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The 'happy strategies' game: Matching land and water interventions with community and landscape needs

Nile BDC Technical Report–4

The ‘happy strategies’ game: Matching land and water interventions with community and landscape needs

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December 2012

Editing, design and layout—ILRI Editorial and Publishing Services, Addis Ababa, Ethiopia.

Citation: Pfeifer, C., Notenbaert, A. and Ballantyne P.G. 2012. *The 'happy strategies' game: Matching land and water interventions with community and landscape needs.* NBDC Technical Report 4. Nairobi, Kenya: ILRI.

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Introduction

Integrated water management is a relatively new concept that seeks to overcome the differentiation between rain-fed and irrigated land (Rockström et al., 2010). It looks at a whole range of water management practices related to crop, livestock and trees, and seeks to understand how these practices can be bundled within a watershed, also referred to as rainwater management strategies (RMS) at landscape scale.

Defining landscape specific RMS that improves livelihoods of smallholders by optimizing water retention or water productivity has thus become a multi-dimensional, unstructured and complex environmental problem (Bose and Bose, 1995) . Indeed, for each landscape there are many possible objectives, and as many possible rainwater management practices that can be combined into a strategy.

Stakeholder participation is often seen as a viable – and essential - approach to make decisions in these unstructured problems that must adapt to changing circumstances and embrace divers knowledge and values (Reed, 2008). Nonetheless, there are only a few methods to involve stakeholders into unstructured complex problem solving as part of a participatory process (Kolkman et al., 2005). New ways of involving stakeholders that capture the complexity of the problems to address are needed.

This paper presents the 'happy strategies' game that was developed for the Nile Basin Development Challenge (www.nilebdc.org) as a way to involve various stakeholders in identifying and matching 'best bet' RMS practices and interventions at different scales.

The main objective if the game[1] is to provide a tool for researchers and practitioners to start a dialogue on the complex issues of rainwater management. It uses cards that describe a broad range of rainwater management practices. These are traded allowing a team to form a strategy (bundle of practices) that fits a particular landscape. Optionally, teams can add 'interventions' (extension for example) necessary to deliver their strategy. The game has different elements that can be combined in different ways, depending on the type of participants and the specific objective of the exercise. Game materials are online at http://happystrategies.wikispaces.com

The game can be played with experts where the objective is to validate and improve the rainwater management practices knowledge base. It has proved to be particularly useful in stimulating discussion and debate among multi-disciplinary game players. It can also be played with communities and stakeholder platforms to start a dialogue about rainwater management in a particular landscape; it could be played with modelers or students to learn about decision-making problems on the ground.

[1] The game was inspired by the 'happy families' child's game in which individuals or teams have to collect set of similar cards related to one another.

Background

The happy strategies game was developed as part of the Nile Basin Development Challenge funded by the CGIAR Challenge Program on Water and Food. Initial versions of the game make heavy use of the landscapes, issues and concepts found in the Ethiopian Highlands.

Rainwater management strategies at landscape scale

In the Nile Basin Development Challenge, a rainwater management practice, hereafter referred to as a practice, is defined as anything done by a farmer or a rural community to increase water retention or water productivity within a watershed. This definition assumes that a farmer, her family, or a group of farmers decide to do something on their farm or land. As such it includes a broad range of practices such as water harvesting, soil and water conservation, livestock production, small scale irrigation, reforestation, agro-forestry or grassland management.

When implemented, many of these practices might increase the amount of water available within the watershed, enabling farmers and communities downstream to adopt new practices. Implementation may also lead to other unexpected changes, positive or negative. To take trade-offs and synergies within a watershed into account, single practices need to be combined and bundled into rainwater management strategies that maximize water retention or water productivity at a specific landscape scale.

In ecology, the landscape is a scale. In the context of water management, the landscape scale can be understood as a watershed, that comprises a top slope (upland), a middle slope (mid-land) and the bottom valley (lowland), as shown in Figure 1. From this perspective a landscape approach to rainwater management suggests that synergies occurred by combing practices within a watershed are assumed constant. Impact on downstream watersheds can be assessed by hydrological models.

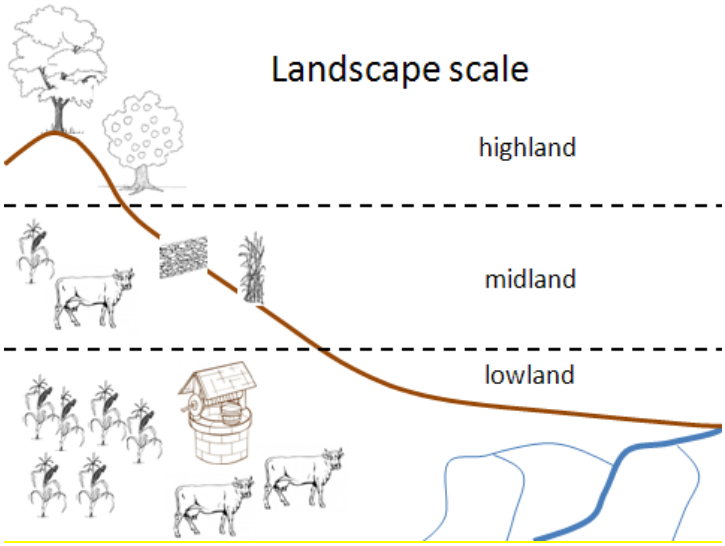


Figure 1: Conceptual landscape with three zones

We define a rainwater management strategy at landscape scale as bundles of practices that cover the whole gradient of the landscape (upland, mid-land, lowland) and maximize water retention or water productivity within the landscape (micro-watershed or sub-basin). To maximize water productivity and water retention within the landscape, a RMS needs to fulfill deferent objectives at different locations in the landscape. Table 1 illustrates the major objectives of a suitable RMS at a given location in the landscape.

Table 1: Objectives of practices in the different zones and land use

	Main objective (examples)		
Zone	Cropland	Grassland	Degraded land
Upland	Increase infiltration (all forms of forestry, percolation pits)	Increase the quantity and quality of fodder for livestock (over-sowing, enclosed grazing)	Rehabilitated degraded land (half moon, forestry)
Mid-land	Increase soil and water conservation (bunds, terraces, in situ water harvesting)		
Lowland	More efficient use of surface or shallow water (wells, rivers)		
Independent	Increase water availability in the dry season (Ex-situ water harvesting)		

In the uplands, the objective could be to increase water infiltration, mid-elevation land practices could aim to increase in-situ soil and water conservation. In the lowlands, the objective of a practice could be more efficient use of surface and shallow water. Ex-situ water harvesting techniques can be applied everywhere across the landscape where water can be collected and used for supplementary irrigation or for livestock.

Besides the practices that are closely related to farmers' decision making, interventions are defined in the game as anything done by a government, NGO or other actor to initiate or support a practice change. Note that these definitions differ from the ones used in environmental sciences where the word *intervention* refers to any practice that intervenes on the landscape structure.

Rainwater management practices

The game was designed to validate and build upon an initial database of existing and potential RMS practices in the Blue Nile Basin. Developed through literature review and expert knowledge acquired through stakeholder participation, for each practice the database provides information about the purposes of the practice as well as any bio-physical, socio-economic and institutional condition of success. For this database, RMS practices were defined very broadly to include traditional water-crop related practices, agroforestry and livestock oriented practices.

Bio-physical suitability conditions are relatively well defined in the literature (Desta et al., 2005). Socio-economic suitability is less well understood and sometimes contradictory (Amha, 2006; Deininger and Jin, 2006; Deressa et al., 2009; Hagos, 2010; Petros, 2010). These conditions have been validated in several expert meeting. When contradictory conditions were found, the one suggested by the experts was retained.

From this database, half the practices were used to develop the game. The selection of these practices was based on the potential impact, as well as their relevance in current policy and NGO work.

Basic elements of the game

The main task of the game is to bundle different practices into a strategy that fits the characteristics of a given landscape. The game consists of several support materials, and is implemented with several support persons. The game has several steps that are always the same. However the detailed rules of the game can be changed depending on the objective of the game and the prior knowledge of the players.

Support material

Conceptual landscape

The conceptual landscape description describes the conceptual approach presented above. It is presented to the participants as an introduction to water management, and aims to clarify the vocabulary used in the game.

Landscape descriptions

These describe the landscape for which a rainwater management strategy needs to be fitted. This description needs to cover the bio-physical characteristics, socio-economic and possibly the institutional context. Bio-physical characteristics can be presented with maps and the socio-economic context can be retrieved from national statistics. This information can be printed on paper and distributed to the participants. The description can be completed with stories from different point of view or from different stakeholders that are active in the landscape.

Practice cards

Practice cards, an example is shown in Figure 2, describe each selected practice from the database. Each illustrates the practice with a picture and as well as the hydrological, environmental and socio-economic purpose and the bio-physical, socio-economic and institutional context.

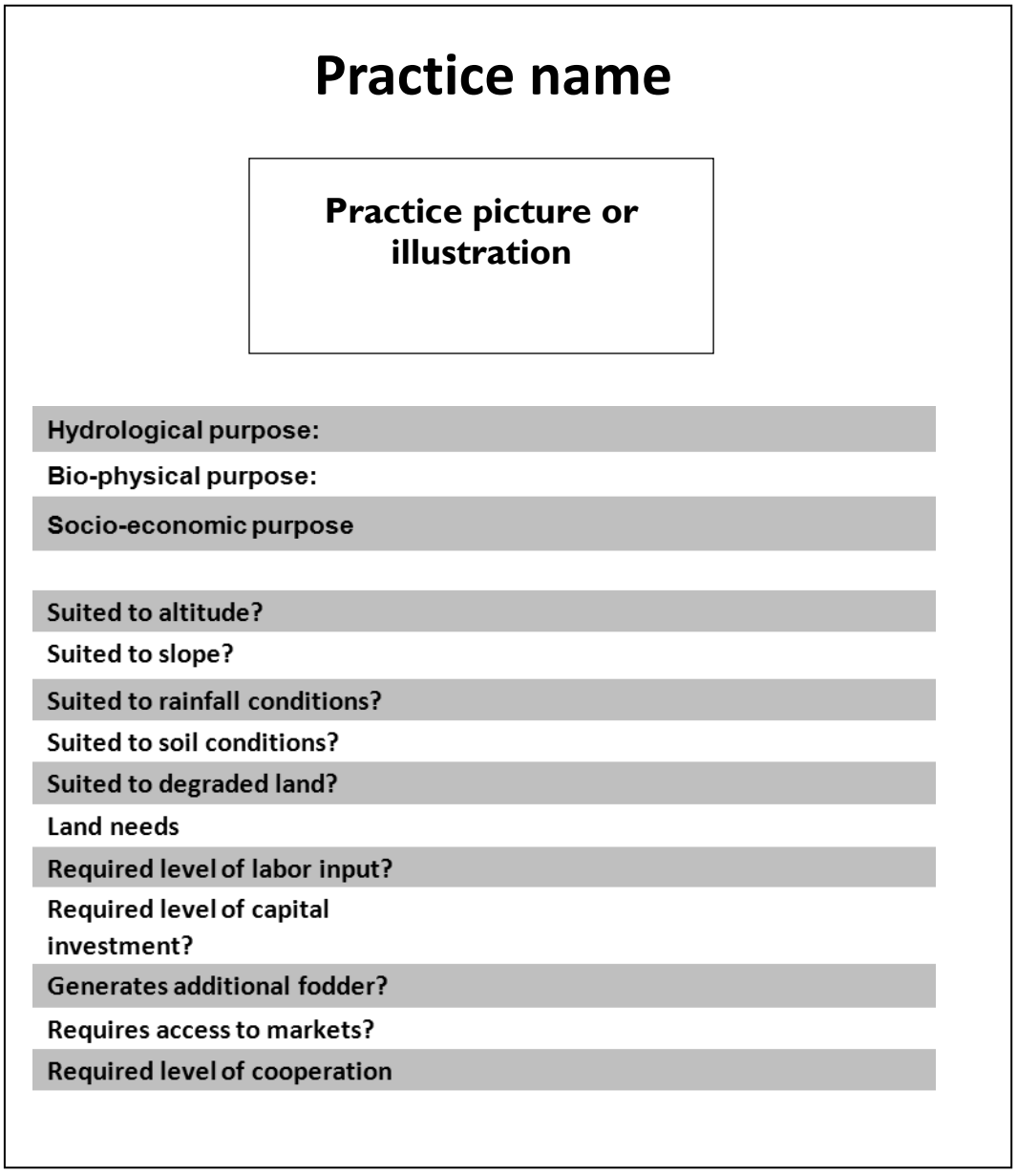


Figure 2: Standard practice card used to describe each practice

In the game, water management practices were classified into different categories, each with its own color. Soil and water conservation is yellow, agro-forestry is green, in-situ water harvesting is brown, ex-situ water harvesting is blue, water lifting is pink, livestock and grassland related practices are black and fertility management is turquoise.

Innovation cards

Innovation cards are blank practice cards that can be filled out by players as needed. It allows them to add new practices that are not yet part of the game.

Intervention cards

Interventions cards are blank forms that players can use to suggest interventions necessary to make their strategy successful, and why. Examples of interventions are improved extension services, better access to credit or supply chain development.

Support persons

- To play the game, several supporting person are needed.
- A facilitator introduces the game, its objectives and the rules and he or she makes sure that the landscapes are well presented and described.
- A landscape manager facilitates discussions for a group of players forming a team whose task is to formulate a strategy. The landscape manager:
    - Manages time and process
    - Reminds people of the instructions.
    - Helps people to reorganizing practice into strategies by suggesting to locate in each practice into the different landscape zones.
    - Facilitates the negotiation process.
    - Hands out intervention cards when necessary.
    - When the group agree on the strategy, guides the discussion towards interventions (what can other actors do to enable the strategy)

There should be between 7–12 people in each group facilitated by landscape manager.

A help desk is a sort of information center where players can ask for more information about each practice card. The help desk also holds all cards that are not yet used in the game. Depending on the specific rules, the help desk can exchange practice cards or give out new practice cards. The help desk also support players to fill innovation cards correctly.

Documenting the game

To learn from the game, different steps need to be documented.

Two main forms are used for this: The landscape manager form and the help desk form. As well as supporting the group work, landscape managers write down the initial set of practices at the beginning of the game, and the final set of practices - which represents the strategy. They also keep track of all innovation and intervention cards that are used, they track exchanges of practices with other landscapes, as well with the help desk and they keep track of synergies and trade off that emerge in the discussion. Typically, the end result is photographed and any presentations of the game results can be captured on video or text.

The help desk form is used to track the exchanges the help desk has been authorizing as well as the innovation cards that were filled out.

Flip charts are useful tools for the landscape manager to involve the players. It can for example be used to design the landscape and its 3 zones, and to locate or position practices within the landscape. The visual result of the game is often a useful discussion point.

At the end of the game, each group (or landscape) presents its final strategy and defends it. They have to explain the chosen objective for the landscape and how this objective is addressed by their strategy. The process of getting to the strategy, and trade-offs and assumptions made, are often important elements of the presentation – they also need to be documented.

Two fundamental variants of the game: the role of the participants

So far, the game has two fundamentally different variants, assigning different roles to the participants.

Variant 1 'players as practices': In this variant, each participant identifies with a practice of his or her own choice at the beginning of the game, and the player needs to find a landscape that 'adopts' him or her. In this variant, each landscape has as many practices as there are people in the team. In this process, the practice needs to fit the landscape characteristics as well as the practices represented by other players in the group. When this variant is played, the participants can decide to change landscape (when several landscapes are available) or try to trade cards (identities) at the help desk. Trading rules can be developed.

Variant 2 'teams as strategies': In this variant, each participant is part of a community or group that gets a set of random starting practices. As a team, they need to use their practices and any other resources to improve the livelihoods of the allocated landscape. Collectively, they decide which practices need to be exchanged, and for which new ones. In this variant, the number of practices for each landscape is independent of the number of participants in a team.

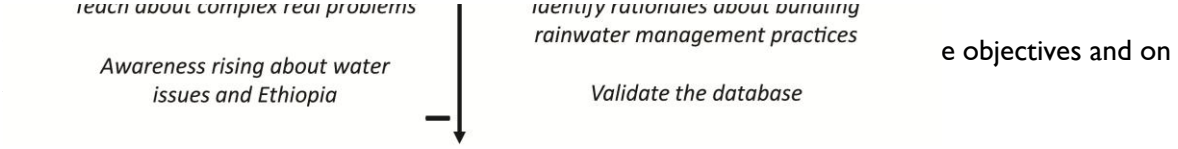
In our experience, variant 1 leads to a more dynamic game especially if there are many participants (more than 50 persons). It allows participants to identify with a practice, t take on the 'identity' of the practice. This allows some breaking down of hierarchical relationships that might influence relations among participants and helps to gives everyone an equal voice. Variant 2 is preferred when there are fewer participants (20-30); it ensures that enough cards are in circulation. Variant 1 is much more about trade-offs and individuals advocating for specific practices while variant 2 is more about collective behavior.

Nonetheless, the steps of the game remain similar and are the following.

	What	Who
1	Introduce the game, the objective and the general rule	Facilitator
2	Describe the landscape	Facilitator
3	Describe the specific rule	Facilitator
4	Introduce the " help desk" and the "landscape managers"	Facilitator
5	Send people to the "help desk" (variant 1) to select ones personal practice card or to the "landscape managers" (variant 2) that hand out the set of practice card for the group.	Facilitator
6	Ask people to amend or improve the card (depending on the objective of the game	Facilitator
7	Start discussing	Landscape manager
8	Hand out innovation and intervention cards when needed	Landscape manager
9	Perform exchange with other landscapes and help desk given the rules	Participant, help desk
10	Ends the discussions and proceeds toward reporting	Facilitator
11	Feedback from the different groups	Participants, landscape manager
112	Scoring	Depends on the rule

Adapting the game to the objectives and target groups

Different participants and different objectives



e objectives and on

Figure 3 shows the different objectives of the game depending on the prior knowledge of the participants. The two major axes are the knowledge about the specific local context and about specific landscapes as well as the knowledge about rainwater management.

When players have a high prior knowledge of the local landscape, the game allows them to make use of their knowledge to validate the database (in which case it is up to the facilitator to make sure there is space to amend the practice cards) and to develop context-specific strategies and identify the necessary interventions to enable the practice adoption. When the participants have less knowledge about integrated water management, the game can also be used to raise awareness about synergies between some practices at landscape scale. This understanding may lead to discussions of benefit-sharing mechanisms that can be taken up into a community discussion.

When participants have prior knowledge about integrated water management the game also allows the organizers to collect expert knowledge on synergies between different practices, both at farm and at landscape scale.

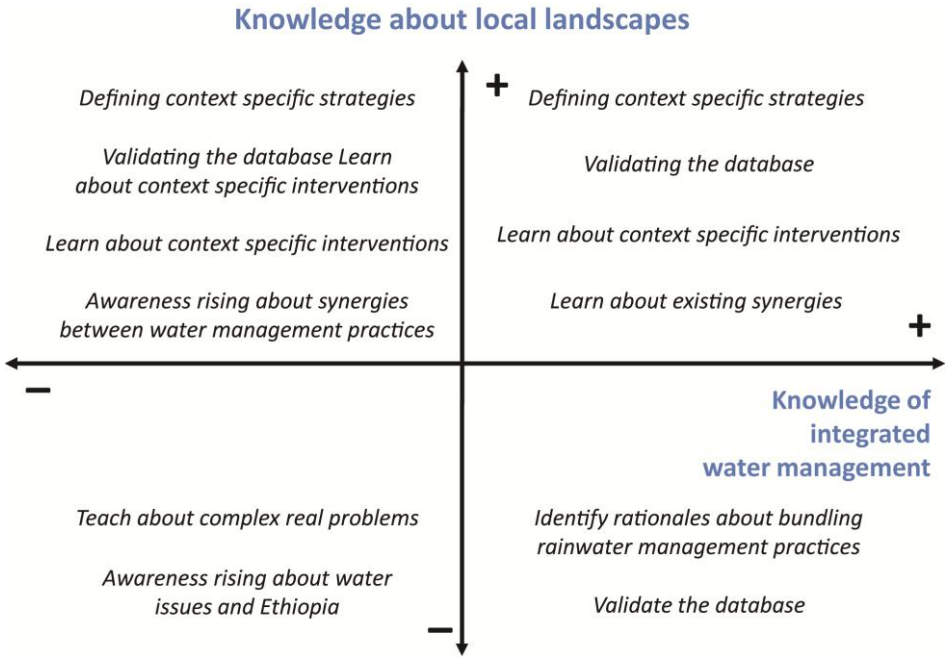


Figure 3: Different objectives given the prior knowledge of the participants

When participants have little knowledge about the local context and its landscapes, the game has different objectives. If the players have prior knowledge of integrated water management, then it allows the exercise to collect more theoretical knowledge to validate the database and to identify rationales about how to bundle rainwater management practices based on theoretical knowledge about synergies between practices.

If the participants do not have prior knowledge of integrated rainwater management strategies, the game is a teaching tool that allow participant to learn about a real complex problem, and raise awareness about water issues in the local context.

Different landscapes

The landscape descriptions can be based on real cases but can also be a 'virtual construct' combining features from different existing landscape. When participants have little knowledge about the local context, the 'constructed' landscape may work best. The landscape bio-physical characteristic can also be inspired by a real landscape, and the socio-economic characteristics can be stereotyped for any local area. In this way it makes it easier for participants to understand a simplified local context. If this version of the game is played, different strategies will be developed for the same landscapes, and can be compared among each other.

If participant however come from a specific area, or have a good prior knowledge of the area, the real landscape can be described with their real socio-economic and institutional context. When this option is chosen it makes sense to use the specific landscapes where the participants come from or know of. When this variant is chosen, different strategies for different landscapes are developed and can hardly be compared with each other. If the number of participants allows, two groups can be used for each landscape definition.

Differences in practice card selection

The currently available practice cards contain the most important practices that the NBDC has identified in the Blue Nile region of Ethiopia and covers about 45 practices. This list can easily be extended with other practices that are already in the database, or by adding practices suggested in previous games - from the innovation cards. This list should be a living document that should grow each time the game is played.

Nonetheless, it is important to select the initial set of cards. If participants have prior knowledge of the local context and the different practices, the proposed set of practice can be relatively large and include cards that might not fit the bio-physical context of any of the landscapes. This approach allows players to validate the database and stretch the discussions.

When participants have little knowledge about the local context and the different practices, it is better to reduce the initial set of practices and select only feasible ones.

When variant 2 of the game is chosen, each landscape team receives 10 cards. It is important that these are all different and cover all the categories (colours of the cards). In addition the set should contain at least two innovation cards and 5 intervention cards. In variant 1, the innovation and intervention cards are held by the landscape manager; he or she hands them out as requested.

Different trading rules

Trading rules can also be adapted. For example, players can be allowed to freely trade a card within the same category (color) at the help desk. Exchanging a card with a practice from a different color group may be made less easy, to maintain some dynamics in the game. Exchanging two cards for one new one is an option when there are many participants in each group (> 10 participant). Otherwise, a practice needs to be refused by at least 2 other landscapes before having the right to trade it in at the help desk.

To allow for a creative process, innovation and intervention cards should be unlimited for each group.

Differential emphasis on interventions

When the objective is to identify context-specific strategies, the landscape managers should be careful and emphasize the need to identify constraints of the strategy and define suitable interventions. When the objective of the game is to identify how to bundle strategies or to teach, interventions are less important as a focus.

Feedback and scoring choices

Each group needs to present its strategy to the rest of the teams. Sufficient time should be allocated to ensure that discussion between the different groups can take place. This is of particular importance when the objective of the game is to identify context specific landscape with specific stakeholders or a community. In this case, ranking the strategies is not important except as a way to introduce 'buzz' to the plenary discussions.

When the game is played as a teaching aid or to argue the rationales for different bundles of practices, then the feedback session can also use scoring to rank the different practices. If only one landscape definition has been used in the game, it is relatively easy, and the following criteria might be used: fitting the bio-physical characteristics, fitting the socio-economic characteristics, fitting the defined objectives, innovation, synergies and the suitability of interventions. A panel of experts could, for example, rank the different strategies. The various groups can also rank each other.

How we played the games

In the NBDC, the game has been played several times: first at the NBDC stakeholder workshop in October 2011 (see Figure 5), second, at the CPWF International Forum on Water and Food (IFWF) in November 2011; third it has been played with rural communities, and fourth it formed part of a training event for water practitioners

Figure 4 shows the various games we have played in relation to the objectives of the various games.

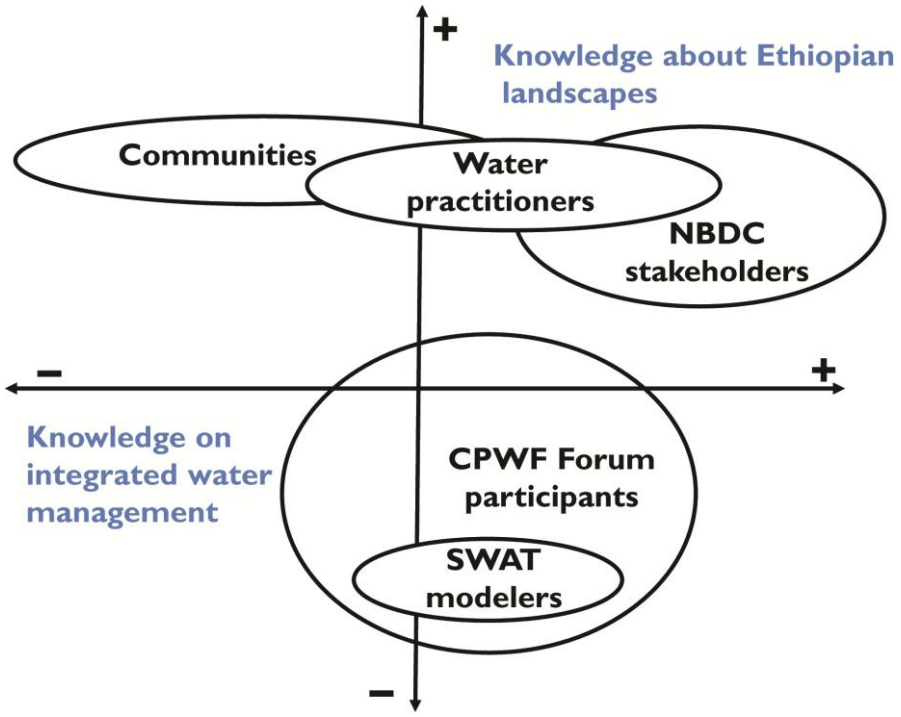


Figure 4. Matching participants and objectives in the NBDC context

The first game used variant 1. The players knew the local landscapes and the concept of integrated water management. The workshop involved close to 70 people and the objective was to validate and enlarge the database of practices and identify which practices might form synergies with others at landscape scale. It was also the first test of the game. In this game, we used 'real' data from the project sites.

The three project study sites were used as 3 different landscapes; we had two groups per landscape. Participants were asked to choose their practice and to correct and improve 'their' cards. They then joined the landscape of their choice, taking care there were enough people in each landscape.

The trading rules allowed a new practice to be obtained from the help desk in exchange for two existing ones – or to swap with any other landscape group. Two innovation cards and an unlimited amount of interventions cards were given to the landscape managers. We found the 'two for one' trading rule to be very limited for the smaller groups; so we used this for the larger groups only. In some cases, two innovation cards were not sufficient and the trading rule two for one was even more restraining.

We learned several lessons in this game. It allowed people to talk easily about multi-objective and multi-criteria problems. Participants could learn from each other. Some cards could be validated and improved for application in specific landscapes. We found that the quality of facilitation in the landscape teams strongly influenced the quality of the discussions and the subsequent strategy development. The concept of interventions was not always understood; consequently some innovation cards were used for interventions. Finally, one and a half hours was simply too short to also include reporting back from a large groups.

Figure 5: Participants discussing a 'happy strategy' at the October 2011 NBDC stakeholder workshop

The game at the IFWF brought together a broader range of scientists and stakeholders that work on water management from six river basins. Some participants came from the Nile, but most were from different areas and had very little knowledge of the local Ethiopian context. The objective was to present our database and the Ethiopian context to people from other regions. An additional objective was to learn from other regions about possible new practices. In this game, we used composite data from the three Ethiopian sites, creating a fictitious 'Jegerida' landscape.

In this game, variant 2 was played with a virtual landscape. In this form, the game was perceived much more as a discussion tool. In this version, innovation and intervention cards were hardly used, whereas the discussions clearly discussed these issues. Nonetheless, this version seems to work well with people that did not know the sites or the different rainwater management practices.

The game has also been played with and adapted for rural communities. Here, the objective of the game was to identify an optimal rainwater management strategy from the perspective of the farmers.

Significant adjustments for the rural community included: First, male and female farmers were separated in different groups and no exchange between the groups was foreseen. This was to overcome situations in which women will not express their opinions in the presence of men nor will have sufficient negotiation power to trade cards.

Second, instead of a landscape description, the group went through a participatory mapping exercise, aiming to produce a common understanding of locations within the watershed. The resulting map was subsequently used to place the practice cards were players thought they would be most needed.

Third, before playing the game, participants were asked about the practices they know of. Only cards corresponding to these practices were used in the game.

Fourth, variant 1 of the game was played with men who are used to making decisions for their fields; variant 2 was played with women, who have more difficulties in making choices. Finally, there was no help desk. Per discussion round, each farmer got one card. The game was played until all the cards that the farmers wanted to discuss were placed on the map.

The lessons learned from the communities were that these communities often have a good vision of what an optimal rainwater management strategy is for their watershed. They often know very well what would improve their livelihoods. Most of the time, there are rational explanations for non-adoption of rainwater management practices, such as lack of market access, lack of access to credit or lack of technical support. In addition, very unexpected practices came up, such as poultry farming.

Finally, the game played with water practitioners was similar to the NBDC stakeholder one, except that two virtual landscapes were developed: a dry landscape and a humid landscape inspired by existing watersheds. Rules were implemented very strictly in the beginning of the game, but facilitators and help desk adjusted the rules as they felt it would make the game more dynamic.

The lesson learned from this game was that it can be used as a tool to teach people about rainwater management. The setting of the game makes optimal use of the prior knowledge that participants have. The flexible game rules allowed the help desk manager to become an NGO that gave away practices he knew about, but which other participants ignored – reflecting the reality in which organizations ‘promote’ their preferred practices.

Conclusions

The happy strategies game allows groups of people of different backgrounds to start discussing multi-dimensional unstructured and complex environmental problems. It allows participants to learn and negotiate with each other and at the same time provide relevant information to scientists working on integrated rainwater management.

We found that the happy strategies game is very flexible and can be adjusted to many different situations with different participants. It has two fundamental variants, but almost every part of the game can be modified and adjusted to the particular objective and participants. From both rounds played, participants enjoyed playing the game and were very positive about it.

More information

A 'happy strategies tool box' is available at http://happystrategies.wikispaces.com. It contains:

1. Full set of cards, including innovation and intervention cards
2. Tracking forms
3. Landscape descriptions
   a. 3 NBDC study site description poster and a conceptual landscape
   b. Virtual landscape poster and PowerPoint description
4. Additional material
   a. Report from the game played at the NBDC workshop
   b. Report from the game played at CPWF forum

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ISBN 92–9146–308–6