Anticipating Change:

SCENARIOS

AS A TOOL FOR ADAPTIVE FOREST MANAGEMENT

a guide

Eva Wollenberg with
David Edmunds
and Louise Buck

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Introduction

This manual is about preparing people for change and uncertainty using future scenarios. Scenarios can provide a tool for planning creatively for the future. Here we describe the principles of scenario-based approaches and several methods that help to tap people's imagination in anticipating the future.

Although future scenarios can be useful in many settings, we discuss them here in the context of community-based forest management in the tropics, where the planning horizons are often decades, complexity and uncertainty are high and people must work together to accomplish their aims. Much of the manual is, however, relevant to other natural resource management or rural development settings where collaboration is sought among different interest groups. Scenarios can be generally useful to evoke and communicate people's ambitions, plans and perceptions of change, as well as to help people decide how to adapt to change and achieve their vision of the future. They are essential for adaptive management by helping people to make decisions today about changes that may occur in the future.

For people seeking to use scenarios in village settings, the range of methods available has been limited. At one extreme, formal methods have reled on quantitative models and computers, and may not be

accessible to or practical for villagers. At the other extreme, simple scenario methods tend to be limited to generating visions, without exploring complex causes and relationships in trends.

By bringing together different methods in this guide, we aim to make available a fuller range of options for using scenarios, especially in ways appropriate for villagers. We can also readily see their common features and understand the basic principles underlying scenario methods. We encourage the reader to use these principles to develop the methods most suited to their situation.

The guide begins by introducing the concept of scenarios and why they can be useful. We then describe how scenarios can contribute to learning and adaptive management. In the rest of the guide we describe four basic types of scenarios, giving the general steps for each method. We highlight processes and options that promote learning among different interest groups. References are provided for readers interested in learning more about a particular subject.

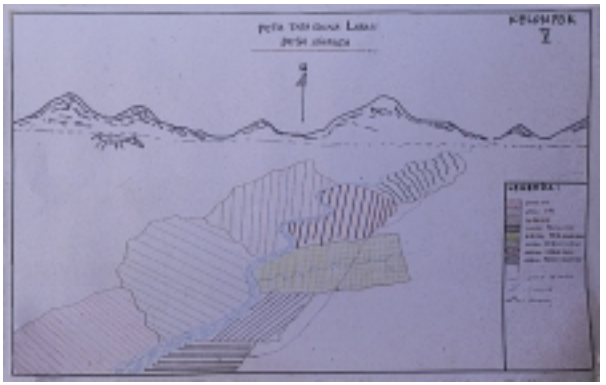
What are scenarios?

Scenarios are **stories of what might be**. Unlike projections, scenarios do not necessarily portray what we expect the future to actually look like. Instead scenarios aim to stimulate **creative** ways of thinking that help people break out of established ways of looking at situations and planning their actions. If we use this creativity well, it can help us get rid of no-longer useful habits of thinking and therefore adapt better to the future. Scenarios are useful tools where **complexity and uncertainty** are high. If the management of tropical forests were more simple and predictable, we could use straightforward projections based on current trends. Unfortunately, complexity and uncertainty are more characteristic of many situations, and so creative processes for anticipating change such as scenarios are useful.

Scenarios can take the form of pictures, photos, written stories, dramas, poems, videos, dances, mathematical equations, piles of beans, geographic information systems (GIS), maps, sand drawings, graphs or any combination of these and other media. The users' capacities, preferences and resources determine the form of scenario. The only real limiting factor is the imagination of the people using them and the interest of people to participate in creating them.

◀ Dramas provide a direct learning experience as people try new roles and play out options. They can also be energizing in community meetings.

▼ Sketch maps of alternative land use options are tangible products that people can use to discuss with others.



Why use scenarios?

The aim of using scenarios is to help people change their habits of thinking or **mental maps** of how things work so they can deal better with the uncertainties of the future and perceive the consequences of their actions in the short and long term. During times of rapid change or complexity, existing ways of thinking are often based on rationales that are no longer valid or limited observations that prevent us from seeing new relationships. Psychological barriers also affect our ability to think clearly and with foresight. We tend to undervalue things that are hard to remember or imagine, to remember better and give more weight to recent events, to underestimate uncertainties, to deny evidence that does not support our views, to overestimate our ability to influence events beyond our control, to be overconfident about our own judgments and to overestimate the probability of desirable events. Scenarios introduce hypothetical possibilities that spur our imagination to overcome these tendencies and enable us to think freshly about things.

The new ways of thinking derive their power of explanation by showing **new interactions**. Macro-level and environmental forces can be given special attention in scenario construction as sources of risk and drivers of change. In community forest systems these forces could be a new government policy on community timber harvesting, an international social movement to assist indigenous people's claim ancestral lands or a shift in control of the market of a nontimber forest product. Scenarios encourage an understanding of the outside world and of how our inside world (the household, the forest, a local organization) interacts with it.[1] This information is crucial for effective community-level decision-makers operating in the context of larger social and environmental systems with many stakeholders. When scenarios are used to develop a systems view of more than one future, they can open up the possibilities for yet more creative thought and critical understanding through comparison of alternatives.

Scenarios also can encourage interaction among different groups, such as neighboring villages that share a forest, government officials from different agencies or villagers and state foresters. Scenarios can enable these groups to engage in creative learning jointly.

When are scenarios appropriate in community forestry? The answer is when there is a need to explore possibilities. A village worker can use scenarios to empower forest users to think about what their forest would look like if different hopes were to come true. A policy maker can use scenarios to consider the range of outcomes of different policy alternatives. A village association can use scenarios to explore the various possible demands on the village's forest and to decide which parts of their forest should be protected. A timber company and community can use scenarios together to discuss the implications of different benefit-sharing arrangements. A local government planning board can use scenarios to assess the impacts of new transportation routes on community lands. Scenarios can be useful whenever it is necessary to stimulate new ways of thinking about an uncertain and complex future.

How are scenarios used in adaptive management?

We define **adaptive management** as the process by which people adjust their management strategies to cope better with change.[2] Paying close attention to changes in the interactions between people and forests is the starting point of adaptive management. New information or new ways of looking at information stimulate an iterative learning process that enables assessment of management strategies. The local community and, where appropriate, other stakeholders responsible for making decisions about the forest work together to make assessments. Given resources, incentives and organizational capacities, the joint assessment can lead to adjustments in management.

In seeking to improve adaptive management, we are concerned with how learning can be improved (see Box 1). Understanding the different types of learning can help us identify where improvement can occur and how

- **Retrospective learning** focuses on the monitoring of past actions. In these cases, adaptive management interventions are designed as trials or experiments. The lessons drawn from the experiences are used to adjust the next set of management actions.
- Forward-looking or **anticipatory learning** focuses on gathering information about what might happen based on an understanding of drivers of change, the probabilities of future events and the interests of different actors. Adaptiveness is improved by increasing preparedness.

Scenario-based techniques are tools for improving anticipatory rather than retrospective learning. They help forest managers make decisions based on an anticipated range of changes. The long-term and dynamic nature of interactions among local people's livelihoods, sustainability objectives and the biophysical conditions of community forests make simple retrospective learning problematic. More open-ended, forward-looking methods can better help address complexity and risk.

Scenarios can be used indirectly to improve retrospective learning, for example, in monitoring. Stakeholders can use scenarios to elicit what they expect to be important to monitor in the future and to build agreement among themselves.

The value of scenarios comes then from learning to think in new ways about the future and in making decisions appropriate to uncertain conditions. Through this process, people can improve their preparedness for the future and their capacity to adapt.

Box 1

IMPROVING LEARNING

Retrospective and anticipatory learning can be improved further by understanding the tradeoffs between independent or interactive learning modes. For learning to occur, new information must be transformed into new knowledge, implying that the information is integrated into the user's thinking. In interactive learning, new knowledge is acquired through interactions with other people, which we call here "**social learning**".[3] Social learning can take place through dialog among the parties concerned, undertaking an inquiry collaboratively, exchanging experiences through cross-visits, or simply exchanging information. Social learning is usually more desirable than independent learning because of the additional knowledge and coordination that can be generated, but can also be more costly due to the transaction costs of bringing people and their ideas together.

Social learning should occur in ways appropriate to the roles, identities, capacities and power relations among the people seeking to learn. Factors to consider in designing and evaluating social learning approaches include

- Who are the relevant groups to involve? How are the interests of each group represented?
- Does social learning result in changes in access to and control over information among actors?
- Is the learning style appropriate to the learning capacities and preferences of each group?
- Are there new interdependencies among actors and what are the implications for control over decisions?
- Is there fair use of knowledge within a group and accurate exchange with representatives who are more directly involved in the learning processes?

Scenarios can be used for either independent or social learning, but are especially useful for learning among different groups because of their inherent nature as a means for expression and communication. The construction of scenarios is also usually complex enough to require the involvement of more than one person or group to draw upon their different sets of knowledge and skills. Whether expressed visually or verbally, scenarios can be tangible ways of exchanging new knowledge among people. We can maximize social learning by finding the most appropriate sets of actors, understanding their learning capacities and preferences, encouraging experiential learning and direct involvement as far as possible, and determining equitable arrangements among actors where capacities, preferences and power relations differ.

Learning occurs through direct experience, observation or the collection of information or through communication with others. Knowledge is more likely to be acquired through personal experience than through simple exchange of information[4] or at least where new information can be linked to existing experiences. The effectiveness of learning is thus affected by the degree of direct involvement. This suggests that scenarios will be more powerful in creating new knowledge and preparedness when they directly involve the relevant stakeholders. Retrospective learning is likely to be more powerful than anticipatory learning to the extent that it involves experientially derived knowledge. This is one important trade-off between anticipatory and retrospective learning.

Learning can be characterized as either systematic and purposeful, or ad hoc and opportunistic. Systematic and purposeful learning follows a set of consistent, logical procedures to gain new knowledge, for example, by isolating the impacts of an intervention through experiments or surveys or through regular monitoring. Systematic learning can be used to, for example, teach a new skill by beginning with supportive group practice of the skill and gradually shifting to solo practice, or introducing concepts from the more simple to complex. Ad hoc and opportunistic learning occurs by chance, but because of its very nature, can lead to more creative solutions. How often have we discovered the pleasure of a new way of doing something because we did not have the materials we wanted on hand? Improvements in learning are likely to involve striking a balance between ad hoc and opportunistic learning To take advantage of what each can offer. Scenarios are structured to provide systematic learning, but by being flexible in how the scenarios are generated and used, we can use them for ad hoc learning as well.

A balance also needs to be struck between introducing new approaches to learning and relying on old patterns of learning that may be well-integrated with existing management practices. The costs of adopting new, more structured learning mechanisms—such as scenarios—may conflict with people's usual ways of acquiring new knowledge or may threaten existing interests. For example, people may prefer to learn by relying on a trusted advisor, tapping periodically into existing information networks, or testing an idea based on intuition rather than trying to acquire the information themselves systematically. We need to understand existing learning practices and see how scenarios fit into existing systematic and ad hoc learning. If scenarios are to be effective, the method of learning must not become a hindrance to acquiring the knowledge produced.

Finally we can assess changes in learning. Assessing retrospective learning requires looking at whether responsiveness to change improves. Improvements in responsiveness occur when the

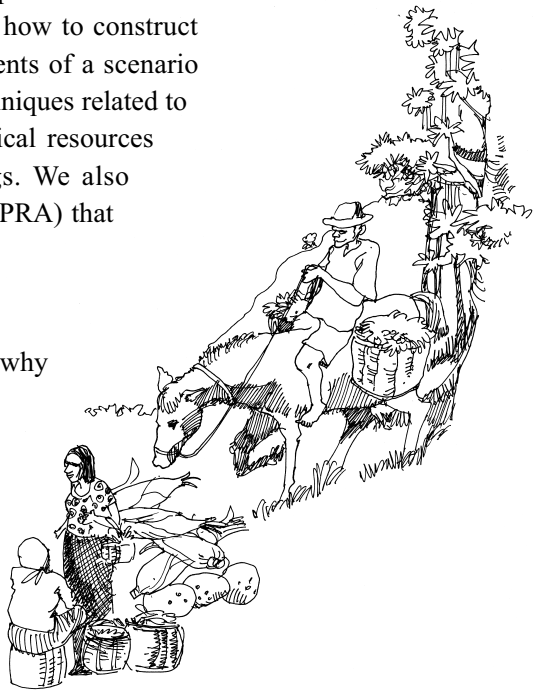
- Appropriateness of the next action to the lesson learned improves (the lesson is applied).
- Speed of follow-up decisions and actions increases (i.e. the lag time between gaining the information and taking an action decreases).
- Unanticipated negative impacts of the actions taken are more quickly recognized and minimized.

We can assess changes in anticipatory change by looking at the resulting preparedness. Improvements in preparedness occur when

- There is better knowledge of cause and effect, trends and uncertainties.
- There are new proposed solutions to anticipated problems.
- Contingency plans are appropriate to the risks at hand and the capacity to implement these plans.
- Back-up systems provide intentional redundancy of vulnerable parts of the system.
- There is flexibility in the allocation and use of resources.
- There is diversification of practices that minimizes the risk associated with any one management practice.

GETTING READY

First, we review basic principles that can guide you in designing scenario-based methods appropriate to your needs. A number of sources provide excellent overviews of scenario approaches[5] and information about how to construct scenarios.[6] We draw on these sources to identify the elements of a scenario approach suitable for community forests. We emphasize techniques related to qualitative scenario methods, because of the limited technical resources available in most community forest management settings. We also summarize methods based on participatory rapid appraisal (PRA) that may be especially appropriate to village settings.



Preparations for using scenario methods include

- Defining the scenario's purpose in order to be clear about why a scenario method is useful in thinking about the future.
- Choosing the type of scenario that best suits this purpose.
- Thinking about how to select participants, facilitators and settings that create an environment favorable to learning and follow-up action.

Some guidelines for carrying out these preparations are described below.

Choosing a purpose

Scenarios are more effective tools for learning when their purpose is clear. The purpose should guide the selection of methods. You need to identify two aspects of your purpose.

- What is the action or decision making context that the scenario(s) will help to inform?
- What kind of knowledge about the future and learning process is necessary to prepare for this action or decision?

These two aspects are often linked. For example, the purpose of a scenario exercise might be to

- Decide which forest trees to plant along an eroding river bank. Scenarios could be used to learn about the future value of the trees by looking at forest product market trends and risks.
- Help villagers decide how to cope with a logging company's harvesting plans or a new local governance policy. By jointly generating and discussing the scenarios, villagers can learn about possible impacts and strategize actions together.
- Stimulate and empower members of a community forest association to organize an action plan by learning together about their respective visions for their forest and create a unified vision.

Normally, some stakeholder has already identified an action context. Additional stakeholders can help in refining the action context and determining learning needs from their point of view.

Choosing a scenario approach

You need to choose a scenario approach appropriate to your purpose. There are four sorts of scenarios.

- **Vision -** A vision of the desired, ideal future.
- **Projection -** Best guesses about the expected future.
- **Pathway -** Determination of how to get from the present to the future by comparing present and desired future (vision) scenarios.
- **Alternatives -** A comparison of options through multiple scenarios of either the vision, projection or pathway type.

To help you choose what kind of scenario best fits your needs, ask yourself the following questions.

- Is there a need to develop knowledge about people's preferences about the future, e.g., to empower forest communities to imagine achieving their goals, or as a team building exercise to create a shared vision for a set of stakeholders?
  If yes, use scenario methods that produce visions of the ideal future.
  If no, is there a need to learn about the likely outcomes of current or proposed practices?
    If yes, use **projection** methods.
    If no, use scenario methods that generate future **alternatives** and help develop knowedge about a range of possible states (e.g. to develop contingency plans, assess risks or determine tradeoffs among different desired endpoints).
- Is having a shared understanding of the future sufficient to achieve the desired action, e.g., to build awareness or communicate to another group?
    If yes, use vision, **projection or alternatives** methods
    If no, use **pathway** scenario methods to develop a more detailed understanding of a sequential process, e.g., for planning development interventions.

With a well-defined purpose and scenario approach in mind, you are ready to give more attention to the learning process, especially who to involve in the scenario process and where.

Selecting participants, facilitators, modes of communication and settings

The key to enhancing learning through scenario methods is to match the selection of participants, facilitator, place and mode of communication to the purpose of the scenario(s). You need to identify the appropriate forums, media and people for different aspects of the scenario exercise.

The main principle in making these choices is that the most useful scenarios will be the ones that **influence stakeholders'** learning to enable them to act in new ways later. The scenario must "come alive in 'inner space,' the manager's microcosm where choices are played out and judgment exercised".[7]

The biggest challenge in using scenarios is to reach the people who will need to act later. This means that you should choose participants carefully and work to create a process in which action-oriented learning occurs. As you design this process, you need to maintain sensitivity and transparency about the degree to which you are imposing your own ideas to manipulate the learning to meet the aims of a particular group. Be prepared to invest the necessary effort and resources. Getting people involved in genuinely collaborative and effective learning processes takes time.

Where local communities manage forests, several challenges to this learning process arise. Ask yourself who will ultimately take actions in managing

the forest, or will influence these actions. You need to consider the roles of different groups in management (forest owner, user, beneficiary, regulator, sponsor, competitor or neighbor), their positions or interests in the action, and their role in society at large.[8] The views of these different groups become anchor points that can significantly affect subsequent discussions and decisions, so you need to select participants with care and be conscious of the interests they represent.

You may wish to consider the following questions as you select participants

- Does the person represent a group that has a stake in the proposed action or decision?
- Will the person have a role in applying the knowledge they gain from this process to the proposed action or decision?
- Are there sufficient accountability mechanisms in place to make sure this person represents his/her group fairly and transparently?
- Does the person have adequate communication, analytical and interpersonal skills to participate effectively?

Assuring that these conditions are met will not always be under your control. To the extent they can be influenced, however, you are likely to have a more fair and effective process of involving different groups.

Not everyone needs to be involved in every stage of the process. Different stakeholders may be called in at different times, for example to consult about specialized knowledge they may have, define the decision context or help design the process. The facilitator needs to be sensitive to stakeholders' differences in power relationships, cultural preferences and tensions, in order to cluster participants in groups that can comfortably and effectively work together. Disadvantaged groups are likely to need special attention.[9] Remember that you will, however, need a core group of participants who are involved sufficiently throughout the process to internalize the lessons learned. You may need to make this clear to your stakeholder groups in advance to avoid groups that decide to rotate participation among several people.

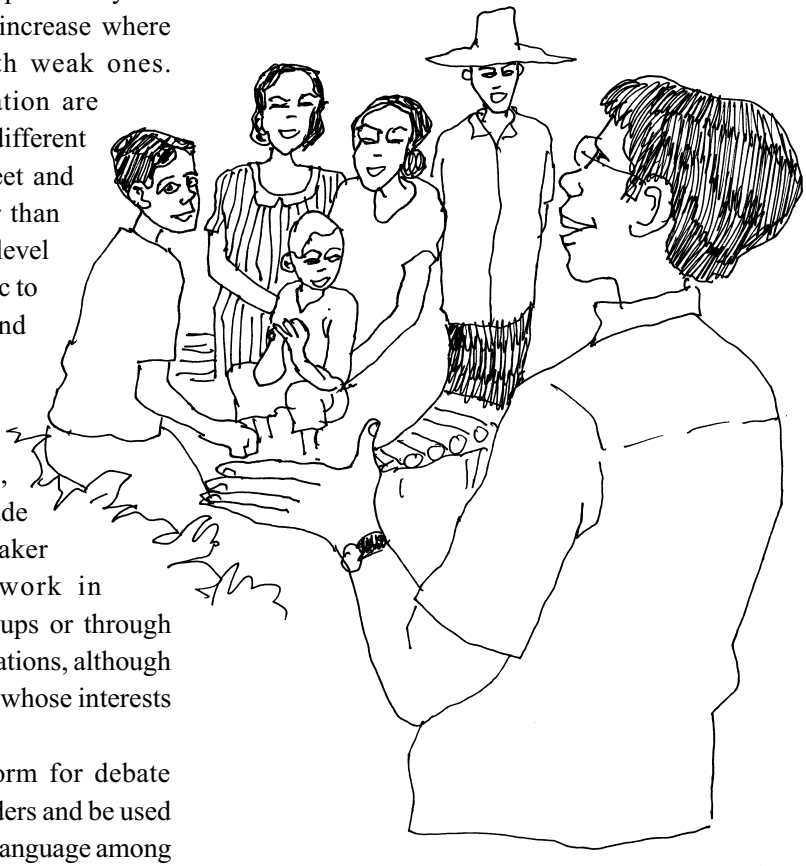
You will need to identify mechanisms for negotiation about preferences and aggregation of the views of the different groups, including

- Within the community, where forests are managed jointly by the members of the community
- Among other groups that co-manage or use the forest outside the community
- With the people using or responsible for the agricultural lands, water ways or practicing other

land uses that affect the forest or are influenced by it.

Try to ensure that stakeholders' power relationships do not bias who has the most say in the scenario exercises. Many community forests involve people disadvantaged by their ethnic or class background or their gender. It may not be desirable or cost effective to work with all stakeholders at once. Communication differences and the possibility for unfair decision-making are likely to increase where powerful players are matched with weak ones. Inventiveness and sensitive facilitation are required to enable participants with different social status or power relations to meet and exchange ideas effectively.[10] Rather than working to create a seemingly neutral "level playing field," it might be more realistic to acknowledge differences in power and culture and to ask participants to develop operating principles to deal with them. Choose a facilitator who cares about empowering weaker parties, yet can maintain a fair and open attitude with all participants. Strengthen weaker village groups by having them work in conjunction with stronger village groups or through federations or non government organizations, although these techniques can raise issues about whose interests are expressed.

Scenarios can serve as a platform for debate among relatively cooperative stakeholders and be used to communicate interests in a common language among more antagonistic ones. Scenarios may help to highlight interdependencies among interest groups and thereby also foster cooperation. Scenario generation can also be used selectively with community stakeholders to empower them, with the understanding that a subsequent analysis of existing scenarios, decision-making, facilitation and negotiation would engage other relevant stakeholders. Costs will increase proportionally with duplicated processes. It is therefore



necessary to understand the players needed to participate in a decision and develop a strategy of using joint scenarios, parallel scenarios or a less intensive alternative with each group, depending on the resources available to you.

Differences in sophistication among the stakeholders require sensitivity to designing understandable, transparent methods for each participating stakeholder group, including villagers who may not be able to read. There may be differences even between how people within a single stakeholder group prefer to communicate (e.g., men and women) or the constraints they have about speaking freely in front of one another. Consider that differences may also occur for people of different occupations, religions, ethnic affiliation, ages or wealth classes. Choose a facilitator with the flexibility to communicate in the style of language most comfortable for each group. Choose styles of communication and meeting places that show respect and fairness for the identities of all participants. Where necessary, give priority to those who will be most responsible for follow-up actions.

The form of the scenario and its presentation should be designed with the different stakeholders' capacities and preferences in mind. The presentation of the scenario need not be written or on paper. In northern Thailand, for example, three-dimensional models of local landscapes facilitated lively exchange of different people's views about land-use planning.[11] The use of simple materials for some audiences should be balanced against the need to keep all the stakeholders involved and stimulated. The degree to which the method is transparent and understandable to all the stakeholders will further aid their ability to work with the scenarios and learn together from them.

Geographic information systems (GIS) and maps can be used to represent scenarios in ways that make them more tangible and "present".[12] Community-based management interventions commonly involve GIS and the generation of maps. These tools have proven popular and useful for strengthening local management, but care should be taken to avoid negative impacts on group dynamics based on different levels of familiarity with or access to such technology.

You may have to use considerable ingenuity where concepts of vision and the future are limited. In many places culture and environmental conditions support a belief in fate and unwillingness to talk of what might be. One way to encourage people is to ask about the future in general terms without assigning a time. If given a specific year, people may feel they have to report accurately what will happen. The closer the time is to the present, the greater the likelihood that people will

link their visions to the present; the more distant, the greater the likelihood that they will think creatively. You can also situate scenarios in the present by asking participants to imagine what they want to be different or keep the same about their village now. Remember that when you use the present as a reference point, you risk restricting people's imagination.

If the method is to be used a number of times, especially for communities to use the methods on their own, you will need to minimize costs of specialists and transaction costs of involving stakeholders and collecting information. There are likely to be tradeoffs in the level of detail and data collection necessary and what can be collected with methods that are accessible, meaningful and stimulating to the participants. You will have to make decisions about the level of specificity desired.

As a guide to the level of detail, the intent with any of the scenario methods described below is to provide just enough information to decision-makers to allow them to construct plausible, distinct scenarios. The aim is *not* to achieve a comprehensive understanding of how each hypothetical future works. Indeed, one of the functions of scenario analysis should be to simplify complexity about the future.

Any of the four kinds of scenarios can be implemented with relatively simple, low-cost participatory rapid appraisal (PRA) methods. PRA-based scenario techniques focus mostly on the use of pictures made through group processes to show visions or current conditions. These techniques have been used as empowerment, awareness and planning tools. They include "possible futures", "story with a

gap", "guided imagery" and "force field analysis" exercises (see Box 2).

PRA-type techniques may not work for every stakeholder or scenario question. PRA-type methods may capture expertise and judgment more directly than more complex modeling techniques, yet they may not handle large amounts of complex information easily. They are more accessible learning tools for most villagers, but may be less acceptable to more "scientifically oriented" groups expecting more technical sophistication. PRA methods can be less precise in how they depict relationships in the scenario and may not be able to show iterations and complex interactions in a transparent way. They may be nevertheless equally as valid as more quantitative modeling techniques.

You might need to use different methods to match the capacities and preferences of different groups. Creating the best mix of participants, a favorable learning environment and the facilitation of the scenario process is difficult. Much will depend on the judgment of the people involved in designing the process. Involving a team of people representing different interests and skills in the preparation phase can help increase the quality of the judgment brought to bear on these decisions. Be prepared to be open-minded, flexible and adaptive yourself as you find ways of improving the process.

Box 2

PARTICIPATORY RAPID APPRAISAL (PRA) METHODS RELEVANT TO SCENARIOS

These methods are provided as examples. Each can be modified to accommodate the needs of the user in a given location.

1. Possible futures
(adapted from Slocum and Klaver 1995)
Participants brainstorm about what they think might happen in their future. The facilitator sets a timeframe (any amount of time for which there is an interest, perhaps as little as one week or as much as several generations) and asks the participants either to draw pictures individually or compose one as a group. Alternatively, people can offer their ideas through words that are written on cards or pictures on flipcharts and then clustered. The group discusses the implications of the different possible futures elicited, the probability of each happening and the conditions that would give rise to each future.

2. Story with a gap
(adapted from Narayan and Srinivasan 1994)
A facilitator or the participants themselves provide a story about their current conditions, such as how someone wanted to get a good price for a particular forest product or how someone wanted to overcome a pest problem in a tree. They then tell the end of the story with a desirable ending (or undesirable ending depending on what lessons you are seeking to generate). The group discusses different types of actions and situations that might occur in the middle of the story. The goal is to link the story's beginning and end. The group reflects upon the types of actions suggested and the possibilities for implementing them.

3. Guided imagery
(adapted from Borrini-Feyerabend 1997)
Participants relax and close their eyes while a facilitator leads them in imagining a walk through their village, home, field, forest or other location where change is desired. Participants try to visualize what they would like to see as they pass through different points in the location (a well, a river, a meeting place, a path etc.) or what they expect to be doing (what they are carrying on their backs, what catches their eye, makes them feel good etc.). After the walk is completed, participants share with one another what they saw and discuss the implications for actions that they would like to take.

4. Force field analysis
(adapted from Narayan and Srinivasan 1994)
Participants reflect about their current situation and the kinds of problems that they face. These are visualized and drawn on a piece of paper. They are then asked to draw a picture of their desired future. Participants then compare both pictures and discuss the forces that encourage or discourage changing from the present condition to the desired one. They use this understanding of the positive (e.g. resources available) and negative forces (constraints) affecting their goals to strategize about the best actions to take to accomplish their goals. These actions should be consistent with the forces, so that actions aim to counteract negative forces and reinforce the positive forces.

SCENARIO METHODS

The four approaches to scenarios—**vision, projection, pathway** or **alternatives**—each involve different methods, which are summarized below. We assume that the preparatory steps described above have already been taken or at least initiated.

The scenarios generated through any of the four approaches should obey certain rules to be useful. They should be internally consistent, coherent, plausible, feasible (i.e., based on real forest resources, natural processes, logic and ethics), linked to the present and understandable by the scenario user. These requirements result in some tradeoffs with creativity, but are necessary to ensure the learning is relevant to the real world. Users are more likely to comprehend and remember the relationships and causalities in scenarios when information is presented in a story-like narrative and each story is given a label. Stories should be approximately the same length and involve the same amount of detail and comprehensiveness to be easily comparable.

For each kind of scenario, participants should seek processes that challenge their thinking and lead them to "a-ha" experiences or new insights. The achievement of new insights that lead to action is the ultimate test of the success of learning through scenarios.

VISION SCENARIOS

The vision scenario is the simplest of the four types of scenarios. Its purpose is to enable people to articulate their ***hopes***, to build awareness about these hopes and to empower them to think it is possible to achieve them.

The method requires eliciting only one scenario, which is usually a snapshot view of some point in the future. The exercise is most effective when people can think freely about their desires for the future without feeling constrained by their knowledge of the present or by the expectations of others. The steps of this method are as follows.

- Ask participants to produce a vision of what they would like to see changed about their forest, village or lives. The question can be general, or more specific, such as, "what kinds of forest products would you like to see be plentiful?" "Where would you like your forest to be?" "How would you like to use the forest?" "What kinds of management rules or organizations do you think would be best?"
- Give participants a chance to reflect individually in group settings to start the visioning process. Depending on the level of complexity of information desired in the vision or the amount of consultation necessary, this step may take minutes or days. It may be done simply by individuals quietly thinking by themselves, through focus group discussions or through the collection of additional information.
- Ask the participants to express their scenarios to each other. Simple media like sketches on flipchart

paper or dramas can be sufficient. These should be accompanied by explanations by the creators.
- Facilitate discussion among the participants about the implications of the scenarios presented and related action points. Discussion points could include
  - Describe the reasoning behind the scenario.
  - Identify what is common and what is different among the scenarios. Explore why differences occurred. Are there relevant differences by gender, age, ethnicity, status, education or geographic groups?
  - Identify what was unexpected and what was predictable.
  - Produce criteria for assessing the desirability of the scenarios.
  - Compile a single integrated scenario that represents the desires of all participants.
  - Analyze the desirability of scenarios from the perspective of different interest groups.

- Rank scenarios or elements of scenarios in terms of their desirability for the group or for subsets of groups.
- Analyze the positive and negative implications — who benefits, who loses? What are the short- and long-term gains and losses?
- Analyze the capacities, motivations and resources involved in the scenario.
- Reflect on what can be done now to achieve the desired outcomes.

An example of an application of a vision-based scenario approach in Zimbabwe appears in Box 3. The case demonstrates aspects of the process that were helpful, as well as those that were problematic.

Options

- You can provide prompts during the process to encourage attention to certain parts of the scenario. For example, you could provide a checklist of the kinds of possible change in the forest (by forest product, forest type, location), sources of change (human-induced, natural) or sectors of change (transportation, agriculture, industry, education, demography). You could ask people to imagine what they or their family or community members would be doing in this future.
- You can supply elements of the story as given. For example, you could ask people to imagine their desired future, given a new policy that would recognize community rights to organize, or given an improved road.

Box 3

EXAMPLE OF A SCENARIO PROCESS USED IN ZIMBABWE

to explore the roles of different stakeholders in local forest management

In Zimbabwe in the 1980s, the district councils were delegated as the organisations to govern natural resources and implement development. One of the key problems was the relationship between the local communities and the district council. There was a mismatch – the most effective local systems for natural resource management were based on traditional systems and focused user groups, while the district council and its local structures, with an array of by-laws, schedules of fines and enforcement mechanisms, were relatively ineffective, but had the legal mandate for resource management.

In April 2000, researchers involved in a participatory research project in two micro-catchments in Chivi District in Zimbabwe convened a meeting of the district council to examine the possibilities of re-orientating resource management organisations. The objective was to see whether anything could be achieved within the current legislative framework. The methodology was "scenario building", in which participants build visions of the future.

The possibility of hosting a meeting on the topic was broached with the Chief Executive Officer of the Chivi Rural District Council (RDC), who expressed enthusiasm for the idea. As we hoped to involve local people at the meeting with the RDC, we decided that it would be best to first have meetings at the community level to adequately prepare the community for the district-level meeting to give them confidence to articulate their views amongst the district officials.

The meetings generated much enthusiasm. The hope from the participants was that there would be more such meetings. Most of the village representatives had never had a chance to discuss such issues before with district authorities. In the final session at the district-level meeting, visions were presented by each of five sub-groups. While four of the sub-groups were constituted by a random mixture of individuals and covered different topics (water, woodlands, livestock and grazing, and enforcement mechanisms), one group was comprised officials of the RDC and some councillors. This group discussed their vision of the role of the RDC and the role of the community. For anyone knowing the current planning and implementation procedures of the RDC, the vision can only be described as revolutionary. It represented a shift from a command and control mode of operation to a fully devolved mode. The role of the RDC was seen as being facilitatory and supportive of community initiatives, providing arbitration when necessary and co-ordinating activities amongst villages.

Features of the process that may have led to the development of a progressive vision included

- **The continuous involvement of researchers**. Researchers were present at all stages of the process to document the feelings of participants and to explore the undercurrents of the various meetings.
- **There was a long-term commitment by researchers**. The visions emerged from an afternoon, but could not have happened without a much longer-term process of engagement between the researchers and the key stakeholders. The research project had been on-going for 18 months prior to the district-level meeting, and the Chief Executive Officer (CEO) had been a member of the project steering committee. The idea for a meeting to be hosted by the RDC on governance had been

broached by one of the researchers more than eight months previous to its occurrence. The long period of engagement was also at the village level. Two researchers had been living continuously in each of the micro-catchments for periods up to one year prior to the meeting.

- **Prior in-depth institutional studies had been conducted**. These covered national legislation and the push to decentralise, the formulation and implementation of by-laws at the district level, and the numerous local level organisations for the management of woodlands and water. These studies gave the researchers insights as to possible intervention points for institutional change.
- **Community confidence was built up prior to the district-level meeting**. In each micro-catchment a large all-day community meeting was held at which preliminary community visions were developed. These were followed by three smaller and shorter meetings in each catchment, to select participants to represent the community at the district-level meeting, to develop the community visions further and to prepare the presentations. Researchers facilitated these meetings. At the initial all-day meeting the large group of about 100 villagers (in each catchment) was subdivided into three groups: older men, women and younger men. Role-plays were used as it was thought that they allowed the more sensitive views to be expressed. Matrix ranking was used to explore some of the expected changes in variables.
- **The district meeting was carefully planned**, involving considerations about the agenda and language. The draft agenda for the district-level meeting had the communities presenting their visions in the morning, while that for the RDC was going to be presented in the afternoon. Although RDC meetings are usually conducted in English, the district-level meeting in Shona to enable all community members to participate.

A vision of the roles of the RDC and community in the management of natural resources

Governance issue	Community roles	RDC roles
Formation of rules and constitutions	Propose laws, rules and constitutions	Rationalise and adopt the proposed rules and constitutions
Enforcement of rules	Employ monitors and apply sanctions	Arbitration, review system, train monitor
Fines, levies, royalties	Set levels, impose and collect	Approve and monitor
Distribution of revenue	Propose distribution systems for revenue, prepare budgets	Negotiate, approve and monitor
Research and development projects	Prioritise projects, identify participants	Co-ordinate among villages, support project applications
Maintenance (e.g., bore holes, dip tanks)	Implement and pay for it	Monitor and evaluate
Land use planning	Produce plans	Facilitate, co-ordinate among villages, approve
Monitoring and evaluation	Undertake monitoring and evaluation	Facilitate, co-ordinate among villages, approve

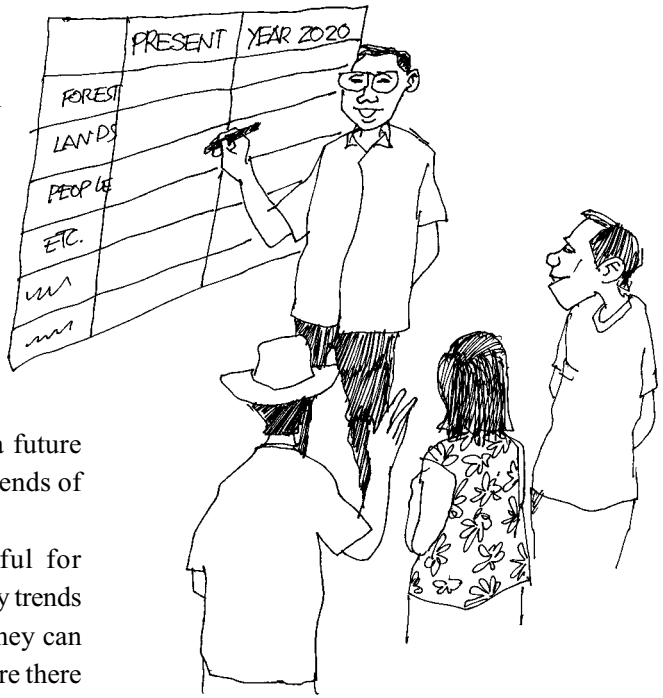
Problems encountered

- The process was lengthy. The full visioning process, up to the presentation of visions at the district-level meeting, took about three days of time for some villagers (in meetings and preparation).
- There were no simple terms in Shona to express what vision entailed. In addition, because of the very pessimistic outlook of villagers about the future, it was not easy to move towards a positive vision. The initial visions, especially those expressed in the village meetings, were very negative.
- There was a tendency for domination by experts and elites. Despite attempts to maintain the representation of community views in the community's vision , there were constant attempts by certain stakeholders to derail the process. Attempts to dominate the Romwe community vision by a powerful personality in the village (the ex-councillor) were prevented by taking the person for a walk to discuss other "important" issues. In one of the sub-groups at the district-level meeting an extension worker pushed the vision away from a community-inspired vision about governance towards a technocratic vision.

Adapted from

B. Campbell et al. 2000. Forging New Institutional Arrangements for Common Property Resource Management – A Case Study from Southern Zimbabwe.

Projection scenarios



Projection scenarios are very similar to vision scenarios, with one important exception. They show a single snapshot image of the future according to people's ***expectations*** rather than their desires. The purpose of projection scenarios is to help people learn what is likely to occur if current trends continue. A group in Cameroon, for example, found that asking villagers about the share of forest resources available to different generations, including a future one, raised their awareness about disturbing trends of resource loss.[13]

Projection scenarios can also be useful for identifying where knowledge is weak about likely trends and more information needs to be collected. They can be useful for designing contingency plans. Where there is a lot of risk and uncertainty, it may not be possible to create a single projection. Instead, alternative scenarios (see below), that make use of projection scenarios, are a better option.

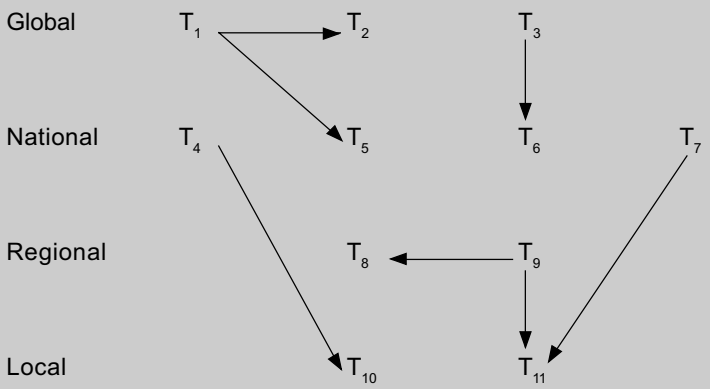
The method entails the following steps:

- Ask participants to select a specific time in the future to use as the endpoint for the projections. The time should be relevant to understanding the impacts of the action or decision that they need to make (see 'Getting ready' above).
- Ask participants to decide which forest, lands and people to include in their projections. These will be the boundaries of the system examined in the scenarios. The boundaries should reflect important influences on the action or decision to be made, or effects of the actions and decisions. They also help to keep the exercise focused.
- Ask participants for criteria that they will use later to assess the data and logic of the scenarios together.
- Invite participants to reflect individually or in small groups about the current structure of resources, actors, institutions, events and relations among them within the boundaries identified. A minimum set of factors might include identification of forest uses,

users, relations among users, rules about forest use, and the relationship of the forest to local households' economic needs, agriculture or livestock and water quality. Brainstorming discussions with prompts are useful. Prioritize to reduce the elements of the system to a workable amount. Additional information can be collected from other sources.

Figure 1. Multi-level relationships among trends on community forest management.[14]

Trends		Impact
T_1:	Increased global demand for green market NTFPs	?
T_2:	UN convention support for community forest management	+
T_3:	GATT trade requirements	-
T_4:	World Bank loan conditions delaying devolution of forest management	-
T_5:	NTFP export values rise with fall in value of local currency	+
T_6:	Increased support for mining	-
T_7:	Policy to promote oil palm plantations	-
T_8:	Declining regional tax base	-
T_9:	Designation of nearby national park	?
T_{10}:	Weakening of local customary law	-
T_{11}:	Increased destructive use of forest by outsiders	-



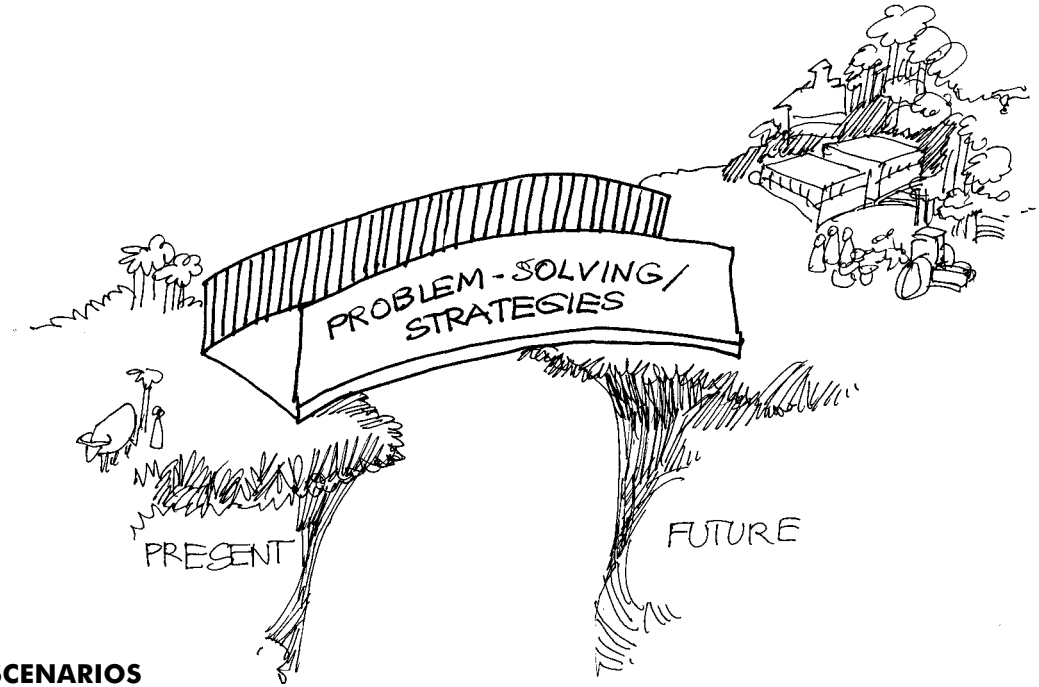
- Characterize relationships in terms of what factors influence other factors, what their impacts are, the level of these impacts (if possible) and any feedback loops where one factor tends to reinforce or balance out something else. Additional information can be collected from other sources.
- Ask participants to identify slow changing, predictable trends for the elements they have given priority. Which impacts are increasing? Decreasing? Are some relationships becoming more important than others in influencing outcomes? Where is there no information or uncertainty? Additional information can be collected from other sources. Participants can map relationships among trends (see Figure 1). You can generate lists of things that are changing and then discuss the types of impacts they have on, for example, improved benefits to the community. The relationships

among trends can then be graphically represented to understand how they might affect one another.

- Have participants apply the trends to the earlier description of current conditions. Trace causal chains of events to the time target and look at interactions among events. Trace changes only for relationships expected to be predictable. Identify where projections are not possible and explain why.
- Ask participants to present the structure, logic and results of their scenarios to each other. Projection scenarios should involve discussion about how participants arrived at the results, not just results. In addition to the projected image, the participants can create pictures of key relationships or chains of events.
- Facilitate discussion among the participants about the implications of the scenarios presented and action points. Examples of discussion points include
  - Elaborate on the reasoning and data underlying the scenario to ensure that everyone understands its basis.
  - Discuss the chance of the projection occurring.
  - Discuss which processes or relationships are most influential on outcomes and why.
  - Reflect upon what the scenario suggests should be done in the present. Which key processes or relationships need action? What is changeable and what is not?
  - Identify what is common and what is different among different people's scenarios. Explore why differences occurred. Are there relevant differences by gender, age, ethnicity, status, or education ? Adjust scenarios as needed.
  - Analyze the data and logic of the projections from the perspective of different interest groups.
  - Compile a single integrated scenario that represents the understanding of all participants.

Options

- You can vary the extent to which chains of causality and relationships are included by varying the levels of expected risk, uncertainty or availability of information used as a cutoff point for inclusion.
- You can decrease the complexity of the exercise by focusing on a smaller number of relationships, or by examining different sets of relationships in a phased way. For example, relationships could be phased by geographic scale (local forest, local administrative unit, watershed, intermediate administrative unit, national scale, international scale), or by sector. The interrelationships among scales or sectors would be examined as a final phase.
- Participants can skip the process of analyzing current conditions and trends and create projections based on their intuition. The discussion can then be used to question the assumptions underlying these projections.
- Participants can compare projections with visions (see 'Pathway scenarios'.)



PATHWAY SCENARIOS

The purpose of pathway scenarios is to help participants determine how they can get from the present to a desired condition. Pathway scenarios combine elements of vision and projection scenarios.

The key difference of pathway scenarios from other approaches is that the learning focuses on open-ended ***problem-solving*** and creating ***strategies*** for dealing with the constraints and opportunities for achieving a future goal, rather than on trying to internalize the possibility of a particular future. The following steps are suggested.

- Produce a vision scenario (see above).
- Ask participants to characterize the current resources, actors, institutions, events and relations among them for their forest, village or lives (see 'Projection scenarios' above).
- Ask participants individually or in small groups to contrast what is different about the two images.
- Work with participants to identify the main constraints and opportunities to achieving their vision, given these starting conditions. What are the existing capacities and weaknesses among actors in achieving their vision? What are the external forces affecting their capacity to achieve their vision?
- Ask participants to brainstorm about a strategy for achieving their vision given these constraints and opportunities. Discussion points could include

- What would have to change and how could it be changed? How can opportunities and capacities be built upon?
- How can constraints and weaknesses be minimized?
- Who are the main actors involved to achieve this vision?
- In what ways would actors have to work together?
- What resources would be required?
- What are the most efficient points of leverage?
- What can and cannot be realistically changed?
- What is under their control and what is not?
- How long would it take to achieve the vision?

- Invite participants to reflect upon differences in strategies among their groups (see vision and projection scenarios for examples of discussion points) and produce action points.

Options

- You can combine the above method with a complete projection scenario analysis to look at the constraints and opportunities in a more detailed way, especially along the chains of causality.
- You can produce vision or projection scenarios at selected intermediate intervals to zoom in on the details of key events or times and their associated implications for strategies.
- You can make the pathway longer or shorter by providing more information about the beginning or end of the story. For example, you could supply the end of the story by generating a discussion about what international accredited sustainability standards suggest for the management of the forest. You could supply the beginning of the story by describing some hypothetical actions that a farmer's group has taken to manage their forest sustainably. You then ask the participants to complete the gap in the story. Focusing on a smaller part of the pathway facilitates learning and strategizing about a more easily handled set of problems.

ALTERNATIVE SCENARIOS

The purpose of alternative scenarios is to broaden people's thinking about the future to account for uncertainty by exploring not one, but a range of possible futures. These scenarios help participants to cope with uncertainty, not by eliminating it, but rather by framing it and understanding the range of associated implications.

The methods rely on elements of the vision, projection and pathways methods. The key difference with these other methods is that alternatives-based scenarios treat the future as unknowable. Risk is assumed to be an important aspect of making decisions in the present. Multiple scenarios are generated to show what could happen because of these risks.

> *The point... is not so much to have one scenario that "gets it right," as to have a set of scenarios that illuminate the major forces driving the system, their interrelationships and the critical uncertainties. The users can then sharpen their focus on key environmental systems aided by new concepts and a richer language system through which they exchange ideas and data.*
>
> *Peter Wack (1985b p. 146)*

As alternative scenarios involve generating a systems understanding for multiple scenarios, they are the most potentially time-consuming of the four methods and—because of the analysis involved—require more intensive facilitation.

The method involves the following steps:

- Ask participants to brainstorm about several possible uncertainties in their forest, village or lives that are linked to existing or anticipated drivers of change such as natural calamities, market fluctuations, the policy environment or competition with outsiders.
- Ask participants which dimensions and ranges of importance and uncertainty they most want to explore in more detail through scenarios. The most important factors of uncertainty form the basis for selecting scenario themes. They could be, for example, changes in markets and pricing or tenure policy .
- For each key uncertainty, it may be desirable to specify a further set of scenarios showing a range of possible values. These ranges would be selected based on assumptions or principles about which comparisons are important, especially in terms of risk. As an example, community members might feel it is important to compare scenarios showing the risk associated with logging by a neighboring concession. They could then look at a range of scenarios showing a range of possible impacts of logging.
- To stimulate creativity and overcome biases in choosing scenario themes try
  - Using extreme outcomes, not just predictable ones
  - Creating disruptions to historical trends
  - Selecting scenario themes that are distinct from one another, not ones that reflect a gradient such as high, medium and low values, or a positive and negative scenario
  - Including undesirable scenarios
  - Starting the construction of the scenario from an

imagined future, rather than by extrapolating from current trends.

- Choose a number of initial scenarios to generate (see below).
- Give each scenario a theme and label. These should reflect the uncertainty in question or the value of that uncertainty. One theme could be for example "Risks to the tagwa nut market". This could have three scenarios, with the labels "Price decline", "Increase in suppliers," and "New processing possibilities".
- Form small groups and assign each group a scenario theme.
- Ask participants in each group to select a target time in the future for which they expect the uncertainty to play out and have an impact (refer to 'Projection scenarios' and 'Getting ready' above).
- Ask each group to draw a picture of (or otherwise express) the present and future condition related to their scenario theme.
- Ask participants to describe the resources, actors, institutions, events and relations among them for their forest, village or lives in each picture (see 'Projection scenarios' above).
- Have participants **tell a story** to explain what happened (or happens) to make the transition from one picture to the other. During the telling of the story
  - Work with participants to identify slow changing, **predictable trends** affecting these elements. These can be recorded on a nearby flipchart and their interrelationships mapped (see Figure 1 above).
  - Assist participants to identify **uncertainties** such as natural calamities, land conversion, market fluctuations, the policy environment and actions of competing users of the forest. These can be recorded on a flipchart and prioritized.
  - Assist participants to identify potential major **drivers of change** such as the opening of a new market for forest products, the introduction of new harvesting technology, a new policy supporting customary forest land ownership or rural-to-urban migration. These may be recorded on a flipchart and prioritized.
- Work with participants to develop a way of expressing their story and highlighting the most important elements of the structure and processes.
- Have participants present their scenarios to the group and discuss the implications.
  - Ask people to elaborate on the elements of their story and their reasoning to ensure that everyone understands the basis for the scenario.
  - Analyze the elements and reasoning from the perspective of different interest groups.
  - Discuss which processes or relationships are most influential on outcomes and why.
  - Discuss what was unexpected or unpredictable and why.
  - Reflect upon what the scenario suggests should be done in the present. Which key processes or relationships need action? What is changeable and what is not?
  - Determine whether additional scenarios should be generated to explore new uncertainties and drivers of change.

Options

- You can alter the number of iterations to suit the needs of the group to explore new options. The analysis of a first round of scenarios commonly leads to the identification of new forces for change and new themes for scenario development. You might need several cycles before participants feel that they have explored sufficient possibilities.
- You can vary the number of scenarios to be compared. Three to nine scenarios at a time seem to be the easiest for people to compare. One scenario can be enough for simple exercises where the intent is to facilitate group communication. More scenarios are necessary where a decision must be tested for its robustness against many uncertainties. Two scenarios create a tendency for one to be the pessimistic and one the optimistic view. People may make judgments by taking a metaphorical average of the two scenarios.[15] Three scenarios—with one showing the surprise-free world and two showing critical uncertainties—can be a good number to start with for most situations.[16] The themes should be selected to reflect different uncertainties. If the themes are only different values of the same uncertainty, people tend to select the middle one as the most desirable scenario. For example, if people use scenarios to understand the implications of a rainy or dry year on their activities, and they examine three scenarios "wet", "average" and "dry", they are most likely to focus on the average conditions as the most likely case.
- You can repeat the scenarios. Try using a first iteration of coarse scenarios that address the widest possible range of options. These first scenarios are used to identify a smaller subset of scenarios that are constructed at a finer level of resolution.
- Scenarios can also be nested. Nesting has the advantage of addressing different scales. Scenarios can be nested, for example, at the scale of the user group, forest-level scenarios, regional economy or country.
- You can ask participants to start from only a picture of the present, or only the future.
- You can ask participants to tell their story from either the future backwards or the present forwards.
- Instead of recording trends, uncertainties and drivers of change during the telling of the story, you can ask participants to note their own observations about these elements quietly and then discuss them after the completion of the story.

Summary

Scenario-based methods share the common feature of helping us to learn about the future. At least four types of scenario approaches can be used. Each serves a different purpose. The vision scenario serves to elicit people's hopes and dreams. The projection scenario shows what people think are the consequences of their current situation. Pathway scenarios create comparisons of the present and a desired future to create strategies for change. Alternative scenarios show a range of possible change in the future to help people "frame" uncertainty. Depending on needs, one or a combination of these methods may be used.

By helping us see things in new ways, scenarios can be a basic and powerful tool for learning, particularly anticipatory or forward-looking learning. Scenarios help to overcome strong tendencies for people to believe that the future will repeat the patterns of the recent past, which can be a problem with monitoring-based learning. Where uncertainty and complexity exist, preparedness for the future will depend on the extent to which people can anticipate the unexpected.

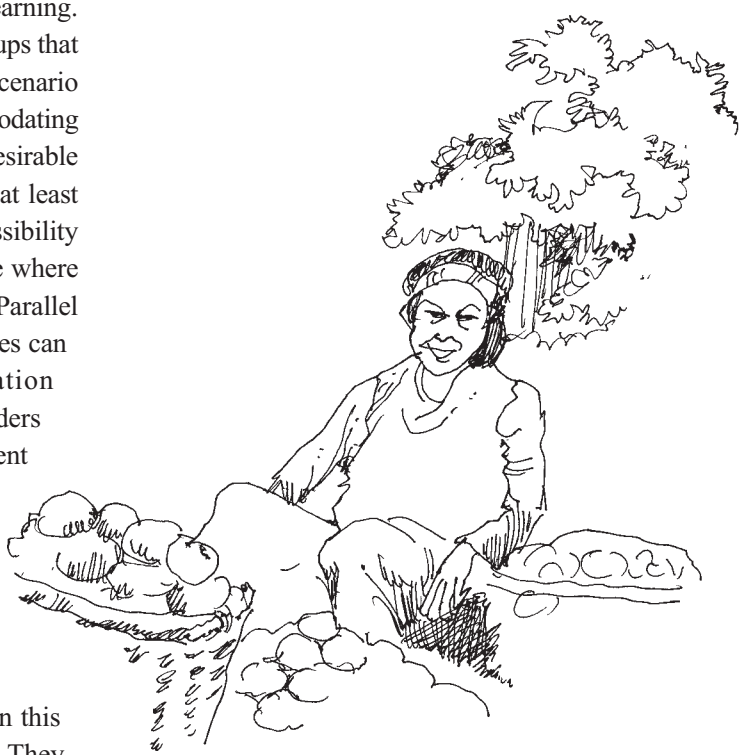
The ways in which scenarios are developed and used are as important to the learning process as the products of the scenarios. Learning occurs both by being involved in the construction of the scenario and, just as importantly, by discussing and exchanging views with others about the elements and implications of the scenarios. Modes of

exchanging ideas and expressing scenarios should help to awaken people's critical thinking and stimulate new insights.

Scenarios can also act as a springboard for building negotiated perceptions or working agreements among stakeholders of the values and assumptions underlying the management of their forests. Bringing out these values and assumptions highlights potential shared values and areas of conflict among stakeholders. Scenarios thus provide a form of expressing ideas that enables learning among social groups or social learning.

To achieve learning among the diverse groups that have a stake in community forest management, scenario methods need to give special attention to accommodating differences among these groups. It may not be desirable or cost effective to work with all stakeholders, at least initially. Communication differences and the possibility for unfair decision-making are likely to increase where powerful players are matched with weak ones. Parallel or sequential, rather than joint, scenario processes can be warranted where power or communication differences are extreme. Cooperative stakeholders may be ready to use scenarios to make management decisions, while more antagonistic stakeholders might use them as a medium for communicating interests. Ideally, scenarios highlight interdependencies among interest groups and can foster change towards more coordination, if not cooperation.

At their essence, the scenarios described in this guide are about seeing choices in a new light. They tap a natural human tendency to wonder about the future and tell stories about it. They enhance the ability of people to develop, describe and exchange their most imaginative thoughts about the future. They respond to basic human desires for surprise and security. The methods described here provide entry points to stimulate people's resourceful-ness to make choices in new ways. Depending on *your* own creativity, you can discover many more such paths to helping people "see" the future and expect the unexpected.



Endnotes

[1] Wack 1985b
[2] McLain and Lee 1996, Lee 1993
[3] Röling and Jiggins 1998, Maarleveld and Dangbégnon 1999
[4] Gochenour1993
[5] Bunn and Salo 1993, Schoemaker 1993, Becker 1983
[6] Bossel 1998, Fahey and Randall 1998, Stewart and Scott 1995, Bunn and Salo 1993, Schoemaker 1993, Deshler 1987, Huss and Honton 1987, Becker 1983
[7] Wack 1985b, p. 142
[8] See Colfer 1995, Grimble and Chan 1995 for ideas about characterizing different stakeholders
[9] Edmunds and Wollenberg, In press
[10] Anderson *et al*. 1999
[11] Tan-Kim-Yong 1992
[12] See Bocco and Toledo1997, Malafant and Fordham 1997
[13] Diaw *et al*., 1998
[14] Figure adapted from Shoemaker 1991, p. 553
[15] Wack 1985b
[16] Wack 1985b

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Scenario methods can be used to anticipate the future and expand the creativity of people thinking about complex forest management situations. This manual describes the use of scenarios with multiple stakeholders, with examples drawn from community-based forest management. Four classes of scenario methods are described: visions, projections, pathways and alternative scenarios. Examples of rapid participatory techniques relevant to scenario methods are also summarized. It is hoped that these methods will be useful for bringing together different groups of people concerned about forest management to exchange views, expand the realm of decision possibilities and reach more innovative solutions.

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