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Prevention and Restoration Actions to Combat Desertification.
An Integrated Assessment.

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IAPro, Integrated Assessment protocol

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PRACTICE

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Abbreviations:

CBD: Convention on Biological Diversity

MSP: Multi-Stakeholder Platform

MCDA: Multi-Criteria Decision Aid/Analysis

RS: Remote Sensing

UNCCD: United Nations Convention to Combat Desertification

UNFFC: United Nations Framework Convention on Climate Change

Preface

PRACTICE Integrated Protocol, IAPro, is a methodology for the assessment of management actions in drylands and, in particular, for the assessment of actions to combat desertification. IAPro is a multi-step participatory protocol aimed at promoting knowledge exchange and social learning in the assessment process. It integrates expert and local knowledge, assessment data and stakeholder perspectives, and biophysical and socio-economic information.

This document presents and describes IAPro, provides templates, guidelines, and tools for its implementation, and gives some examples of site-specific adjustments to adapt the protocol to the local conditions in the target areas.

The document is structured as follows:

A Background section (1) introduces the social demands, the baseline principles, and previous research achievements that support the assessment approach of IAPro.

A section on Conceptual framework (2) defines the assumptions and the general conceptual framework of IAPro regarding both the evaluation criteria and the evaluation procedure.

Section 3 presents the general structure and the various steps of IAPro.

Section 4 provides specific tools, methods and templates for key IAPro steps, as well as some implementation examples.

IAPro has been developed in the framework of the EC-funded PRACTICE Support Action and is being tested in the various LTEM PRACTICE sites distributed in 12 countries. Further refinement of IAPro is expected after the testing process.

Although this protocol focuses on the evaluation of prevention and restoration actions to combat degradation of dryland ecosystems, the assessment approach and most of the tools presented here are applicable to a wide variety of management actions and ecosystems. PRACTICE approach aims at being universally applicable. This protocol is intended to be a "common-denominator" assessment method for the comparative assessment of dryland management actions, and yet also has the capactity for any site to go beyond this procedure and perform a more exhaustive survey in order to accomplish other potential site-specific research or management objectives.

Susana Bautista and Barron Orr

IAPro, PRACTICE Integrated Assessment protocol

1. Background

There is a consensus on the need for the evaluation of management actions to combat desertification, which ultimately can provide essential inputs for decision-making (see, for example, UNCCD 2009).

Approaches to the assessment and monitoring of dryland management range from those that focus on particular biophysical properties of the system (e.g., soil erosion) to those that emphasize socio-economics (e.g., cost-benefit analysis). In recent years, focus has shifted to socio-ecological assessment, which recognises the complex and dynamic relationships between humans and ecosystems, and focuses on both biophysical and socio-economic attributes (SER 2004, MA 2005).

The participation of stakeholders and the incorporation of local knowledge in the assessment of environmental problems and potential solutions have also been increasingly demanded by international institutions. Recent recommendations from the UNCCD, in particular, emphasize the need to integrate the knowledge of scientists and local stakeholders in dryland assessments. Conventional environmental assessments tend to be expert-led, top-down activities that generate knowledge for understanding the impacts of management actions. However, these approaches suffer poor adoption rates in part because the engagement of local stakeholders is unidirectional and often limited to defining the context at the beginning and delivering the findings upon completion. Participation has the potential to engender social learning among all stakeholders, including scientists, which then has the potential to increase collaboration. Assessment approaches that promote the identification and selection of assessment criteria by the stakeholders, ensure a link between stakeholder perspectives and what is measured, and create the demand on the part of the stakeholder for accurate and representative data that are relevant to their local realities and constraints.

The PRACTICE Integrated Assessment protocol, IAPro, responses to the need for participatory assessment methods that focus on the evaluation of practices to combat desertification, facilitate the exchange of knowledge and experiences, and integrate the human and social dimensions of land degradation, and therefore of land management and restoration

2. IAPro conceptual framework

PRACTICE IAPro links the **evaluation** and potential improvement of management and restoration actions with **knowledge exchange and social learning** through a participatory process (Fig. 1).

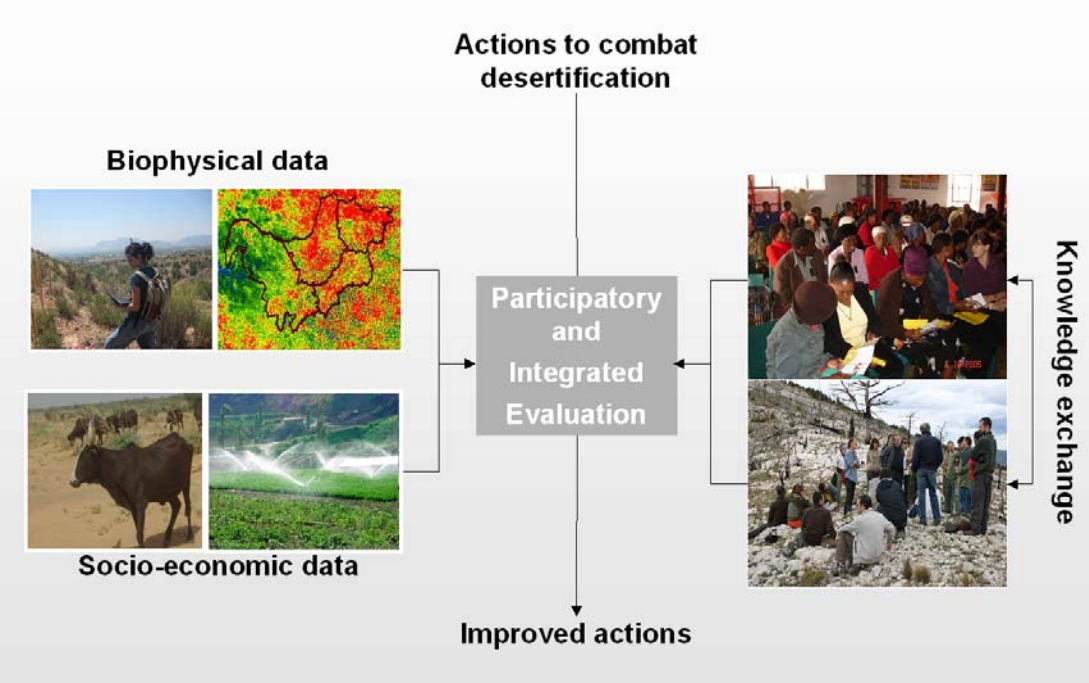

Figure 1. General framework for the evaluation and improvement of actions to combat desertification.

The following sections describe the assumptions and principles that define the general conceptual framework of IAPro regarding both the evaluation method and the evaluation criteria:

On the evaluation method

The basic assumptions underlying IAPro evaluation method are:

1. Participatory evaluation increases adoption.
2. Evaluation improves by linking scientific and local knowledge.
3. Evaluation must be supported by accurate monitoring data.
4. There are not absolute best practices. Evaluation of practices depends on tradeoffs between criteria, individual stakeholder perspectives and interests, as well as dynamic socio-environmental contexts.

5. Assessment and evaluation of management actions should go beyond a success/failure approach. Assessment protocols should provide information systems and ways for knowledge exchange, so that the stakeholders can make a more informed assessment of the alternatives, and a more informed decision on future adoption of actions.
6. Learning is fostered by making the learner's "pre-concepts" explicit and making he/she face alternative perspectives and data that may question those pre-concepts (constructivism learning theory)

Building on these principles, IAPro provides guidance on how to engage a comprehensive and representative set of stakeholders interested in actions to combat desertification. It provides a means to capture baseline stakeholder perspectives on management actions and assessment indicators, and then facilitates knowledge exchange and social learning among stakeholders, including scientists. It includes a suite of common, science-based indicators, and provides a means to integrate scientific and local knowledge. IAPro concludes by providing the stakeholders an opportunity to refine their initial perspectives based on what they learn from each other, when actual data collected for each indicator are integrated, shared and discussed.

On the evaluation criteria

On the evaluation criteria, IAPro assumes that:

1. Dryland social-ecological systems are coupled and dynamic, and therefore the assessment of land condition and management options must simultaneously consider both biophysical and socio-economic attributes.
2. The 'Ecosystem services' concept provides a suitable framework for assessing the impacts of management actions on the social-ecological systems.
3. Assessment of practices to combat desertification must be consistent with UNCCD, UNFCC and CBD goals.
4. Assessment approaches must be effective to understanding common dynamics in dryland systems, but also sensitive to site-specific conditions and context.
5. By integrating assessment criteria based on both scientific and local knowledge solutions can be adopted.

In agreement with the these assumptions, PRACTICE protocol is based on (1) key common indicators that represent key ecosystem services in drylands, and that are also relevant for the objectives of CBD and UNFFC, and (2) site-specific indicators identified by local stakeholders that are relevant to the objectives and the particular context conditions.

3. IAPro structure

IAPro is structured as a sequence of steps that offers a path for knowledge exchange among the variety of stakeholders and between scientists and stakeholders. Some of the modules are full participatory activities (Steps 1 to 3 and 6-7), while Steps 4 and 5 represent scientific and technical work to be performed by the local assessment team (Fig. 2).

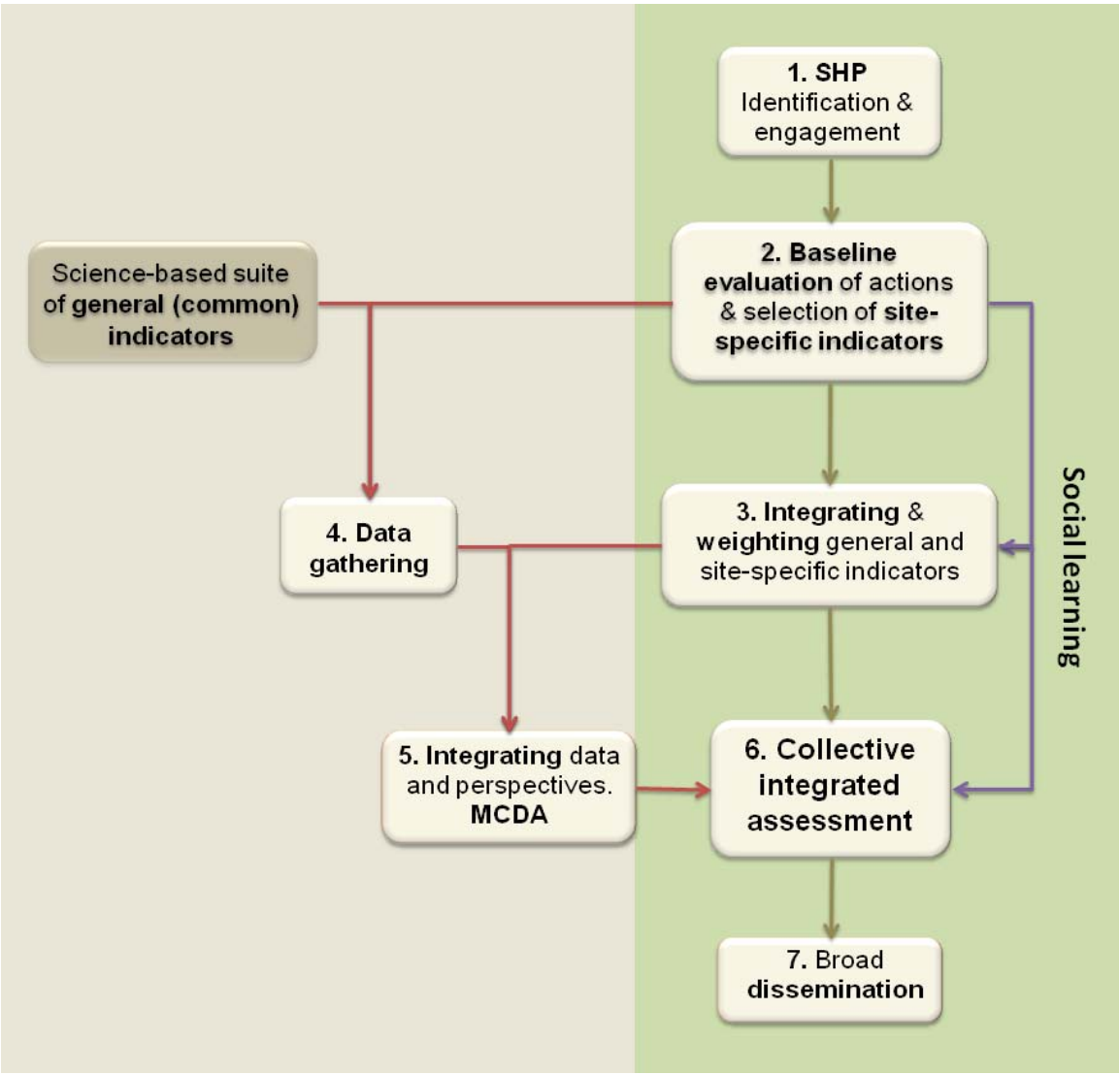

Figure 2. IAPro structure. Flowchart of the protocol steps.

On the science-based suite of common indicators

IApro bases the comparative assessment of management and restoration actions on both science-based common indicators that represent overall functioning of dryland ecosystems, and site-specific indicators identified by local stakeholders that are relevant to the objectives and the particular context conditions.

The suite of science-based indicators in IApro aims to represent a well-balanced basket of ecosystem services, covering the four broad categories of provisioning, regulatory, supporting, and cultural services, and focusing on key services in drylands (MA, 2005). Figure 3 summarises the criteria and suite of indicators proposed, including potential metrics for their assessment. This framework and the selected criteria and indicators complement efforts to encourage national assessment and monitoring of the United Nations Convention to Combat Desertification (UNCCD), while also maximizing possible synergies with global programmes pursuing ecosystem health and associated human well-being, such as the United Nation Framework on Climate Change (UNFCC) or the Convention on Biodiversity (CBD).

These common indicators are meant to be assessed in all target sites for IAPro

Criteria		Indicators / Proxies
Economy	Income, personal wealth	Site-specific
Provisioning Services	Goods (food, fiber, timber, fuel wood…)	Productivity Productivity value
Regulating & Supporting Services	Water and soil conservation	Plant cover & pattern Soil surface condition
	C sequestration	SOC Above-ground biomass
Cultural Services	Landscape and cultural heritage	Site-specific
Biodiversity		Diversity of vascular plants

Figure 3. Science-based common criteria and indicators for the assessment of management and restoration actions to combat land degradation in drylands

On the participatory path

The protocol begins with the identification and engagement of the site-specific stakeholder platform, SHP (*Step 1*). The participatory path for the assessment of management actions involves two main phases. The **first phase** (*Step 2* and first part of *Step 3*) aims to establish the **baseline** stakeholder perspectives on (i) the actions, (ii) the site-specific assessment criteria (indicators), and (iii) the relative importance of the various indicators. This produces a baseline measurement of the stakeholders' assessment at the level of each individual (prior to interaction and discussion). The **second phase** (second part of *Step 3* and *Step 6*) aims to provide learning opportunities, capturing the changes in stakeholder perspectives

after interaction and discussion, and to produce a **collective integrated** evaluation (across the entire multi-stakeholder platform) of both the assessment criteria and the management actions. The final step of the protocol (*Step 7*) focuses on participatory activities to disseminate what was learned from the evaluation process.

On knowledge exchange

Implementation of IAPro facilitates knowledge exchange and learning –including learning by scientists from local knowledge– throughout the entire assessment process. The following steps offer particular opportunities for social learning:

- Step 3 provides the opportunity for stakeholders to review and discuss the indicators selected and their weights (first provided by individual stakeholders and then integrated across the entire multi-stakeholder platform).
- Step 6 provides the opportunity for stakeholders to review and discuss the evaluation of the target actions (after visualizing the actions through the criteria they have identified as important, and seeing how the mitigation/restoration actions rank relative to each other).
- Step 7 provides the opportunity for stakeholders to further promote social learning within and outside the site-specific stakeholder platform by sharing their perspectives and what was learned with the worldwide community.

In addition, Steps 3 to 5 provide opportunities for stakeholders to learn from science-based information. Step 3 introduces to the stakeholders the common indicators, which are science-based indicators selected by the PRACTICE expert panel, and Steps 4 and 5 provide the data for the selected assessment indicators (both general and site-specific) and the assessment results for each of the target actions according to these data (see below).

On the assessment team

In any target site/area, IAPro is meant to be implemented by a **Local Assessment Team**, in collaboration with the local multi-stakeholder platform. Prior to the protocol implementation, this local assessment team has to be defined and organized.

Ideally, the local assessment team will consist of an interdisciplinary group, including social and biophysical scientists, as well as natural resource managers, extension agents, or any other professional with a good knowledge on the site and the actions to be evaluated, and experience in participatory research.

The local assessment team is responsible for ensuring the entire process follows internationally accepted standards for research ethics in the conduct of human subjects research, conducting interviews with the stakeholders (Steps 1 to 3); organizing group discussions and workshops and facilitating the interaction among stakeholders (Steps 3 and 6); gathering data on the selected indicators (Step 4); integrating assessment data and stakeholder perspectives through MCDA tools (Step 5); and facilitating and training on internet-supported dissemination of audio-visual information (Step 7).

In addition, before starting the implementation of IAPro, the assessment team must:

- Identify and select for assessment the main types of restoration and mitigation actions implemented in the area

- Prepare factsheets on the local (and global) assessment effort and goals (to be distributed to the stakeholders).
- Prepare factsheets, maps, and pictures on the actions to be evaluated (to be distributed to the stakeholders).
- Ascertain and document the status of any existing MSP. Prepare the strategy for complementing, if needed, the existing MSP or, if there is no suitable MSP, for identifying an engaging a suitable MSP.
- Prepare data logs for compiling the results from the various IAPro modules.
- Train team members in research ethics to ensure free and informed consent of all participants and the protection of confidentiality and privacy.
- Discuss and select the best local metrics for the common indicators. These common indicators are already defined by PRACTICE IAPro so that they represent a well-balanced basket of ecosystem services. However, the local assessment team must decide on the best metrics for those indicators, according to the site characteristics, data availability and/or potential for gathering new data. For instance, the indicator "productivity" could be assessed through measurements of forage production, wood production, total vegetation productivity, etc., depending on the specific key land uses in the site. Similarly, the indicator "plant cover and pattern" could be measured from field surveys, aerial photos, fine-resolution remote sensing (RS) images, etc., depending on the type of data (potentially) available.

3.1 Step 1: Multi-Stakeholder Platform identification and engagement

Stakeholder identification and engagement aims to identify and involve a comprehensive and representative set of stakeholders who can contribute to the evaluation process. IAPro defines Multi-Stakeholder Platform (MSP) as a voluntary partnership of "different stakeholders perceiving same resource management problem, realizing their interdependence for solving it and collaborating to find common solutions"[1]. IAPro proposes an informal but guided approach to discussion with potential stakeholders. Specifically, a **semi-structured, semi-directed interview** approach is recommended, where the interview "instrument" is a guide of discussion topics and not a rigid questionnaire (see section 4: Guidelines). It structured enough to pursue specific information, but flexible enough to allow the capture of unanticipated, potentially relevant information.

It is essential not to assume a priori knowledge of all stakeholders. Therefore, the stakeholder identification method to be used is a form of "chain referral" where initial key respondents (potential stakeholders) are interviewed to obtain information (characteristics of themselves and those they may represent) and referrals of other potential stakeholders (Figure 4). Each round of referrals is an iteration of this process that leads to more potential stakeholders (and even categories of stakeholders); more iteration can reduce bias and increase the chances of more comprehensive and representative identification of

[1] As per Steins, NA and VM Edwards. 1999. Platforms for collective action in multiple-use common pool resource management. Agriculture and Human Values. 16(SI):241-255.

stakeholders. The process is finished when the referrals are (as much as feasible) starting to become duplicative.

The local assessment team will provide an initial identification of the major categories of stakeholders based on the nature of their stakes (e.g., types of use, or management), social status, level of interest, influence, ethnicity, and other logical attributes. This is an open-ended process, as new categories will emerge with the iteration of the chain referral. The categorization process is useful to identify traditionally marginalized or peripheral stakeholder groups in order to obtain comprehensive representation within the platform.

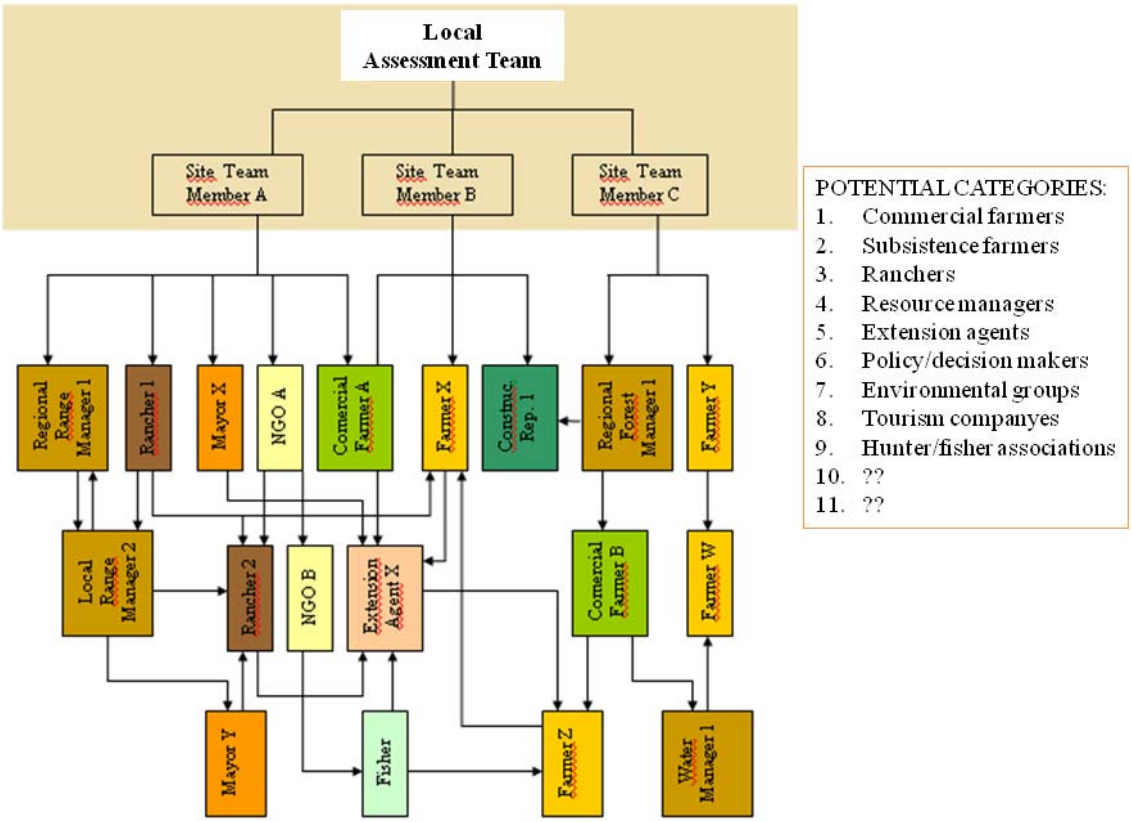

Figure 4. Schematic of the chain referral process.

Step 1 in IAPro consists of three main elements: free and informed consent (for stakeholder participation in all information gathering/recording aspects of the process), semi-structured interviews for assessing, and eventually engaging, potential stakeholder as part of each site-specific multi-stakeholder platform (MSP), and contact data.

The semi-structured interviews aim to elicit information on a limited number of key issues that are relevant for assessing the potential of the respondents as part of the MSP, such as:

1. The social position (occupation, responsibilities) of each potential stakeholder.
2. Respondent's perspectives on general socio-environmental conditions of the region/site
3. Respondent's relationship with the restoration/mitigation actions under consideration
4. Respondent's level of interest and potential impediments to participating in this process
5. Referrals, to identify other potential stakeholders or special interest groups.
6. Basic biographical information on the respondent (age, gender, preferred language...)

The process of stakeholder identification and engagement must address gender and ethical issues in agreement with basic international and European guidelines[2]. The interviewer should make sure the respondent is fully informed about the assessment goals, as well as the assessment team commitment to protect confidentiality and privacy (and how). Emphasis must be placed on the voluntary nature of participation, and the interviewer must ask for consent to participate prior to beginning the discussion. The participation of women in the multi-stakeholder platforms will be fostered when necessary, and special care must be taken to assure that women perspectives are captured by the participatory assessment process.

Step 1 can be implemented as a first single step or in combination with Step 2. If combined, the sequence should be maintained, though the contact data section can be placed at the end of Step 2.

3.2. Step 2: Baseline assessment and selection of site-specific indicators

Baseline evaluation of actions and indicator selection aims to capture the baseline stakeholder perspectives on (1) the management and restoration actions applied to combat desertification (including no-action control areas, if appropriate), and (2) the site-specific indicators for the assessment of these and other potential actions.

Step 2 provides two crucial elements for participatory assessment and social learning. On the one hand, it captures and makes explicit the individual stakeholder baseline perspectives, which can be later contrasted with monitoring data and other stakeholders' perspectives, leading eventually, to the production of new knowledge and learning. These baseline perspectives will be the reference data for assessing and quantifying social learning throughout the assessment process, as any potential change (further in the assessment process) in the stakeholders' perspectives will be assessed by comparing them with the individual baseline ones.

On the other hand, Step 2 provides stakeholders a first opportunity within the assessment process for participating in the definition of the assessment method itself, by proposing site-specific indicators that are relevant for the local assessment of management actions to combat desertification. Step 2 therefore offers the first opportunity for incorporating local knowledge into the assessment process.

Like Step 1, Step 2 is meant to be implemented through individual semi-structured interviews. General guidelines on Step 1 interviews (see above and section 4: Guidelines) also are applicable to Step 2 interviews.

The semi-structured interviews in Step 2 aim to elicit information on the following issues:

[2] UNESCO. 1994. Ethical Guidelines for International Comparative Social Science Research in the Framework of MOST (Management of Social Transformation). Paris: UNESCO Social and Human Sciences. Available online: http://www.unesco.org/most/ethical.htm

European Commission Directorate-General for Research Science, Economy and Society. 2010. European Textbook on Ethics in Research. EUR 24452 EN, ISBN 978-92-79-17543-5. Luxembourg: Publications Office of the European Union. Available online: http://ec.europa.eu/research/science-society/document_library/pdf_06/textbook-on-ethics-report_en.pdf

1) On the actions:

- The stakeholder knowledge on the objectives of the actions
- The self-evaluated degree of (technical) stakeholder knowledge on the actions
- The baseline personal stakeholder evaluation of the actions (general assessment; positive aspects; negative aspects; potential improvements)

2) On site-specific indicators:

- Potential assessment indicators based on local-knowledge

The issues outlined above serve as anchoring points for a semi-structured interview, which, like in Step 1 (Stakeholder identification and engagement), is meant to be a natural discussion. Guidelines for Step 2 (see section 4.II) include examples of questions to help the interviewer guide the discussion. To ensure continuity and a very basic capacity to measure change in knowledge and perceptions between this step (which is the baseline) and further steps in the assessment process (after a number of opportunities for social learning), Step 2 includes some questions in which the stakeholder rates their response on a Likert scale. Thus, for example, the interviewer will ask the stakeholder to rate his/her general opinion on each action using a scale of 1 to 5; where 1 is "very bad choice" and 5 is "excellent choice" (see section 4.II). These scales can be adapted locally to accommodate cultural and linguistic differences and facilitate their understanding by the local MSP.

Although the actions to be evaluated were already presented in the framework of Step 1, the actions must be listed again and described before starting the Step 2 interview. At this stage, the information about the actions should be only about (1) the type of action, (2) the implementation time (when has it been applied? or is being applied?), and (c) the actual area where the actions were or are being applied. The list of actions should include one or more "no action" cases (i.e.: similar areas left untreated, where no prevention/restoration action has been applied), if any. If needed or useful, some pictures, a map or any other type of supporting information can be provided. However, care must be taken to ensure that photographs are consistent in their scale and how they look to reduce the potential for inadvertent bias.

The second main outcome from Step 2 is a list of local-knowledge based indicators for the assessment of actions to combat desertification. To capture the individual stakeholder baseline perspectives on assessment indicators, the Step 2 interview follows two approaches: (a) from the responses to previous questions on the actions, the interviewer extracts the indicators implicitly considered by the stakeholder for his/her appraisal of the positive and negative outcomes of each action, and then asks for confirmation, and (b) the interviewer directly asks the stakeholder about potential assessment criteria and indicators. An essential step in participatory work on indicators is to find terms for the word "indicator" that local people understand. The word "sign" (and its equivalent in local languages) has been found to be the most appropriate in many cases. The result from this process is a list of potential indicators from each individual stakeholder. These indicators are then pooled and integrated by IAPro Step 3, and a single, consolidated and integrated list of local-knowledge based indicators is produced for each site and Multi-Stakeholder Platform.

3.3. Step 3: Integrating and weighting general and site-specific indicators

For each target site, Step 3 aims to establish both individual and integrated stakeholder perspectives on the relative importance of the indicators selected in previous steps to assess management and restoration actions to combat desertification. Step 3 is designed to gather information on stakeholder preferences on both the indicators suggested by different stakeholders and the common indicators suggested by IAPro. Therefore, Step 3 represents the first opportunity within IAPro for social learning and the integration of scientific and local knowledge. The stakeholder preferences, once computed, are represented by a number or weight for each indicator, and ultimately a hierarchy or order of importance for the group of indicators selected.

Step 3 includes two phases: (1) Individual baseline weighting, and (2) Integrated collective weighting. The procedure for Step 3 facilitates discussion and social learning between these two phases. Ideally, the two phases in Step 3 should be implemented in a single meeting. However, as long as the sequence of activities is kept, the various participatory steps in IAPro can be scheduled in whatever way is most logistically pragmatic.

Step 3 is meant to be conducted with multiple stakeholders simultaneously, first as independent thinkers generating their own baseline indicator weights, followed by the integrated collective weighting. The number of stakeholders performing this exercise simultaneously should therefore not be too large, or the independence in the baseline weighting by each individual in the group will be difficult to maintain. Ideally, the local Multi-Stakeholder platform should be split in various sub-groups, with the goal of conducting Step 3 with all or, at least, the majority of the stakeholders in the local platform. Each sub-group should represent as much as possible the local MSP and its variation in stakeholder categories and number per category. This way, the potential for social learning is maximized and proper integration of individual weights into collective values is facilitated.

The final outcome from Step 3 is a set of collective weights for a consolidated list of indicators. The weights elicited are then incorporated (See Step 5) into a Multi-Criteria Decision Analysis (MCDA) applied to the data obtained or collected for each indicator and action assessed in the target site.

The sequence of main activities in Step 3 is the following (See section 4.III for guidelines):

1. *Consolidation of the indicator list*

This activity links Steps 2 and 3. One of the outcomes from Step 2 is a set of individual lists of signs/criteria/indicators –implicitly or explicitly– suggested by participating stakeholders as useful to them for assessing management and restoration actions. When all stakeholder inputs are considered, the resulting list may be long and somewhat inconsistent and/or redundant. This list must then be refined and consolidated, and combined with the science-based common indicators proposed by IAPro (See section 2.2. Evaluation criteria). (It should be noted that it is not unusual for stakeholder-elicited indicators to include many of the common indicators.)

Several issues must be considered when consolidating and refining the indicator list. First, all proposed indicators must be *true* indicators. The conceptual limits between “criteria”, “indicators” and “metrics” are often unclear. IAPro assumes that criteria represent a more general framework for assessment (e.g., “carbon sequestration” would be a criterion), while

indicators are specific signs that represent a given criterion (e.g., “soil organic carbon” would be an indicator for C sequestration).

Second, though perhaps labelled or described differently, some proposed indicators will be essentially the same as others. These must be consolidated into a single indicator.

Third, the difficulties for ranking the relative importance of indicators largely increase with the number of indicators. IAPro recommends a rough limit of 12 indicators. Reducing the indicator list should involve consistent criteria. IAPro suggests considering popularity and uniqueness as selection criteria (discard the indicators mentioned less frequently unless they come from unique stakeholders).

Finally, data availability or potential for data gathering, and data suitability (e.g., data available at a scale sensitive enough to communicate meaning when applied to the actions) must be also considered.

Once the list of stakeholder indicators is refined and consolidated, the science-based common indicators are checked against this list. If any common indicator is not represented on the stakeholder list, then it must be added to the combined and consolidated list. If it is already captured by the stakeholder list, the existing stakeholder language labelling and describing the common indicator is retained.

2. *Introduction: presenting the activity goals and the selected indicators*

After a brief summary of the assessment project background, the overall goal and the method, the facilitator of the weighting exercise provides and presents clear definitions of each indicator. The explanation of the meaning of the indicators should be developed directly from recorded comments from Step 2 indicator elicitation so that the language used is familiar to the stakeholders. It is advisable also to use this language when explaining the meaning of the common indicators included in the consolidated list that will be used in the exercise. Consistency among the way we explain each indicator at a given site is essential.

3. *Indicator weighting exercise: “Pack of Cards” method*

There are several approaches and methods available for weighting indicators and criteria. IAPro uses a revised version of a procedure called the “Pack of Cards”, also known as SIMOS procedure (Figueira and Roy, 2002). It is an exercise that uses a ‘card playing’ format in which different criteria (indicators) are classified in different levels (also called subsets), followed by the ranking of the subsets, with varying distance (blank cards) between subsets according to the difference in their relative importance (Fig. 5). From this ranking exercise, a set of simple calculations determines the weights for the various subsets of indicators. Section 4.III includes guidelines and additional material for the implementation of this exercise.

The reasons for adopting the “Pack of Cards” method are based first on its simplicity and plasticity, which allow the exercise to be carried out by stakeholders that may greatly vary in their educational and cultural backgrounds, also being applicable in cultural context where numeric values are not typically used for expressing preferences. A second, technical reason is the compatibility of this weighting exercise and outcomes with MCDA *outranking* methods, which is the MCDA type of method further used in the IAPro-driven assessment process (See Step 5: Integrating data and perspectives).

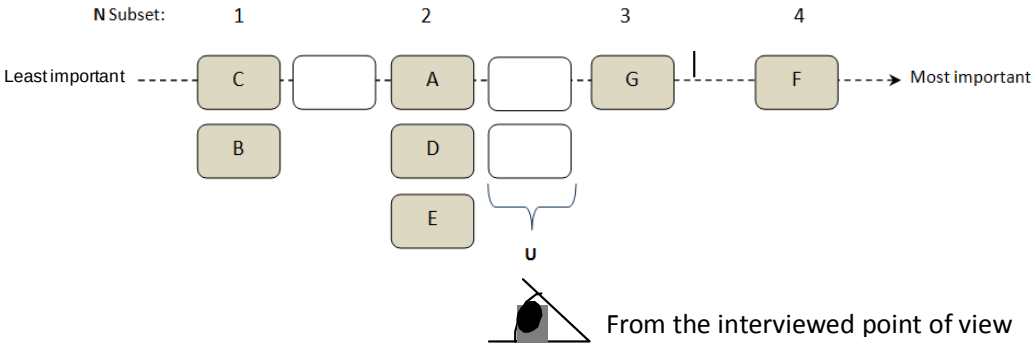

Figure 5. Outline of a potential arrangement of indicators (and blank) cards during a weighting exercise, and examples of Step 3 implementation in the Alentejo, Portugal (middle) and the Kalahari, South Africa (bottom).

4. *Computation of the (first) exercise results*

A note taker must record what the participant has determined through his/her individual arrangement of cards (for example, as depicted in Fig. 5, top). The information is recorded in a simple form per participant stakeholder (Step 3_note taker.doc, see section 3.III for a template), and then transferred to a simple spreadsheet. For each participant stakeholder, a series of calculations on the values recorded result in a normalized weight for each of the indicators assessed. For more information about the theoretical and computation foundation for this approach, see Figueira and Roy (2002). For further details about computation of the results, see Guidelines to IAPro Step 3 (Section 4.III), and also a computation template available at PRACTICE NetWeb site:

Step 3_Pack of cards_computation.xls.

This computation exercise is repeated for each stakeholder. The result is a baseline set of indicator weights provided by each individual stakeholder.

These weights are then integrated, resulting in a ***baseline set of collective weights***. Depending on how well the participants in Step 3 represent the whole MSP, simple or weighted ***averages*** per indicator can be used to integrate the individual weights (See section 4.III for guidelines). Ideally, the Step 3 team will carry out the calculation and integration of individual weights during the meeting with the stakeholders, so they can be discussed further in the same Step 3 exercise (see next point below).

5. *Discussion on the individual and collective results*

This activity represents the transition between the two phases, *baseline* and *post-learning*, in Step 3 and in IAPro. Prior to this activity, care must be taken to ensure that the individual stakeholder perspective, either on the actions or the indicators, was not potentially biased by the interaction with researchers and other stakeholders. Conversely, hereafter knowledge exchange between scientists and stakeholders and, in general, social learning processes are facilitated and particularly promoted.

Once the baseline stakeholder perspectives (arrangement of cards) have been recorded, the stakeholders are encouraged to discuss each others' results in pairs or small groups, and to report on these discussions afterwards. After this period, a general discussion on the individual and the integrated weights (already computed and shared with the stakeholders during the meeting) is facilitated, ideally with an exchange of views taking place.

6. *Re-assessing the indicators. Final individual and collective weights.*

After the discussion on the individual and collective results, the stakeholders are asked to re-rank the indicators in case their perspectives have changed based on what they have learned. The changes in the arrangements of the cards, if any, are registered, and a new round of computations and calculations takes place in order to estimate again individuals and integrated (averaged) weights for each indicator.

This process (each iteration) can be repeated as many times as necessary in order to find a final set of weights. Differences between the two (or more) iterations in this process can be used as metrics of the social learning produced.

Figure 6 illustrates the two-phase indicator weighting process using an example of two sets (baseline and post-discussion) of weights given by a group of stakeholders in a test site in Alentejo (Portugal), and some photographs that captured the discussion by pairs.

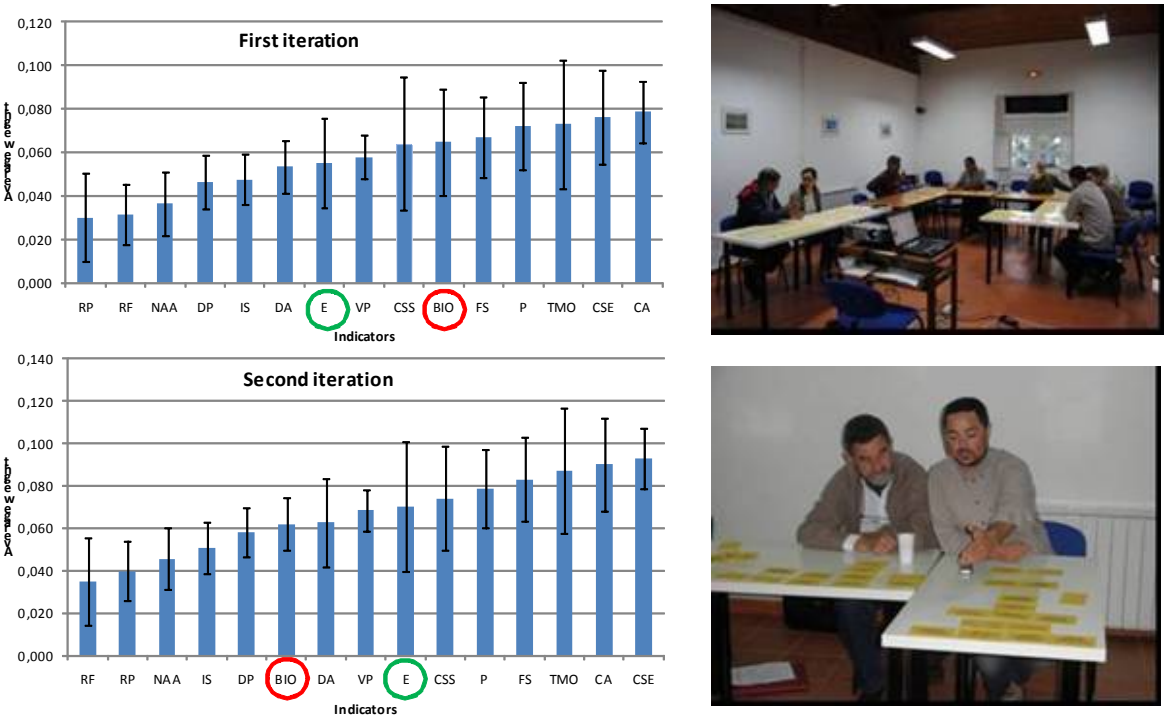

Figure 6. From a demonstration Step 3 exercise held in Portugal (May 2011), the first graph (top) shows the averages of first (baseline) individual weights given by stakeholders to each of the indicators; second graph (bottom) shows the averages of all weights given by stakeholders for each indicator after a discussion has occurred. Coloured circles highlight some of the changes in stakeholder's perspectives between the first and the second (after discussing each others' results) round of the Pack of Cards exercise. Right: Scenes of these discussions, with stakeholders initially working in pairs.

Final individual weights from each Step-3 sub-group within the local MSP are combined and a final simple average of all individual (final) weights is computed (assuming the group is representative of the overall MSP). These weights are then used as inputs for a MCDA (See Step 5), which combines the stakeholder perspectives on assessment indicators (captured through the collective weights elicited in the framework of Step 3) and data on each indicator, gathered and/or measured in the framework of IAPro Step 4 (see below).

3.4. Step 4: Data gathering

Step 4 addresses the capture or collection of data for each of the indicators proposed in the consolidated and integrated list of indicators that resulted from previous IAPro steps, which include both general (common) indicators and site-specific indicators.

Some of the data needed may be already available in the site. However, new sampling and assessment will be necessary for gathering data on many of the selected indicators, particularly on the site-specific indicators identified by stakeholders. Data gathering is

expected to be led by the local assessment team, though participation of stakeholders in the process is desirable and encouraged.

IAPro does not propose any particular socio-economic or biophysical assessment, monitoring or sampling method, as local conditions and constraints will vary. Methods for data gathering must rely on the expertise of local researchers and technicians within the local assessment team, who are responsible for choosing the most appropriate metrics and survey methods. Notwithstanding, the following general recommendations should be followed:

(1) Exploit already available data and minimize sampling and field visits.

(2) Focus on simple metrics that could be easily adopted for future monitoring programs, potentially conducted by a variety of stakeholders (researchers, technicians, resource managers, etc.).

(3) Use comparable (same) methods to assess the target actions, including comparable sampling units and sampling dates.

(4) Rely on the most standard sampling methods and analyses.

(5) Rely on RS approaches wherever suitable and possible, paying attention to scale and data sensitivity considerations so the results are meaningful.

In addition, IAPro recommends using some practical and well-tested methodological approaches to gathering data on some of the common indicators selected:

For the assessment of soil and water conservation indicators such “soil surface condition”, functional approaches such as LFA (Landscape Functional Analysis; Tongway and Hindley, 2000; 2004) are excellent options.

In areas with patchy vegetation, the indicators “land cover and pattern” can easily be assessed from aerial photographs or fine-resolution RS images using bare-soil connectivity metrics (e.g., Mayor et al., 2008; Ludwig et al., 2007)

Data on some key socio-economic and cultural indicators (e.g., income, family wealth), are commonly available at coarse resolution (e.g., region, municipality) that is insensitive to the specific potential impacts of the various local management actions. IAPro recommends relying on semi-structured interviews to gathering data on these indicators. Similarly, data on cultural indicators such “landscape and cultural heritage” and indicators based on aesthetic perspectives can be captured through interviews. These interviews could be conducted in the framework of Steps 2 and 3, or as independent activities.

3.5. Step 5: Integrating data and perspectives: MCDA

Multi-Criteria Decision Analysis is an approach and a set of techniques that have been developed to help decision makers solve problems where several and often incommensurate or contradictory criteria and points of views applies at the same time. The main applications of a multi-criteria analysis are: choosing the best option among a set of alternatives, ranking a set of alternatives from the best to the worst, and/or sorting alternatives according to their performance. The general elements of an MCDA method are (Fig. 7): (1) various alternatives to solve a problem, (2) different attributes or criteria that will allow the comparison between

the alternatives, and (3) various interests or points of views about each one of the criteria (commonly expressed as weights or coefficients that define the relative importance given to the various criteria).

- Alternative (actions)
- Criteria (indicators)
- Weights
- Data

Indicators

Actions

	Criteria			
Alternatives	**C1**	**C2**	**C3**	**C4**
A	20	High	1	2
B	15	Medium	1	3
C	5	Low	2	2

Criteria	C1	C2	C3	C4
Weights	2	3	0.5	1

Figure 7. General elements of MCDA

IAPro Step 5 applies MCDA to integrating the stakeholder perspectives on the assessment method (through the selection of assessment indicators and definition of their relative importance) and the assessment data gathered for each of the selected indicators.

Out of the many methods available for MCDA, outranking methods are particularly suitable for the achievement of Step 5 objectives and general IAPro goals. The reasons for adopting an outranking-type of approach include:

- The method assumes that sometimes there is not only one best alternative.
- It is a non-compensatory method (very good performance in some criteria shouldn't offset bad performances in some other criteria).
- It does not need a data normalization procedure.
- The actions are compared in pairs using each criteria; no need for a reference.
- It is possible for two options to be classified as incomparable (for example, if there is no data available).
- The method works well with quantitative and qualitative criteria.
- The approach encourages more interaction between the decision maker and the model in seeking out good options, as compared with other MCDA approaches.
- The method does not require significant infrastructure to perform and thus can be conducted almost anywhere.

The outranking approach proposed by IAPro is ELECTRE (based on Roy and Bertier, 1973), though some other outranking methods like PROMETHEE and NAIADE also meet IAPro goals for Step 5. Details on outranking methods for MCDA can be found, for example, in Dodgson et al. (2000) and Figueira et al. (2005).

All the ELECTRE methods are based on the identification of the strength of statements of the form: "alternative A is at least as good as alternative B". So, outranking is defined

fundamentally between every pair of options being considered. Alternative A outranks B if on a great part of the criteria A performs at least as good as B. The final result of the procedure is Partial or Ordinal Ranking of options, which helps visualize the alternatives that perform at least as good as the others in most of the criteria.

3.6. Step 6: Collective integrated assessment

Step 6 targets the integrated evaluation of the local actions to combat land degradation, supported by the results from the site-specific MCDA performed in previous Step 5, and encouraging the re-evaluation of actions according to these results and previous discussions. This step brings what scientists from the Local Assessment Team have learned from the stakeholders from previous steps back to them and brings the science (the approach and the data) to the stakeholders so that they can make a more informed assessment of the management/restoration actions through social learning and other forms of informal learning. Step 6 represents the end of a process where the combination of science and local knowledge, monitoring data and stakeholder perspectives converge into a collective and integrated evaluation of the local actions implemented to combat land degradation.

Although implementing Step 6 through individual interviews is technically possible, a collective exercise is proposed to fully meet IAPro goals of knowledge exchange and social learning. Ideally, Step 6 is conducted in a framework of a workshop with all or most of the stakeholders from the local MSP, in particular with those that participated in previous IAPro steps. This workshop could be complemented by a set of individual interviews, if it is considered convenient by the local assessment team (e.g., in order to include stakeholders that could not participate in the workshop; to gain further insights into stakeholder perspectives; etc.). The following description of activities in Step 6 assumes a workshop approach.

Step 6 includes four main activities (See section 4.V for guidelines)[3]:

1. Presentation to the stakeholders of a summary of the weighting exercise (both baseline and post discussion results) on assessment indicators conducted in Step 3.
2. Presentation to the stakeholders of a summary of the Multi-Criteria Decision Analysis (MCDA) results on the comparison of actions (integrating weights from stakeholders and data).

   These two first activities are crucial for the successful exploitation of the integration of scientific and local knowledge, data, and individual stakeholder interests and perspectives that is facilitated through IAPro. Special attention must be paid to:

   - Presenting (again) the actions that are being evaluated through IAPro, providing visual representations of them displayed within view of the participants and/or distributed individually.

[3] The activities are described assuming a workshop approach for Step 6. The adaptation of the activities to be conducted through individual interviews is straightforward.

- Presenting the weighting and the MCDA results in a way that can be easily understood by the local stakeholders. Adapting language and visual representations as necessary.
- Stressing that assessment criteria (indicators and their relative importance) have been defined by the MSP, therefore by the participants.
- Explaining that the assessment team gathered the best available data and/or performed new surveys for each of the indicators selected by the MSP.
- Stressing that the results from the outranking MCDA are not meant to identify the best option possible, nor to rank them along a quality scale, but to provide information on which action outranks each other as a function of the criteria (indicators) considered. Thus, the results from an outranking method can be seen as an information system that helps the stakeholders evaluate the alternatives (management actions) and decide about future directions.

3. Facilitate debate on the results among the stakeholders (including researchers);
4. Re-evaluation of the actions by Stakeholders and discussion on the opportunities and constraints for the adoption of the actions assessed.

   This last activity focuses on similar issues that those addressed in Step 2: (1) the self-evaluated degree of (technical) stakeholder knowledge on the actions; (2) the personal stakeholder re-evaluation of the actions (general assessment; positive aspects; negative aspects); and (3) the stakeholder views on the potential (opportunities and constraints) for adoption.

   Following a similar approach in Steps 2 and 6, including the use of Likert scales, facilitates the assessment and quantification of the social learning resulting from the participatory and integrated evaluation of actions. This “pre- and post-“ comparative assessment facilitates the quantification of social learning,not only a valuable byproduct of IAPro, of unquestionable interest for research, but also, if learning has been demonstrated, a powerful motivation for further promotion of participatory approaches in decision-making, management and assessment activities. Participatory approaches that result in social learning also result in engagement, a necessary precursor to collaborative decision making and collective action.

3.7. Step 7: Broad dissemination

This step aims to promote dissemination of what was learned among stakeholders at each site, and ultimately between sites and the larger desertification community through Internet-based tools.

IAPro proposes exploiting relatively recent Internet innovations (e.g., content management systems and online collaborative tools) that simplify information sharing, encourage community of practice formation (the experts and practitioners), facilitate linking communities of practitioners with those who stand to benefit from their efforts (communities of interest), and are easily integrated into any existing network. These technologies are based on virtual communities and interactive mapping (e.g., Google Groups and Google Earth), and are relatively inexpensive and easy to use (1-2 hour training).

In the framework of IAPro workshops with stakeholders, the local assessment team will facilitate the use of digital still and video cameras and handheld mapping technology by the participant stakeholders, and will encourage participants to document (through words, photographs, video, maps, data, etc.) their perspectives and discussions on the assessment indicators, the participatory evaluation process, and the management actions assessed (what worked, what did not, and why). These stakeholder-created materials will be shared with the community of practice and broader public by posting them on existing interned-based networks or on interactive websites created *ad-hoc* by the community of practice.

4. Guidelines

This section includes guidelines for the implementation of IAPro steps. Guidelines for participatory steps also include “Instruments” to guide the interviews and the interaction with stakeholders, as well as examples and templates of additional useful materials.

I. Guidelines for IAPro Step 1: Identifying and Engaging Multi-Stakeholder Platforms, MSP: Stakeholder Definition, Identification and Contact

IAPro endeavors to seek the perspectives of those with a stake in the restoration and mitigation actions under evaluation (e.g., implementers, decision makers, and most importantly, those who are impacted by desertification and its mitigation). These guidelines are based on a balance of IAPro objectives, tested approaches, and pragmatism (e.g., variability in the maturity of local MSPs, resource limitations).

A) Organize a local team

Each Local Assessment Team will identify someone responsible for stakeholder identification and engagement. This individual will lead this process and train others within the team. Ideally, this person would be a social scientist interested and experienced in participatory research. The more interdisciplinary the team, the better.

Though stakeholder identification should be systematic, pragmatic considerations suggest that opportunity (e.g., someone who is a potential stakeholder arrives by chance in the office) is equally important. Therefore all members of the Local Assessment Team should be familiar with these guidelines and prepared to conduct the brief key respondent interview outlined below in order to reach as many potential stakeholders as possible.

B) Summary on the local (and global) assessment effort and goals

Initial discussions with potential stakeholders must start in a consistent manner with a very brief summary (in laymen's language) of:

1. Overall assessment goals and the potential societal benefits (hinting at why the potential stakeholder might want to participate – it should be relevant to the potential stakeholders.)
2. Statement on what constitutes a stake (se point C.3 below) and a role in this effort. This statement should address these typical potential stakeholder questions:

   I. Why are you contacting me?
   II. What is in it for me? (express what their participation could potentially lead to)
   III. How can I participate? (define the collaboration, outline the modes of communication, interviews, meetings, and mention any available support resources)
   IV. Expectations? (express the desire for a fully representative participation, encouraging the communication of different perspectives, including that of the potential stakeholder)

The local team will prepare **factsheets** on the local (and global) assessment effort (see Step 1 Materials). These factsheets will be given and described to the potential stakeholders at the beginning of the first contact meeting. Factsheets must include contact information.

C) Multi-Stakeholder Platform (MSP) assessment

Each Local Assessment Team should conduct an internal meeting to:

1) Ascertain and document the status of any existing MSP. Successful stakeholder engagement requires interaction and motivation to participate, ideally beyond the objectives of the assessment process. The assessment teams may face varying levels of MSP maturity and appropriateness for meeting the assessment goals. Even in cases of limited prior interaction, it

is possible to engage stakeholders and meet the assessment objectives. The MSP status must be assessed prior to initiating stakeholder identification and engagement. The typical range of scenarios that may be encountered are:

a. Existing, self-organized and self-run MSPs focused at least in part on local concerns related to land degradation and restoration in their mandate would be engaged. This is the ideal.

b. MSPs focused on related issues (e.g., water management and allocation) would be the next best choice.

c. Local community-based or interest groups organized for other reasons but who have a stake in the restoration/mitigation effort (e.g., local farmers' or ranchers' associations).

d. No existing MSP (the Local Assessment Team would therefore need to identify the full representation of stakeholders and encourage their interaction.)

2) Record the perception and knowledge of the stakeholder groups' mission, constituents, key representatives, level of influence, relationship (conflict or alliance) with each other, potential alignment with the assessment goals, and their incentives to collaborate.

3) Define what constitutes a stake so that it can be used as a guideline in determining who is a stakeholder. As a starting point, stakeholders in IAPro are broadly defined as those who are involved in and/or impacted by the actions implemented to prevent/reverse land degradation.

4) Identify potential concerns, such as whether or not certain groups of stakeholders will or will not convene together according to local social norms, or due to entrenched conflicts, social divide (e.g., do male and female stakeholders of a certain type communicate the same message when together than when apart?)

D) Stakeholder Identification

1) **It is essential not** to assume *a priori* knowledge of all stakeholders.

2) **Stakeholder categorization**: Using a top-down approach, provide an initial identification of the major categories of stakeholders based on the nature of their stakes (types of use, or management), social status, level of interest, influence, ethnicity and other attributes. This is an open-ended process, as new categories will emerge with each iteration of the chain referral (see below). The categorization process is useful to identify traditionally marginalized or peripheral stakeholder groups in order to obtain comprehensive representation (in a purposive manner) to invite to the collaboration platform. An excellent way to develop these categories is a group "brainstorming" session among all members of the Local Assessment Team. Warning: these categories are not meant to be overly strict or structured. It is important not to exclude stakeholders who may not fit any particular category.

3) **Chain referral:** Stakeholder identification method to be used is a form of "**chain referral**" where initial key respondents[1] (potential stakeholders) are interviewed to obtain information (characteristics of themselves and those they may represent) and referrals of other potential stakeholders, who may also be key respondents. Each round of referrals is an iteration of this process leads to more potential stakeholders (and even categories of stakeholders); *more iterations can reduce bias and increase the chances of more comprehensive and representative*

[1] Key respondents are potential stakeholders who are very competent with a particular domain of knowledge such as local land management and who are willing to share that knowledge.

identification of stakeholders. The process is finished when the referrals are (as much as feasible) starting to become duplicative.

4) **The first key respondents:** Ideally, Local Assessment Team members would be the initial key respondents in the chain referral approach to stakeholder identification, seeding the process with their own knowledge and recommending the first round of other potential stakeholders to be interviewed next. The representatives of oversight entities or of the existing stakeholder groups identified in point C are also likely candidates as initial interviewees.

5) **Interview order:** The goal of full representation and pragmatics both contribute to ordering the interviews based on several gradients employed more or less simultaneously:

   a. *Who you know, and who you know best.* Start with yourselves! This helps work out kinks in the process and instills consistency among all potential interviewers. Yes, you are biased, but it is MUCH better to have your first interviews with yourselves and stakeholders you already know well so that you practice with those more likely to forgive any errors or confusion. This is also an excellent opportunity and essential step to train members on interviewing skills and test the clarity of the questions.[2]

   b. *Opportunity:* All Local Assessment Team members should be prepared to conduct the interviews at any clear opportunity with any potential stakeholder-

   c. *Jurisdiction:* Coarse to fine (e.g., interview the Regional Manager before District Managers).

   d. *Geography:* Be careful to cover all sectors of the spatial area under assessment, generally starting from "near" restoration actions to "far" form them. Note: here distance may be relative when barriers to access are considered – a highway, a mountain, or even a policy may make access (and impact) less or more likely.

   e. *Stakeholder type:* Rigid categorization is not necessary, but at some level the categorization proposed (see D.2) helps because it increases the chances that all types of stakeholders will eventually be contacted. Category order is less critical, but clearly certain categories are more likely to lead to more essential stakeholders (e.g., rangeland restoration actions may impact ranchers more than farmers, so start there!)

6) **Interview instrument (interview outline):** IAPro proposes an informal but guided approach to discussion with potential stakeholders. Specifically, a **semi-structured, semi-directed interview approach** is recommended, where the interview "instrument" is a guide of discussion topics and *not* a rigid questionnaire. See below a template instrument and associated instructions for this: **"Potential-Stakeholder Interview Guide.doc"**

   a. Note that discussion finished with requesting leads on other potential stakeholders.

   b. NOTE: some key respondent interviews may be conducted in **focus group** format – i.e., at a small-holder farmers association meeting. This is particularly true where only a few people need to represent accurately the perspectives of many in a category, as is the case with subsistence farmers.

7) **Logging results:** Tracking and assessing the potential stakeholders for inclusion in the MSP can be facilitated through a log Excel Spreadsheet. A template (**Step_1_PRACTICE_datalog.xls**) is described in "Step 1 Materials (see below). It can be downloaded from PRACTICE web site**.**

[2] If local language enumerators are to be engaged, use internal team interviews as practice for them. Ideally the team could do back-translation of the interview questions to ensure that the meanings are translated correctly.

8) **Cross-validation at each iteration:** As information comes in from potential stakeholders, the Local Assessment Team should meet, categorize the results, assess the appropriateness for participation of those interviewed thus far, and determine who among all those recommended for the next round should be interviewed next. The team must meet regularly enough to compare notes on the interviews conducted to date, and cross-validate.

9) **When is enough enough?** As repeat referrals become more common and new categories less common, the process has run its course. However, be careful to assess the results as independently as possible (e.g., another local researcher working on an entirely different topic who might be able to review the stakeholder list for omissions, duplication, and representative balance. Two examples to consider: 2 commercial farmers out of 20 total would overwhelm only 2 subsistence farmers; a commodity association representative suggested by the mayor who is never referred by any actual farmers may not represent farming interests well).

PRODUCT: A log of potential stakeholder representatives balanced across categories that reflect local realities and ensure as much as possible that "all parties are at the table". A list of categories used. **Some level of voluntary commitment to participate.** A secondary product is a database on qualitative data of the initial information necessary to launch the stakeholder engagement process – e.g., cursory knowledge, attitude and perceptions, as well as potential available resources for or constraints to their participation.

E) MSP Stakeholder Selection

1) When referrals become more and more repetitive, conduct a meeting of the local assessment team to review the entire potential stakeholder log.

2) Re-assess stakeholder categories to ensure representativeness.

3) Review information about all potential stakeholders. Consider representation, balance, and concerns. Note that balance and representativeness will only result from a meaningful discussion among team members of the logged information resulting from the respondent interviews. More often than not, balance does not come from equal numbers but a sense of the actual local circumstances (e.g., some groups involve few members but are very influential while others have many members, but their voices are rarely heard). Concerns raised by anyone about any potential stakeholder are equally important. This can help reduce the risk of conflict among stakeholders and/or an overly dominant participant and/or an unrepresentative or poorly representative participant.

4) Note also that not all stakeholders can participate at all times, so erring having multiple stakeholders in each category is advisable.

5) The size of the MSP really depends on its maturity and how representative it might be. A more mature MSP may already have all stakeholder interests represented by people experienced with this working environment, so fewer total participants are needed. In such a case, you will be building off an existing MSP that is self-organized: rather than organizing, you may be requesting permission to participate. In such a case your only additions will be stakeholder categories you note are missing. If you are helping organize an MSP where there is limited past collaborative interaction among stakeholders, you may find you must take more responsibility for the logistics. It is important be practical about the size of the MSP relative to the time and resources you might have available to interact.

INSTRUMENT 1: Potential-Stakeholder Interview Guide.doc

Instructions

1. Use this outline as a guide for your discussion with someone you feel may be a potential stakeholder for the PRACTICE multi-stakeholder platform (MSP) in your respective study area.
2. This is a guide only, and should *not* be used as formal questionnaire or a form to be filled in. The interviewer should be familiar to the questions before the interview in order to achieve a fluent and natural conversation and avoid the "interrogation" format. The idea is to have an informal conversation with the potential stakeholder, introduce them to what we are doing, and through the discussion, obtain insights on their background, potential influence, experience, and potential stake in the management actions under consideration.
3. There is no set order, nor should the discussion be limited to these questions. The interviewer outline should be used by the person facilitating the discussion. A note taker form should be used by the person capturing the responses. If needed, the interview could be recorded with the interviewee's consent.
4. Not all segments of this outline will be applicable to every respondent. Remember to adapt your language to the interviewee's needs. Some words in this guide are technical, such as "restoration actions". The assumption is that locally there are words which would better represent the specific actions for that country/region/site. Thus, use those local descriptors (e.g., "reforestation" or "tree planting"). Adapt this guide to be more locally representative**.**
5. Some of the sites and restoration actions under study may have great influence on some people, but may not be something they are directly familiar with. It is important to recognize this and provide them context.
6. NOTE: Text in *italics* is meant to prompt you on what you will say to the potential stakeholder. It serves as a reminder for information to be shared with respondent prior to asking specific questions so that he/she has an idea of what we are hoping to learn and why.
7. NOTE: **Boldface text** is used to emphasize the most important questions to ask during the discussion. Though some questions may be a simple "yes/no", more detailed answers that contain additional relevant information are desirable and should be included in the notes. It is the interviewer's job to encourage the conversation beyond the respondent's first answer.

What is needed?

A. Someone to guide the discussion, and if possible, an additional person taking notes.

B. ***Factsheets*** on the overall assessment effort (must include contact information), and on the local assessment effort (with description of the site and actions, and local contact information)

C. ***This guidelines***: Guidelines for identifying and engaging Multi-Stakeholder Platforms, MSP: Stakeholder Definition, Identification and Contact

D. ***This document***: Potential-Stakeholder Interview Guide.doc – a guide to your initial interactions with potential stakeholders

E. A ***Note-taker version*** of this document, structured around the most important questions in the Interview Guide and with space for taking notes on what the respondents say. Identify each Note-taker document with the respective **Stakeholder ID number**.

F. Afterwards: ***Step_1_PRACTICE_datalog.xls*** to help keep track of the potential stakeholders.

How to begin: Share the preamble and consent in as natural a form as possible, including:

- Assessment project background (hand out fact sheet(s) on global and local efforts),
- brief description of the goals and procedures, and the societal benefits we are pursuing,
- clarification that at the personal level there are no anticipated benefits or risks,
- our commitment to protect confidentiality and privacy (and how),
- emphasis on the voluntary nature of participation, and
- contact information (on the fact sheets about the global and local assessment efforts).

These are the elements we provide to ensure that potential participants are fully informed when they consent to participate. The interviewer should make sure the respondent is fully informed and ask for consent to participate prior to beginning the discussion. Once given, the participant can check the box provided verifying that informed consent was provided and interviewer should sign the form.

Preamble and Consent: ***This preamble does not need to be read literally by the interviewer. It can be communicated in a more natural conversational mode. However it is important that the respondent is fully informed prior to providing consent for participation.***

Hello, my name is _____ [facilitator's name] and I am _____ [title] at _____ [organization)]. With the help of _____ [name of Local Assessment team lead], a _____ [his/her title] at _____ [his/her organization], I am participating in a research study to evaluate the effects of mitigation and restoration actions (such as planting trees, reforestation, grazing control, soil/flora/fauna conservation/protection measures) on the environment and on local populations. We hope to use information obtained from scientific study and the expertise and knowledge of local people who have participated in the mitigation and restoration actions and/or have been affected by them. The problem of desertification (severe land degradation) is common throughout the world, and while there are many strategies and techniques that have been employed to halt the degradation and restore impacted landscapes, formal evaluation of the effects of these actions is uncommon. We are conducting such evaluations in sites in many countries around the world, integrating knowledge from local stakeholders and scientists and sharing what is learned so that future actions consider what has been learned. Here in _____ [country], the site(s) under study are _____[site(s)].

Local knowledge is essential to evaluate these actions. In order to obtain local insights, perspectives and expertise, we are trying to identify representative stakeholders to participate in the research as individuals and as part of group discussions with other stakeholders, including scientists. We define a stakeholder as anyone who is involved with or impacted by restoration, mitigation actions, or desertification such as implementers, land users, extension specialists, and sponsors.

This research project is being coordinated by Fundación Centro de Estudios Ambientales del Mediterráneo, also known as the CEAM Foundation. The local affiliation for the research is _____ [lead local research organization]. The research is independent of all private and public management entities other than this research institution. Our goal in conducting this research is to combine local and scientific knowledge here and in other sites to improve our capacity to address environmental changes, which we hope will benefit future restoration efforts. However, there are no foreseeable direct personal benefits or risks in participation.

Though there are no anticipated risks, as researchers it is our responsibility to protect the confidentiality and privacy of participants as much as possible. To ensure this, we have a procedure to separate names from field notes. When we begin, a separate page will be assigned a unique number that will include your name and contact information. We will keep this separate from all other information, and use it only if we need to come back to you with further questions. The unique number will be used on all notes or transcriptions. No names will be used in any publications resulting from this research. Once any need to contact you is past, this original page (the only page with your actual name) will be destroyed. Participation is completely voluntary, both in a general sense, and at the point of any topic or question.

If you have any further questions, our contact information and that of the CEAM Foundation can be found of the project fact sheets which we are giving you now. By participating in the interview, you are giving permission for us to use your information for research purposes.

Confirmation of the *Interviewer* (that he/she informed the participant and obtained consent of the participant.)	

Please do not use this as an interview form…it is a guide for the discussion. *It is the interviewer's job to make the respondent feel comfortable. The order below is designed to encourage a natural conversation – however any order is fine if it is comfortable for the respondent.*

Stakeholder ID number:

1. Position *(the aim is to elicit the social position of each potential stakeholder and their influence. As an example, this section could be addressed by asking "Could you please describe your current occupation?, What kind of responsibilities does your job involve?, How long have you worked as Xxxxxxxx ?, etc.)*

Occupation:	**Title:**
Organization: *(employer or write self-employed)*	
Responsibilities: *(try to prompt for management responsibilities or resource usage at the site)*	
Length and nature of experience: *(try to establish his/her level of expertise)*	
Land tenure: *(if applicable to your profession)* **private / lease / public / communal / open / not applicable**	
Are you a member of any associations or groups in this region/site?	**Yes / No**
If yes, what is the name of the group?	**Mission or objectives?**

2. Ask the respondent for a general description of the socio-environmental situation and conditions of the region or study site. *(the aim is to prompt discussion and get a general idea)*

Note any key points:

3. Actions *(the aim is to elicit information concerning the relationship with the management and restoration actions applied to combat land degradation in the site)*

Are you aware of these actions [refer to the action(s) applied –which are listed in the local factsheet] in _____ [name of the site/region]?	**Yes / No**
NOTE: Some of the sites and restoration or mitigation actions under study may have great influence on some people, but may not be something they are directly familiar with.	
If Yes: *capture what is said*	***If No:*** *the interviewer should inform the respondent about the actions in the study site*[3] *and then try to find out to which extent the respondent may be directly/indirectly related to the actions. For example, the following question might be formulated:*
What is the nature of your relationship or involvement?	**From the description we have given, do you think these *actions(s)* can indirectly be related to you or can affect you?**

[3] Use language most appropriate to the context and potential stakeholder (e.g., actions, efforts, programmes, etc.). Refer directly to the actual actions: EXAMPLES: planting trees, reforestation, grazing control, soil/flora/fauna conservation.

4. Participation *(the objective of this section is to elicit information on respondent's level of interest and potential impediments. If needed, describe to the respondent what participation in an assessment means: The key to assessing the impact of these restoration/mitigation actions is learning from those who have interest, knowledge, experience, and/or perspectives to share. Participating in the assessment would involve meeting with other interested people or affected groups, visiting the sites, providing perspectives on what is working and what is not, reviewing what the scientists have learned, completing a survey, etc.)*

Would you consider participating in the assessment of restoration/mitigation actions? Yes / No
Why or why not? *(to elicit motivations and expectations for participation)*
If no, what might encourage you to participate? *(to find out the barriers to participation)*
If yes, how often would you be willing to meet over the next 12-18 months?
What locations would be best for a meeting?
Would you be willing to answer some questions by email or using an online form? Yes / No

5. Referrals *(to identify other potential stakeholders or special interest groups)*

Who do you recommend that we speak to next to obtain further information? *(Explain that we are looking for people who may know a lot about, been involved with, or been affected by the local environmental conditions and/or the restoration/mitigation actions.)*
Name *(if known)* & Affiliation/Network
Contact Information *(if known)*
Why do you recommend them? *(elicit knowledge, experience, and/or potential to represent a group or interest)*
Comments on prior experience with this person or organization
Comments about collaborative potential
Any concerns?

Please place any other names on the back of this page.

6. General Demographics of Respondent *(to elicit basic biographical information)*

Age:	Gender: M / F	Preferred language *(add ethnic group if relevant)*:
Highest level of education completed: □ primary □ secondary □ professional training □ university □ beyond		

Note: This final page will only be used to for making contact with the potential stakeholder. The unique ID number on the top of this page must be added to all associated pages. In order to safeguard privacy and confidentiality, when the discussion is completed, this page will be stored separately from all other information collected associated with this individual. Once the need for this is past, that is, after the last stakeholder engagement activity, these contact information pages should be destroyed.

Stakeholder ID number:

Interviewer Name(s):

Note Taker Name: Interpreter Name:

Which country / region / study site(s)?

Potential Stakeholder Contact information

Potential Stakeholder Name:	Date
Phone No.:	Email address:
City/town/community of residence:	Address: home / work *(describe generally if no specific address)*
What is the best way to communicate with you? phone / email / regular mail / other:	

Closing Remarks

We thank you very much for sharing your valuable information with us. Should we need clarification on any of this information, can we contact you again? If you have any questions about our project, you can contact us (provide contact information). If you think of an additional person whom we should talk to, please contact us. Thank you!

STEP 1 Materials

Examples of Factsheets on:

1. **The overall assessment effort, using PRACTICE project as template (include contact information)**

EUROPEAN COMMISSION
European Research Area

ASSESSMENT OF METHODS TO COMBAT DESERTIFICATION

PRACTICE

AT A GLANCE

Title: Prevention and Restoration Actions to Combat Desertification. An Integrated Assessment

Instrument: European Commission Support Action FP7

Duration: 36 months
Start Date: 01/09/2009

Consortium: 16 partners from 12 countries

Project Coordinator:
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Project Web Site:
http://www.ceam.es/practice

Key Words: desertification prevention, restoration, participatory and integrated evaluation, knowledge transfer and exchange.

THE CHALLENGE

Desertification is an important environmental and socio-economic problem that affects much of the world's drylands, resulting in a significant loss of biological and economic productivity.

Responding to desertification by improving the efficiency of land and resource management represents a crucial step towards social welfare in drylands. While science has made noticeable progress in aiding our understanding of the drivers and processes of desertification, the evaluation of practices to combat desertification, the exchange of experience and knowledge, and the incorporation of social dimension in the solutions often remain limited, compromising the adoption of best practices in prevention and restoration efforts.

THE RESPONSE

PRACTICE is a global initiative that gathers scientists and stakeholders from among the most affected regions of the world to combine local and scientific knowledge to help address the desertification challenge. In this way, we hope to learn from past and ongoing experiences, and equally important, from each other.

PROJECT OBJECTIVES

To pursue this goal PRACTICE first aims to develop and apply participatory evaluation tools to assess the effectiveness of prevention and restoration practices, integrating the human and biophysical dimensions of desertification, and involving stakeholders at all levels, including farmers and ranchers, natural resource managers, scientists, and policy makers (local, regional, national and international).

Second, PRACTICE seeks to create an international network of long-term monitoring sites aimed at supporting future synthetic analysis, improving the accessibility and use of long-term data, and facilitating the exchange of knowledge of successful practices worldwide.

THE STUDY SITES

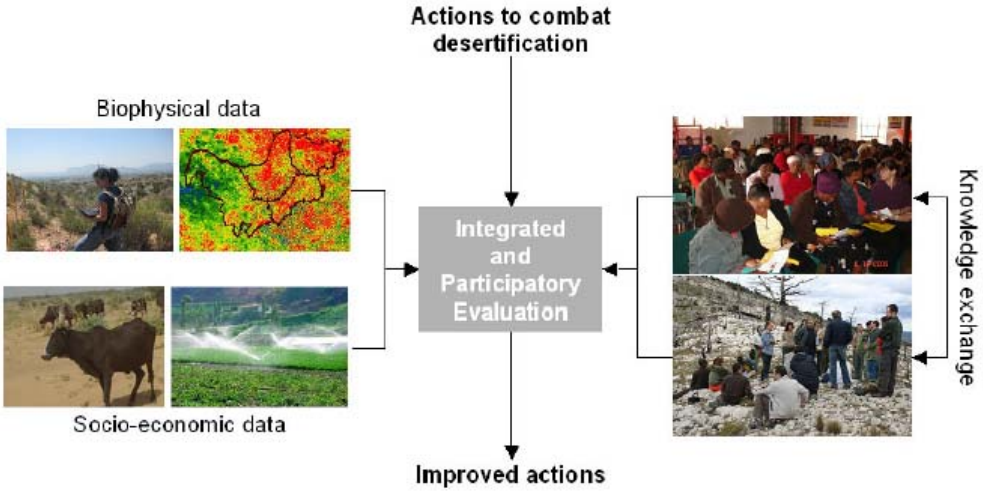
PRACTICE involves research teams and stakeholder platforms in 12 countries. Monitoring sites are distributed in the Mediterranean Europe (Greece, Italy, Spain, and Portugal), Africa (Morocco, Namibia, South Africa), Middle East (Israel), China, and South and North America (Chile, Mexico, and USA).

Spain contributes to PRACTICE with three study sites: *Albatera*, *Agost*, and *Ayora*.

PROJECT PARTNERS
CEAM Foundation, ES
University of Alicante, ES
Nucleo Ricerca Desertificazione (NRD), University of Sassari, IT
University of Trier, DE
Euro Mediterranean Center on Climate Change, IT
Aristotle University of Thessaloniki, GR
University of Aberdeen, GB
Fundación Universidad Empresa Región de Murcia & Spanish Ministry of Environment, ES
University of Hamburg, BioCentre Flottbek, DE
Liga para a Protecção da Natureza (LPN), PT.
Ben Gurion University (Israel), IL
North-West University (South Africa), ZA
NE Normal University & Shengyang Institute of Applied Ecology (China), CN
Instituto de Ecología y Biodiversidad (Chile), CL
Universidad Autónoma de Nuevo León, MX
University of Arizona, USA

YOUR PARTICIPATION

The key to successfully assessing practices to combat desertification is learning from those who have interest, knowledge, experience, and/or perspectives to share. Participating would involve providing perspectives on what is working and what is not, meeting with other interested people or affected groups, visiting the sites, reviewing what has been learned, and discussing the process with the research team so that we can improve our ability to conduct such a participatory approach in the future.



PRACTICE contact information in Spain:
Ramón Vallejo. Fundación CEAM. Paterna (Valencia). Tel: 96 131 8227
Email: practice.ceam@gmail.com

2. The Local assessment effort (with description of the site and actions, and local contact information), using a PRACTICE site (Agost) in Spain as template (in Spanish).

EUROPEAN COMMISSION
European Research Area

EVALUACIÓN DE PRÁCTICAS PARA COMBATIR LA DESERTIFICACIÓN

PRACTICE

ÁREA DE ESTUDIO: LA CUENCA DE AGOST

La cuenca de Agost es una de las zonas de estudio seleccionadas en España por el proyecto internacional PRACTICE para evaluar las actuaciones llevadas a cabo con el fin de frenar la degradación del territorio y para aplicar una metodología de evaluación participativa que integre la variedad de conocimiento, perspectivas e intereses que coexisten en la zona.

ACTUACIONES PARA REDUCIR LA DEGRADACIÓN Y MEJORAR LAS CONDICIONES DE LA ZONA

La mayoría de las actuaciones llevadas a cabo en la cuenca de Agost para prevenir o revertir la degradación han sido actuaciones de restauración forestal, que han combinado repoblaciones forestales de pino carrasco (*Pinus halepensis*) y la construcción de diques en los barrancos. Estas actuaciones se han repetido a lo largo del tiempo, destacando los grandes grupos identificados en la imagen. En algunas zonas de la solana se ha mantenido la vegetación de espartal (sin reforestación).

Actuaciones en el TM de Agost:

- Repoblaciones (~ 1945-1965) realizadas en su mayoría en la vertiente de umbría del Ventós (rojo)
- Repoblaciones (décadas de los 50-70 y 90) realizadas en la vertiente de solana del Ventós y otros montes del TM, combinando diferentes técnicas de preparación del terreno (ahoyado y subsolado). (azul y verde)
- Diques (3) construidos en los barrancos de la vertiente de solana (uno de ellos es un dique de recarga).
- Zonas de espartal sin repoblar con pinos. (azul claro)
  La línea amarilla marca el límite de la cuenca de Agost

Espartal en la vertiente de solana del Ventós

Repoblación de pinos (subsolado) en solana, 1995

Dique de control de avenidas en barranco

Repoblación de pinos en solana, ~1960 (zonas de subsolado y zonas de ahoyado)

Dique de recarga

Repoblación de pinos en umbría, 1945/65

Información de contacto de PRACTICE en España:
Ramón Vallejo. Fundación CEAM. Paterna (Valencia). Tel: 96 131 8227
Email: practice.ceam@gmail.com

II. Guidelines for IAPro Step 2: Baseline Evaluation of Actions and Selection of Site-specific Indicators

The topics outlined below serve as anchoring points for a semi-structured interview, which, like in Step 1 (stakeholder identification and engagement), is meant to be a natural discussion. This outline provides the content and order of the interview, and includes an Interview instrument (see below), with examples of questions to help the interviewer guide the discussion. Most of the questions can be adjusted to fit the interview itself so that there is a discussion that flows.

To ensure a very basic capacity to measure change in knowledge and perceptions between Step 2 and further steps in IAPro, the interview instrument includes some "anchor" questions in which the stakeholder rates their response on a Likert scale.

List of topics:

0) Definition (list) of the actions to be evaluated
1) Establishing stakeholder knowledge on the actions
    a. On the objectives of the actions
    b. Self-evaluation of their degree of (technical) knowledge
    c. Main source of information used
2) Establishing the baseline personal evaluation on the actions
    a. General assessment on how good/right/wise the action is
    b. Positive aspects:
    c. Negative aspects:
    d. Potential improvements:
3) Identifying indicators based on local-knowledge

0) Definition (list) of the actions to be evaluated

Before starting the interview on actions, the actions to be evaluated must be presented. At this stage, the information about the actions should be only about (1) the type of action, (2) the implementation time (when has it been applied? or is being applied?), and (c) the actual area where the actions were or are being applied. The list of actions should include the "no action" case (i.e.: similar areas left untreated, where no prevention/restoration action has been applied, if any), if any.

If needed or useful, some pictures, a map or any other type of supporting information about what, when and where can be provided[1].

[1] Photographs should be consistent in their scale and how they look (lighting, perspective, etc.), and capture the context as objectively as possible to reduce the potential for inadvertent bias.

In some cases, there may be a hierarchy of types of actions. For example, for two major types of actions with one of them being implemented in two slightly different ways, actions should be listed accordingly and presented as two main actions, and two ways of applying one of them

This list of actions has been partially addressed in previous Step 1 (while identifying and engaging the stakeholders). Therefore, here we mean to recap on the list of actions.

Finally, we will ask each stakeholder if they know about any other (restoration/mitigation) action not included in our list. With this question we aim at having more context information on stakeholders' general perception about what can be considered as a restoration or mitigation action.

1) Establishing stakeholder knowledge on the actions

During Step 1 we asked the stakeholders if they knew about the actions (if they were aware of them) and if they felt that are affected/concerned about them. Here we aim to know about the stakeholders' self-assessment on their knowledge about the actions (we can then measure if this assessment changes in further IAPro steps). We'll also ask about the source of information that they use to base their opinion (can be very general, such as "my own observations", "available data", etc.).

2) Establishing the baseline personal evaluation on the actions

This is a key section in Step 2. It is aimed at establishing the initial (baseline) individual stakeholder evaluation of each of the target actions, including their perspectives about the objectives, the general outcome, the positive and negative results/impacts, and potential improvements. These issues will be re-assessed again during the last step in the IAPro participatory assessment process (Step 6: Collective integrated assessment), after sharing with the stakeholders the data available about the effects of the actions on the socio-ecological system, as well as the perspectives of other stakeholders on the actions. Differences between both assessments will be used as a social-learning metric.

3) Identifying indicators based on local-knowledge

The outcome from this section is a list of local-knowledge based indicators that could be relevant for the local assessment of management actions to combat desertification. To capture the individual stakeholder perspectives on assessment indicators, the interviewer (1) will take note of the signs and criteria pointed out by the stakeholders in response to previous questions on the positive and negative outcomes of the actions, and will extract potential assessment indicators from these signs and criteria; (2) will initiate a discussion with the stakeholders on these preliminary indicators, asking for confirmation about their potential for action assessment; and (3) will explicitly ask for additional assessment indicators that they may want to propose. This process offers the first opportunity for incorporating local knowledge into the assessment process.

INSTRUMENT 2: Baseline Assessment Interview Guide.doc

Instructions (see also Instrument 1: Potential-Stakeholder Interview Guide.doc)

1. This is a guide only, and should *not* be used as formal questionnaire or a form to be filled in. The interviewer should be familiar to the questions before the interview in order to achieve a fluent and natural conversation and avoid the "interrogation" format. It is the interviewer's job to encourage the conversation beyond the respondent's first answer.
2. There is no set order, nor should the discussion be limited to these questions. The interviewer outline should be used by the person facilitating the discussion. A note taker form should be used by the person capturing the responses. If needed, the interview could be recorded with the interviewee's consent.
3. Not all segments of this outline will be applicable to every respondent. Remember to adapt your language to the interviewee's needs.
4. Some of the actions under study may not be something the stakeholder is directly familiar with. It is important to recognize this and provide context.
5. NOTE: Text in *italics* is meant to prompt you on what you will say to the potential stakeholder. It serves as a reminder for information to be shared with respondent prior to asking specific questions so that he/she has an idea of what we are hoping to learn and why.
6. NOTE: **Boldface text** is used to emphasize the most important questions to ask during the discussion. Detailed answers that contain additional relevant information are desirable and should be included in the notes.

What is needed?

1. Someone to guide the discussion, and if possible, an additional person taking notes.
2. Factsheets on the local assessment effort with description of the actions to be evaluated (must include local contact information)
3. This guidelines: Guidelines for Baseline Evaluation of Actions and Selection of Site-specific Indicators
4. This document: : Baseline Assessment Interview Guide.doc
5. A Note-taker version of this document, structured around the most important questions in the Interview Guide, and with space for taking notes on what the respondents say. Identify each Note-taker document (only) with the respective **Stakeholder ID number**.
6. Afterwards: Step_1_PRACTICE_datalog.xls to help keep track of the potential stakeholders (template available at PRACTICE NEtWeb site)

How to begin:

- Brief description of the goals and procedures (links with previous Step 1), and the societal benefits we are pursuing.
- State the commitment of the assessment team to protect confidentiality and privacy, and put emphasis on the voluntary nature of participation,
- Provide fact sheet(s) on global and local efforts and descriptions of actions (see Step 1 Materials), and
- Provide contact information (on the fact sheets on global and local assessment efforts).

Please do not use this as an interview form…it is a guide for the discussion.

Stakeholder ID number:

0. Definition (list) of the actions to be evaluated *(the aim is to present again the actions to be evaluated –they have been already introduced in Step 1. Give a brief technical description of the actions (including any potential "No action" –control– option to be evaluated), the location and extent of the implementation area, and the implementation dates for each action. Avoid any comment on the goals and/or known results/outcomes of the actions, as initial evaluation by individual stakeholders must not be biased by the interviwer. If needed or useful, provide factsheets with maps, pictures, or any other type of supporting information that help the stakeholders to identify the actions to be evaluated. To avoid potential biases, the information provided as well as the quality and scale of the pictures should be comparable for the various actions)*

a) This is the list of actions implemented to improve land condition and reduce degradation that we aim at evaluating (counting on your and other stakeholders inputs), and that we already presented to you: *(describe the actions)* **Action 1:** *(e.g., Aleppo pine plantation implemented on south-facing slopes)* **Action 2:** *(e.g., No action: alpha-grass steppes on south-facing slopes without intervention)* **Action 3:** _____ **Action n:** _____
b) This list is meant to be comprehensive, but perhaps you are aware of other actions. Are there any other actions you might like to add to this list?

The questions on the following topics have to be answered for each of the actions. The interview is meant to be a discussion and should be done in a flexible and comfortable way. For example, rather than going in the order listed, consider asking first about the type of action they think they know more, and then addressing the others by asking something like "…and what about this other one? Do you think the same or is there any particular other things that you would like to highlight?"

1. Establishing stakeholder knowledge on the actions. *(the aim is to know about the stakeholders' self-assessment on their knowledge about the actions.*

a) Please consider the different actions and rate your overall knowledge of each of them. On a scale of 0 to 5, where 0 is "I don't know about this action" and 5 is "extremely knowledgeable," how would you rate your knowledge of these actions?[1] (At each response the interviewer circles the number indicated in the table below. Note that if the stakeholder indicates they do not know enough to respond about action X, the following questions along the interview won't apply to that action).

[1] This rating of the stakeholders' knowledge applies to both types of knowledge: general (about the type of action) or site-specific (about the actual implementation of the action in the target site), as both can vary from not at all knowledgeable to extremely knowledgeable.

Actions	**Rate on knowledge**						**Information source**
Action 1 (name)	0	1	2	3	4	5	
Action 2	0	1	2	3	4	5	
Action 3	0	1	2	3	4	5	
Action 4	0	1	2	3	4	5	
Action n	0	1	2	3	4	5	

b) What is your main source of information about each of these actions? (e.g., your own observations [perhaps through field visits]; references made by others; data obtained by yourself or provided by others, etc).

(The table above helps to link the answers of the two previous questions for each action. But, again, the order of the questions can be adjusted so that there is a discussion that flows.)

2. Establishing the baseline personal evaluation on the actions. *(The aim is to know, FOR EACH ACTION, about the stakeholder appraisal of the actions, combining both general questions and semi quantitative assessment through Likert scales)*

REPEAT FOR EACH ACTION

a) From your perspective, what were the original objective(s) of this action, and what should they be? *(The objectives of mitigation and restoration actions evolve over time, and may vary among stakeholders. This aims to know the initial individual stakeholder perspective about the objectives)*

b) What's your general opinion on _____(Action descriptor)?

c) Do you think this action has been a good choice? On a scale of 1 to 5, where 1 is "very bad choice" and 5 is "excellent choice," how would you rate this action?

Very bad choice				**Excellent choice**
1	2	3	4	5

d) What do you feel are the positive aspects/outcomes/results/consequences? [2]

e) What do you feel are the negative aspects/outcomes/results/consequences?

f) If this action is implemented again in the future, how do you think it could be improved?

In some cases, there may be a hierarchy of actions. For example, several major types of actions with one of them (Action X) implemented in two different ways. Instead of going through all the above topics for each of the technical variations of Action X, the interviewer could say:

g) This action in particular was carried out in two ways that vary on the technique applied *(describe technical differences.)* **Do you think there is any particular good or bad aspect to consider about any of them?**

[2] The interviewer will take note of the positive and negative outcomes pointed out by the stakeholders as potential indicators, which will be confirmed through the following section (Identifying indicators…)

3. Identifying indicators based on local-knowledge. *(The aim is to know how stakeholders know/decide that action X is (or not) a good choice. While answering the previous questions, the stakeholders probably mentioned (explicitly or implicitly) the criteria, sign, or indicators that they used to form their opinion on the actions. The interviewer will take notes on these potential indicators and use them to introduce this third topic… and then ask for more)*

a) Earlier in our conversation, you mentioned xxxx and yyyy (e.g., the amount of water in the aquifer, and the amount of visitors in the area) as positive outcomes/consequences. Would you propose to use these criteria/signs/indicators to evaluate this type of actions?
b) Do you have any other economic, cultural, ecological or environmental criteria or sign that you would suggest to consider when evaluating these actions?

For complementary, useful materials, see Step 1 Materials (above)

III. Guidelines for IAPro Step 3: Integrating and Weighting General and Site-specific Indicators

Step 3 is designed to gather information on stakeholder preferences on the assessment "indicators", which are the local and common "signs" proposed to assess local management and restoration actions to combat desertification. These preferences, once computed, are represented by a number or weight for each indicator, and ultimately a hierarchy or order of importance for the group of criteria selected.

Step 3 includes two phases: (1) Individual baseline weighting, and (2) Integrated collective weighting. The procedure for Step 3 facilitates discussion and potential social learning between these two phases. The final outcome from Step 3 is a set of collective weights for a consolidated list of indicators.

These collective "values" are to be afterwards incorporated into a Multi-criteria Decision Analysis (MCDA) processed for each site-specific field database on the selected indicators. In this step local stakeholders have the opportunity to assess the relative importance of the set of indicators, which include indicators suggested by other local stakeholders – site –specific indicators – and common indicators suggested by the PRACTICE expert board.

The method allows obtaining quantitative data, necessary for Step 5 and 6, but also qualitative data, through the comments made by stakeholders during the discussion.

For indicator weighting, IAPro uses a revised version of a procedure called the "Pack of Cards" (also known as SIMOS procedure). It is an exercise that uses a 'card playing' format in which different criteria are classified in different levels (also called subsets), followed by the ranking and indirect determination of the weights for the levels.

These guidelines include information on the following tasks:

a) Consolidation of the indicator list
b) Logistics and Preparation
c) Introduction (guidelines on describing the indicators and explaining the process)
d) Indicator weighting exercise ("Pack of Cards" method)
e) Computation of the exercise results and integration
f) Discussion on the individual and collective results.
g) Re-assessment of the indicators. Final individual and collective weights.

a) Consolidation of the indicator list (This task links Step 2 and Step 3. The locally identified indicators, stored in the Step 2 data log, must be refined and combined with science-based common indicators prior to the weighting process)

On stakeholder-selected indicators:

One of the outcomes from Step 2 is a set of individual lists of signs/criteria/indicators – implicitly or explicitly– suggested by participating stakeholders as useful to them for assessing management and restoration actions. When all stakeholder inputs are considered, this list may be long (numerous different indicators) and somewhat inconsistent and/or redundant. The following points will help guide refining the list:

1. Ensure that all proposed indicators are indicators (e.g., "rainfall" is a factor of concern, but not an indicator for evaluating the outcomes of the actions assessed, while, for example, "water level in the well", "soil erosion", or "plant cover" are indicative of action outcomes), and that they are named as indicators (rather than, for example, as impacts).
2. Linked to the previous point, be aware that the limits between "criteria", "indicators" and metrics" are not sharply defined, and often can be used as synonymous. Ensure that Step 3 focuses on true indicators. AIPro understands that criteria (e.g., "carbon sequestration") represent a more general framework for assessment, while indicators are specific signs that represent a given criterion (e.g., "soil organic carbon" would be an indicator for C sequestration). Ensure to focus Step 3 on true indicators.
3. Consolidate equivalent entries. Though perhaps described differently, some proposed indicators will be essentially the same as others. These should be consolidated into a single indicator. For example, different stakeholders may suggest "soil nutrients", "soil capacity to support vegetation", or "soil fertility". These all are different ways of expressing soil fertility and, therefore, should be consolidated into "soil fertility"
4. Reduce the list if needed. Even after consolidation, there still may be too many indicators for practical assessment. Reducing the list should involve consistent criteria. For example, the frequency an indicator is proposed is important, but so is the uniqueness (e.g., if only one stakeholder mentions "tourism jobs created" but that stakeholder is the only politician, this may be an essential indicator despite low frequency).
5. There is no ideal number of indicators; however keep in mind that an individual who is ranking the importance of indicators has more difficulty if the number of indicators under consideration is high. IAPro recommends a rough limit of 12 indicators.
6. "Are data available or collectable?" Indicators that are not frequently proposed that also are challenging to document may be eliminated from the list. However, indicators that are important (proposed frequently or by a unique stakeholder category) should be kept, even if such indicators currently pose challenges to data gathering.

Incorporating expert-based common indicators:

Once the list of stakeholder indicators is refined and consolidated, the expert-based common indicators are checked against the stakeholder list to develop a combined list of criteria. For, each common indicator it is important to check if it is already captured by the stakeholder list. If so, the existing stakeholder language is retained; and if any common indicator is not represented on the stakeholder list, then it must be added to the consolidated list.

b) Logistics and Preparation

Individual or group?

The first part of Step 3 is the last "baseline" step in IAPro, and therefore, the first information elicited in indicator weighting is done at the individual level. However, the exercise is meant to be conducted with multiple stakeholders simultaneously, if care is taken to ensure that the indicator weighing is done individually (rather than collaboratively), because the perspectives of the individual are needed prior to interaction as a group.

The number of stakeholders performing simultaneously this exercise should not exceed a rough limit of 12-15 stakeholders. Therefore, the local Multi-Stakeholder platform should be split in various groups when conducting Step 3. Each group should represent well enough the local MSP and its variation in stakeholder categories and number per category. This way, potential for social learning is maximized and proper integration of individual weights into collective values is facilitated.

What is needed?

1. Team. The team conducting this exercise should include the facilitator (who will do most of the talking and will guide the weighting exercise) and the note taker(s) (to record the exercise outcomes and what is being said). Once the exercise is done, either the note taker or the discussion lead will transfer the "Pack of Cards" numbers into the support Excel spreadsheet (see below). NB: If other PRACTICE team members are present, and, for example, they recognize that they can help answer a stakeholder question, care must be taken to communicate through the facilitator to avoid confusion and inadvertently biasing the stakeholder(s). Unsolicited external inputs are discouraged because the ranking of indicators at the first stage is *baseline* and bias should be avoided.
2. Indicator list. Consolidated and refined list of locally identified indicators (elicited in Step 2 prepared in advance of Step 3 activities) and common indicators (see task a).
3. Indicator names, definitions, and explanatory aids. Clear, recognizable and concise names & definitions of these indicators prepared in advance. The names and definitions should be developed directly from recorded comments from Step 2 indicator elicitation so that the language used is familiar to the stakeholders (e.g., use direct quotes where possible). Consistency among the indicators is also essential. The name of each indicator should be displayed within view of the participating stakeholders. In this way, they can be referred to at all times during the exercise, providing a clear and consistent means of description. Any supporting explanatory materials, such as images, or explanatory graphics can be used, but must be as consistent as possible across indicators (e.g., scale, etc.). Care should be taken that the explanatory aids are neutral and discreet (e.g., an aesthetic color photograph may be viewed as positive, rather than neutral[1]. The names,

[1] Care should be taken to avoid positive or negative connotations in indicator descriptions, explanations or pictures. Images and other graphics can be made more neutral by a) consistent scales and perspectives, b) ensuring no or few people are in the photos, c), ensuring no confounding factors are represented in the photograph, d) reducing the brightness (black and white is an option). All text, include axis on graphs, etc. should be 100% consistent in formatting across all indicators. Finally, names, descriptions and supporting aids like images should be mounted and displayed together to avoid confusion. Testing for comprehension in advance is essential.

descriptions and images should be tested with individuals with similar background to participants to determine if they are readily understood. This is particularly important for the names and descriptions of the common indicators.

4. "Pack of Cards" indicator weighting materials

i. Table(s) (or other flat surface) of adequate size to arrange the cards for each individual participating.

ii. A pack of cards (8 x 6 cm each - the size should be manageable) with each criterion (the indicator name/short description) written on one side of a card, and a corresponding alphabetic code on the other (the code is used to support more rapid recording of the results after the ranking is completed). The indicator name should match exactly what is posted on the wall, displayed within view of the participants, and any short description included should be brief and simple (i.e., "vegetation cover – the amount of vegetation covering the soil surface"). In cases where written language may be difficult to understand or interpret, the card can also include an image or drawing representing the indicator.

iii. A pack of blank cards of similar size to the previous. The number of cards should be at least triple the number of criteria (indicators) – the more the better to ensure you do not run out. These cards will be used to separate criteria according to their importance (explained further below). NB: the criteria cards and the blank cards can both be white, however, making one a color can make them easier to distinguish and discuss with stakeholders.

iv. The Step 3_note taker.doc: A sheet to write the exercise outcomes and additional qualitative information –the reasoning stakeholders give for their ranking decisions. The sheet includes a list of all the criteria that are going to be assessed with an alphabetical code for each one (i.e. A, B, C….). As many letters as number of criteria (an example is given at the end of these guidelines).

v. Computer with MS Excel and computation file. One computer running Excel is necessary to record the ranking results in a spreadsheet that has the criteria weighting algorithms for the "Pack of Cards" method built in. A template can be downloaded from PRACTICE NetWeb site: Step 3_Pack of cards_computation.xls.

vi. Afterwards: The Step 3_data log.doc: In order to record the additional qualitative information from the exercise.

5. Additional materials: (1) Factsheets used in Step 2 to describe the overall project and the restoration actions under assessment should be available if requested by stakeholders for clarification. (2) Any other documents that may facilitate understanding the larger context (photos, maps, etc.). However, extreme care should be taken not to let these interfere with the weighting process. Keep in mind that photos and maps are visually appealing, and thus potential distractions.

c) Introduction (guidelines on introducing the process)

1. Room layout. The room should be organized so that each participant has access to a desk (or any flat surface). Organize the group so everyone has a space to work on their own.
2. Informal, understandable, consistent communication. While the exercise is structured, the approach is very informal. Fluid conversation should be encouraged. Language and terms used should be adapted to meet the participant's needs. Wherever possible, use of terms proposed by the stakeholders themselves (in Steps 1 & 2) is important. These terms should be consistent with those written on any visual aids used during the exercise, and they should be consistently used throughout the entire exercise.
3. Project/research summary. The facilitator should begin with a brief summary of the assessment project background, reminding the participants of the research goals and procedures, societal benefits we are pursuing, the voluntary nature of the participation and confidentiality of the results. The facilitator should also remind the participants of the desertification mitigation practices and restoration actions that will be assessed (and that the participants have already described in terms of positive and negative outcomes in the previous discussion in Step 1 & 2) using the indicators that will be weighted in this Step 3 exercise. NB: It is important to remind both those leading Step 3 and the participants that the focus is on indicators for the evaluation of actions to combat land degradation (and not for the evaluation of degradation).
4. Introduction of the weighting exercise. The facilitator should introduce the indicator weighting exercise. This should be a brief summary of the overall goal, the method, and what team members will be doing. For example:

"In our previous discussion, you and other stakeholders shared with us perspectives on the management and restoration actions for this site, and on what signs/indicators you and other stakeholders (other land users, managers, scientists, etc.) use to assess those actions. The result was a list of candidate indicators that might be used to assess these actions, some which you and others contributed, and some which may be new to you. Not all indicators may be considered of equal importance, so this is about getting your perspectives on the relative importance of the different signs/indicators. You may feel that some of these indicators are more or less important for evaluating restoration actions than others. To determine this in a relatively simple, consistent (and fun!) way, we would like to invite you to participate in an exercise that is something like a card game. It is a way of organizing your preferences so that we can assign weights to the relative importance you place on each indicator. We will then integrate your responses with those of all the other participating stakeholders and discuss, and potentially review, the results. In future steps in this assessment process, we will relate the weights to real data associated with each indicator, and then we will share the results back with you so that we can all discuss and interpret them.

While you are working, we will be taking some notes. You will see soon that a set of weights/ranking scores will result from your participation in this exercise, but it is equally important to understand the reasons behind your ranking decisions. Therefore, during the exercise, we will be talking with you to learn more about your decisions."

d) Indicator weighting exercise ("Pack of Cards" method)

1. Present the list of indicators and provide clear definitions of each of them (see point b.3, above). The names should be consistent with those printed in the cards. The explanation of the meaning of the indicators should be developed directly from recorded comments from Step 2 indicator elicitation so that the language used is familiar to the stakeholders (e.g., use direct quotes where possible). Try also to use this language when explaining the meaning of the common indicators included in the consolidated list that will be used in the exercise. Consistency among the way we explain each indicator is also essential.

2. State the specific exercise objective. After the introduction is completed, and before passing out the cards, the facilitator will state the objective of the exercise. It is important to have these words clearly defined, so the ranking will be directly focused in the local context and objective. A possible way of presenting this:

   "The objective of this exercise is to organize the indicators we have just presented in order of importance for assessing the restoration actions."

   "Each of the cards I will give you in a few moments has one of the indicators we have just presented, and which are also described in more detail on the wall. We would like you to go through the pack, read each card, and think about the importance of each indicator for assessing the restoration actions. As you go through the cards, display each on the table in a row, ordering from the one you feel is least important (on your left) to the one you feel is the most important. You can also put several together (as a group) if you think they are equally important. Look up on the wall or ask us if you have questions about their meaning."

3. Mix the cards so they are in a non-specific order. Hand the pack to the participant.

4. Check to be sure the participant understands the task. They should be ranking/organizing/displaying the cards (or indicators) from the one he/she thinks is the least important in his/her LEFT, to the one is most important to the RIGHT. The participant will rank in an ascending order according to the importance: the first indicator in the ranking is the least important and the last indicator in the ranking is the most important.

   Several indicators can be grouped together if the stakeholder thinks that they have the same importance. Each group of one or more equal-ranked indicators represents a subset. If necessary, the equal-ranked cards in a subset can be held together with a clip or a rubber band.

5. Be prepared to repeat the initial question and to provide information about the indicators. Avoid positive or negative connotations in your explanations.

6. Determining the distance between adjacent subsets. Pass out stacks of blank cards to each participant. Up until this stage, the distance between any two adjacent subsets is considered to be identical and equal (like the steps of a staircase). However, each two successive subsets can be further distinguished by adding one or more blank cards between them. The number depends on how much importance distance or distinction there is, compared to the previous subset of criteria. So we ask the participant:

"Now that you have arranged your cards, think about the fact that the importance of two successive criteria or group (subset) of criteria can be more or less close. Maybe there are some criteria that you think are much more important than the previous one. But others may be just a little bit more important. If you think the distinction is greater between some of the indicators or subsets of indicators, please use the blank cards to separate the subsets. Place as many blank cards between two successive groups to represent that difference. More blank cards will mean more importance distance or a greater distinction between these subsets."

Each blank card means one more scale unit difference between their corresponding relative importance values.

- No blank cards means the difference between the indicators is one unit.
- One blank card means a difference of two units (like adding an extra stair step of importance distance).
- Two blank cards mean a difference of three units….and so on…

7. Obtaining the value of the distance units. The absolute value of the distant unit or blank card is unknown at this point, since there is no specific numeric scale yet for the overall ordering. Also, some people or cultures may perceive distance units in varying ways. To address this in processing the rest of the information collected, it is additionally required that the participant(s) provides an estimation of the ratio of difference between the most to the least important indicator. Let's call this the Z Ratio.

This ratio is totally determined by the participant. It can be: 2, or 3, or 5, or 10, etc., where "2" would mean that the participant feels the top indicator is twice as important as the lowest ranked indicator. This number, in the software, scales the distribution of the resulting weights. In cases where the participant is uncomfortable with numbers, try using some other formulation (analogous to numeric quantities) that he/she culturally would be more familiar with. Ask the participant:

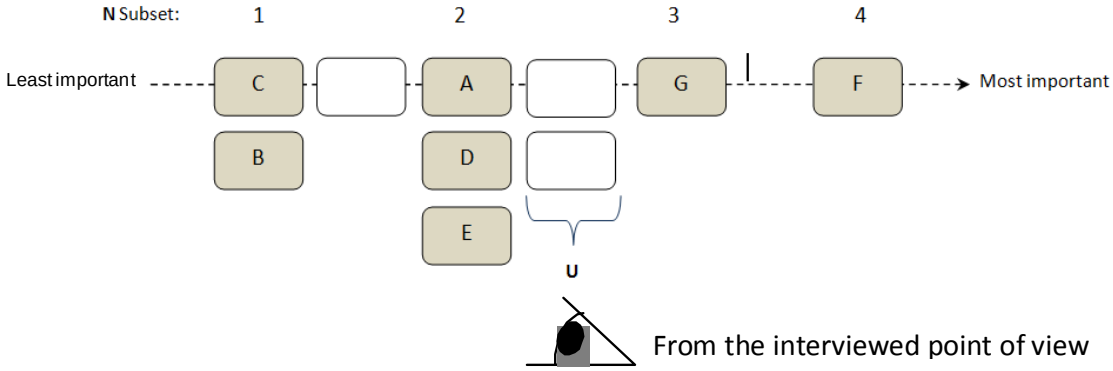
"Up until now you have ranked the indicators, and given a sense of difference between each indicator. Now we need a sense of how you are thinking about the entire set of indicators…the overall scale. Please indicate how many times the top criterion of your list (pointed out) is more important than the last one…? Twice as important? Three times as important? 10 times as important?"

From the Z ratio and the number of subsets used by the participant, the "Pack of Cards" calculations estimate the actual value of the distance unit (in terms of relative importance) for each participant (See "U" in Figure A, below).

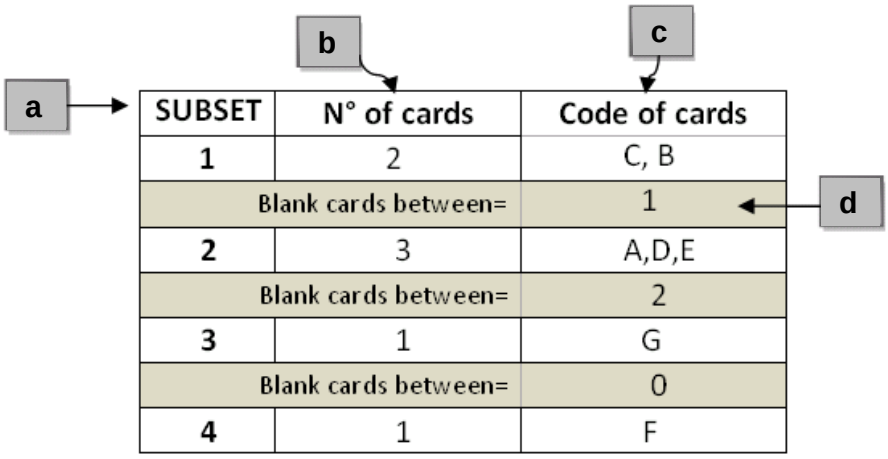
8. Collecting the information

Wait until the participant is sure of their arrangement.

As an example, let's suppose that there is a list of 7 criteria (A to G) and a given stakeholder arranges the cards like in Figure A:



From the previous arrangement of cards, the note taker will record what the participant has determined, as depicted in Figure B. This is recorded in the Step 3_note taker.doc (see a template below). Use as many rows as number of subsets, in this case four:



SUBSET	N° of cards	Code of cards
1	2	C, B
Blank cards between=		1
2	3	A,D,E
Blank cards between=		2
3	1	G
Blank cards between=		0
4	1	F

a. Numbers of subsets from 1 to N (where N is the total number of subsets). This is for identification and for further calculation. Record the subsets according to its importance from the least important (subset 1) to the most important.

b. In the cell next to the subset number, record the number of cards in that subset.

c. In the cell next to the number of cards, write the indicators in that subset. Use the letters or codes used for the indicators (should be written in the back of the cards).

d. Between each row/subset, write the number of blank cards used to separate the subsets.

Finally, take note of the difference between the most important and least important indicator (Z ratio)

For a better insight in the final results, qualitative information regarding the reasons of the particular order of indicators is recorded as well (see below).

Step 3_note taker.doc

Participant name:……

SUBSET	N° of cards	Code of cards
1		
Blank cards between=		
2		
Blank cards between=		
3		
Blank cards between=		
4		
Blank cards between=		
5		
Blank cards between=		
6		
Blank cards between=		
7		
Blank cards between=		
8		
Blank cards between=		
9		
Blank cards between=		
10		
Blank cards between=		
11		
Blank cards between=		
12		

Z Ratio =

Step 3_note taker.doc (cont.)

Qualitative assessment of the reasoning for the ranking decisions

Quantitative information will result from this weighting procedure. However it is important to record qualitative information regarding to the reason of the order of each indicator, for a better insight in the final results. The aim of this part of the exercise is to capture the stakeholder reasoning behind his/her decisions. Since we asked them to do three things: general ranking; relative distance between subsets criteria; and importance ratio between the least and the most important, we will try to capture their reasoning through three types of questions, such as:

1. **What are your reasons (how did you decide) to rank these criteria as more or less important in this way?**

   This type of question provides an opportunity for the stakeholder to explain ¨why¨ she/he sequenced the criteria in a particular order. Answers may be general, or specific, as the stakeholder may decide.

2. **What are your reasons for showing the relative differences in importance between these criteria in this way (pointing to particular blank cards as examples)?**

   This type of question provides an opportunity for the stakeholder to explain ¨why¨ she/he rated the relative importance of the criteria in this way; i.e., why they separated the criteria by particular amounts of relative distance (blank cards) along this importance gradient.

3. **How did you decide to make the total difference in importance between these two endpoint criteria this much?**

   This type of question provides an opportunity for the stakeholder to explain ¨why¨ she/he scaled the absolute importance of the criteria in this way; i.e., how did they decide how many times more important the strongest criterion is than the weakest criterion along this importance gradient.

e) Computation of the exercise results

Results can be computed using a simple excel spreadsheet. For each participant stakeholder, a series of calculations on the values recorded in the Note taker.doc result in a normalized weight for each of the indicators assessed.

The calculation procedure can be summarized as follows:

I. For each subset, calculate the number of scale units (Gr) to its next subset as the number of blank cards between the given subset and the next subset + 1 (Note that if no blank card is used between two successive subsets, there exists one unit difference between their positions on the scale).

II. The total number of units between the first and the last subsets (S) is calculated as: $S = \sum Gr$

III. Using the Z ratio (difference between the most and least important criterion) the length of the distance unit, U, is obtained by: $U = (Z - 1)/ S$

IV. For each subset, calculate the non-normalized weight, Kr as the sum of the units of difference above the criterion: $Kr = 1 + (U \times (G_0+\ldots\ldots+G_{r-1}))$, where

$(G_0+\ldots\ldots+G_{r-1})$ is the sum of all the scale units for previous subsets and $G_0 = 0$

For each indicator, the non-normalized weight, Kr is defined to be the same as the weight of the subset it belongs to.

V. For each subset calculate the total non-normalized weight, T, as T = Kr x C, where C is the number of criteria (indicator) per subset

VI. For each subset, calculate the Total normalized weight, Ki as: $Ki = T/\sum T$

VII. For each subset, calculate the normalized weight, K'' as: Ki/C

For each indicator, the normalized weight, K'' is defined to be the same as the weight of the subset it belongs to.

For further details about computation of the results, see Figueira and Roy (2002) and template available at PRACTICE NetWeb site:

Step 3_Pack of cards_computation.xls.

See below an example of the calculation spreadsheet and final weights obtained from a particular "Pack of Cards" exercise by an individual stakeholder.

Information collected during the exercise				Calculations				
Subsets/ Rank (r)	Criteria	Criteria per subset	Number of blank cards between this subset and next subset	Gaps	Non normalized weight (Kr)	Total	K*i	Normalized weight (K")
1	K	1	0	1	1.00	1.00	0.06	0.060
2	J,H	2	0	1	1.20	2.40	0.14	0.071
3	A,D	2	0	1	1.40	2.80	0.17	0.083
4	E,C	2	0	1	1.60	3.20	0.19	0.095
5	F,B,G	3	0	1	1.80	5.40	0.32	0.107
6	I	1			2.00	2.00	0.12	0.119
7						0.00	0.00	#DIV/0!
8						0.00	0.00	#DIV/0!
9						0.00	0.00	#DIV/0!
10						0.00	0.00	#DIV/0!
		11	0	5	9.00	16.80	1.00	
S =	5							
Z ratio =	2							
U =	0.200							

This computation exercise is repeated for each stakeholder. The result is a set of weights for each indicator and for each individual stakeholder.

Next task is the **integration of the weights** provided by each individual stakeholder into collective weights. If the group of stakeholder that participates in the weighting exercise represents well enough the whole MSP, IAPro recommends using a ***simple average*** per indicator to integrating the weights provided by individual stakeholders. If this is not the case, the results can be adjusted by using ***weighted averages*** of the individual weights to fully represent the MSP proportion of categories and number of stakeholders per category. It is assumed that the MSP represents well enough the stakeholder population (categories and number of stakeholders per category) in the target area.

f) Discussion on the individual and collective results.

Once the first round of results from the Pack of Cards exercise has been collected, the stakeholders are encouraged to discuss each other results in pairs or small groups, and to report on these debates afterwards. This pairing/grouping is recommended since it can provide some cover for the people who are not comfortable to report individually.

In the meantime, the Step-3 team is expected to compute the results from the first round of the exercise; calculate the individual and averaged weights; and prepare a simple table/graph/diagram (adapted to local context and cultural/educational backgrounds) that facilitate sharing the results with the stakeholders.

After the debate in pairs/small groups and further report, and once the first-round results are presented to the stakeholders, an open group discussion is promoted. As in previous steps, fluid conversation should be encouraged; language and terms used should be adapted to meet the participant's needs.

For gaining insights in the final results, taking notes on the stakeholders' contribution to the discussion is recommended.

g) Re-assessment of the indicators. Final individual and collective weights.

After the discussion on the individual and collective results, the stakeholders are asked to reorder the indicators in case they wanted. To facilitate this step, it is important to keep the first arrangement of cards in place during the debates.

The changes in the arrangements of the cards, if any, are then registered, and a new round of computations and calculations takes place in order to estimate again individuals and integrated (averaged) weights for each indicator.

This process (each iteration) can be repeated as many times as necessary in order to find a final set of weights. It is the role of the facilitator to explain that it is not expected that every stakeholder agrees on the final collective set of weights, but the weights will be considered as "final" when no further change in any individual ranking is produced.

It also is the role of the facilitator to ensure a fruitful debate, facilitating that all perspectives in the group are expressed, and therefore potentially considered by the others.

Final considerations:

Differences between the two (or more) iterations in this process can be used as metrics of social learning. It is advisable to compute some basic statistics on these changes, if any.

Final individual weights will be combined with other final individual weights from the implementation of Step 3 with other stakeholder sub-groups within the local MSP. A final simple average of all individual (final) weights will be computed (assuming a representative MSP). These weights will be used as inputs for a MCDA (See Step 5), which combines the stakeholder perspectives on assessment indicators (captured through the collective weights elicited in the framework of Step 3) and data on each indicator, gathered and/or measured in the framework of IAPro Step 4.

IV. Guidelines for IAPro Step 6: Collective Integrated Assessment

Step 6 represents the culmination of the participatory assessment process in IAPro, where the combination of science and local knowledge, monitoring data and stakeholder perspectives converge into a collective and integrated evaluation of the local actions implemented to combat land degradation.

In Step 6 promotes the re-evaluation of the target management/restoration actions after considering the results from the MCDA performed in Step 5. This way, Step 6 brings the results from previous steps back to the stakeholders so that they can make a more informed assessment of the actions through social learning.

a) Logistics and Preparation

1. <u>The workshop and the participants</u>

   A collective exercise is proposed to fully meet Step 6 and IAPro goals of knowledge exchange and social learning. Step 6 is therefore designed (and described below) to be conducted in a framework of a workshop[1]. Ideally, all or most of the stakeholders from the local MSP, in particular those that participated in previous IAPro steps, would participate in the workshop. If it is considered convenient by the local assessment team, the workshop could be complemented by a set of individual interviews, (e.g., in order to include stakeholders that could not participate in the workshop; to gain further insights into stakeholder perspectives; etc.).

   The Local Assessment team may consider combining Step 6 with a field visit. The visit should be oriented to facilitate (1) the group discussion on the actions that are being evaluated and (2) the co-production of dissemination and educational (audio-visual) materials by the stakeholders (Step 7 in IAPro). Areas where a particular action had been applied could be visited, and some of the participant stakeholders (that were involved in the implementation of the action or are familiar with it) could share their perspectives on particular actions, as a starting point to promote a group discussion. Visual (pictures, videos) and audio materials of the various stakeholders participating in the discussion, as well as of the areas and actions visited could be recorded (with specific consent of the stakeholders) and further used in dissemination activities.

2. <u>The team</u>

   The team conducting the workshop should include a general facilitator (who will lead the general flow of activities), facilitators for some of the specific sessions in the workshop

[1] Step 6 can also be implemented through individual interviews. The interviewer should follow the same sequence of activities described in these guidelines, with the necessary adaptation to the interview context. However, the interview approach to Step 6 greatly decreases the potential for social learning and therefore should be limited to particular cases (e.g., key stakeholders than cannot attend the Step-6 workshop), if any.

(presentation of data gathered from the various actions; presentation of previous weighting and MCDA results; field visit; etc.), several assistants and note takers (to help stakeholders implement the collective assessment exercise and to record the exercise outcomes and what is being said).

3. Materials and data from previous steps (to be prepared ahead)

   On the actions:

   - Descriptions (as in previous steps 1 and 2) of the actions that are being evaluated through IAPro. Prepare visual material that can be displayed within view of the participants and distributed individually (e.g., hand outs / factsheets)[2].

   On previous results:

   - Consolidated (final) list of indicators (elicited in Step 2 and consolidated in Step 3). and
   - Summary of the results from the Step-3 weighting exercise (Any supporting materials, such as images or explanatory graphics, that were used during the weighting exercise can be used again here; they must be as consistent as possible across indicators)
   - Summary of the data gathered in Step 4, including graphs and diagrams that present a summary of the results from Step-4 surveys
   - Summary of MCDA results

4. Materials for the re-assessment of the actions

   - Guide instrument: guidelines for facilitating the re-assessment of actions (template with questions; see below)
   - Big-format tables (to be posted on big boards) and coloured stickers to facilitate a collective re-evaluation of the actions. These big-format tables favour a more interactive setting and promotes dialog among the participants. It also privileges passing information in an easier and transparent way to all the participants present.
   - Small versions (hand outs) of the above table for individual use (to be distributed to each participant and to the note-takers in order to facilitate both individual assessment and recoding of the assessment)

[2] Care should be taken to avoid positive or negative connotations in descriptions, explanations or pictures. Images and other graphics can be made more neutral by a) consistent scales and perspectives, b) ensuring no or few people are in the photos, c), ensuring no confounding factors are represented in the photograph, d) reducing the brightness (black and white is an option). All text, include axis on graphs, etc. should be 100% consistent in formatting across the actions.

b) Introduction

1. Room layout and workshop dynamics

   The room should be organized so that every participant has (a small) space to work their own and access to the material displayed in the room.

2. Informal, understandable, consistent communication. As in previous IAPro participatory steps, fluid conversation should be encouraged. Language and terms used should be adapted to meet the participant's needs. Wherever possible, use of terms proposed by the stakeholders themselves (in previous steps).

3. Project/research summary. The facilitator should begin with a brief summary of the assessment project background, reminding the participants of the goals and procedures, and the societal benefits that are pursuing. The facilitator should also remind the participants of the previous contributions made by the MSP: baseline evaluation of level of knowledge, the objectives and the results of the actions; selection and weighting of indicators; and a wide range of qualitative information based on local knowledge)

4. Introduction of the re-assessment exercise. The facilitator should introduce the collective re-assessment exercise. This should be a brief summary of the overall goal, the method, and what team members will be doing. For example:

   "In our previous intractions, you and other stakeholders shared with us perspectives on the management and restoration actions for this site, and on what signs/indicators you and other stakeholders (other land users, managers, scientists, etc.) use to assess those actions. The result was a list of assessment indicators that was merged with (few) other indicators proposed by an international panel of experts, and re-assessed by you in order to produce a final consolidated list of indicator. This final list has been used to guide a survey process to get available and new data on the various actions. The indicators proposed, their relative importance, according to your perspectives, and the results from the survey will be presented next, followed by the presentation of the results from the analysis of these data.

   After a period of discussion on these results, we wil ask you to assess the actions (again), focusing on similar issues that were addressed during the first individual interviews. You will be asked to post part of your assessment on big-format tables that are displayed on the walls, and a final discussion on the lessons learned and future directions will close this workshop."

   Note: if a field visit is part of the workshop, the facilitar should also explain the goals and activities associated to the filed visit

c) Exercise for a collective and integrated assessment

This exercise includes several activities, many of them use slide presentations or other types of visual representation of information. It is advisable to use visual materials that can be both displayed for the whole audience and distributed individually.

1. Presentation of the actions (see point a.3 above)

2. Presentation of previous results. Results must be presented in a way that can be easily understood by the local stakeholders. Adapting language and visual representations as necessary. The results to be presented include: (1) The consolidated list of indicators selected in Steps 2 and 3; (2) the resulst from the weighting exercise (including summaries on both the baseline and the post-discusion results); (3) the results from the surveys and data gathering process. Stakeholders must be informed that the weights obtained in step 3 were incorporated into a Multi-criteria Decision Analysis (MCDA) that will be presented later in the session.

3. How does the (outranking) MCDA work?

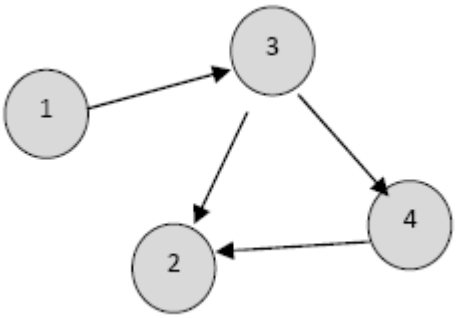
The assessment process in IAPro is at least as important as the assessment results obtained. It is therefore important to share with stakeholders the basic foundations and key processes underlying the various steps in the assessment process. At this stage, in Step 6, it is important to share with the stakeholders several key points regarding the outranking method used, including:

- *As most MCA approaches, it uses a variety of criteria (the indicators selected by the MSP and by an international panel of scientists), and the data gathered for each of them in order to compare the actions. The influence of each indicator in the comparisons is modulated by the weights, which represent the relative importance that the local MSP collectively gave to the set of indicators selected*
- *To compare/assess the actions, this particular MCDA approach, the outranking method ELECTRA (change as needed, if any other outranking method –e.g., PROMETHEE, NAIADE- is used) works in the following way:*
    a. Outranking is defined fundamentally between every pair of actions being considered.
    b. The methods are based on the identification of the strength of statements of the form "alternative *A* is at least as good as alternative *B*". The quantification of this strength requires two main tests (see Dodgson et al., 2000) that assess (a) how many indicators support the statements, and (b) the magnitude of the difference between each pair of actions of the values for the attributes (indicators) considered.
    c. The results from these two test are combined to construct the final outranking relationships among all the actions.

4. Presenting outranking MCDA results

This is crucial to the process. Presentation must be adapted to local educational and cultural context. Ideally, the results are both displayed on screen/posters and distributed as hand outs for participants.

Next figure shows examples of graphical representation of (a) overall partial order, where the relative outranking relationships between actions are depicted, and (b) criteria (indicator) for which each action outrank the others.



	Ind A	Ind B	Ind C	Ind D	Ind E
Action 1	■	■	■	■	
Action 2					■
Action 3	■	■			
Action 4		■	■		

5. Discussion:

   After the presentation of the MCDA results, the facilitators in Step-6 workshop will promote a discussion on these results. Questions such as, if that was in agreement with what they expected or not, if results fit their views, and so on can be raised by the facilitators to promote participation and discussion among stakeholders, and also between stakeholders and the assessment team members participating in the workshop.

   It is important to stress that the results from the outranking MCDA are not meant to identify the best option possible, nor to rank them along a quality scale, but to provide information on which action outranks each other as a function of the criteria (indicators) considered. Thus, the results from an outranking method can be seen as an information system that helps the stakeholders evaluate the alternatives (management actions) and decide about future directions.

   The format of the group discussion should be a facilitated discussion, meaning that the facilitator's job is to encourage dialogues among stakeholders and to clarify points or instruction. The facilitator is not a discussion leader so he/she should avoid giving his/her own opinions or dominate the discussion.

6. Re-assessing the actions:

   After the discussion on the results, the stakeholders are requested to re-evaluate the actions, using the individual tables and then the big-format posters with the common tables created for this exercise.

   A variation of the Instrument 2 (Guide for baseline evaluation of actions) can be used as guide for Step-6 re-assessment of actions. It should include, at least, the following questions:

a) Please consider the different actions and rate your overall knowledge of each of them. On a scale of 0 to 5, where 0 is "I don't know about this action" and 5 is "extremely knowledgeable," how would you rate your knowledge of these actions?

Actions	**Rate on knowledge**					
Action 1 (name)	0	1	2	3	4	5
Action 2	0	1	2	3	4	5
Action 3	0	1	2	3	4	5
Action 4	0	1	2	3	4	5
Action n	0	1	2	3	4	5

For each action:

b) What's your general opinion on this action (name the action)?

c) Do you think this action has been a good choice? On a scale of 1 to 5, where 1 is "very bad choice" and 5 is "excellent choice," how would you rate this action?

Very bad choice				**Excellent choice**
1	2	3	4	5

d) What do you feel are the positive aspects/outcomes/results/consequences?

e) What do you feel are the positive aspects/outcomes/results/consequences?

f) Whoul you adopt this action? Yes/No, and Why

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7. Lessons learned and future directions

The final activity in the workshop (after a break that allows the assessment team to summarise the results of the re-assessment of actions) includes:

- The discussion of the re-assessment results. The facilitators will focus the discussion on (1) the re-assessment results; (2) the differences between the baseline and the final assessment results (highlighting the learning process behind potencial differences), (3) the opportunities and constrainst for the adoption of the actions assessed and/or potential variations, and (4) the assessment process itself.
- Final discussion and eventual agreement on next steps towards adopting good practices in the area
- Collaborative design (selection of the key messages, materials to be included, format, etc.) of dissemination products from the stakeholder-created materials.

5. References

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