Brief report on the “Happy Strategies Game”

Nile Basin Development Challenge Program Stakeholder Forum and Project Meetings

October 5-7 2011

Held at Amhara Region Agricultural Research Institute (ARARI), Bahir Dar, Ethiopia

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The "Happy Strategies" game

NBDC Stakeholder Forum and Project Meetings

October 6, 2011, ARARI, Bahir Dar, Ethiopia

1 Objective

The objective of this game is to identify a selection of practical strategies of Land and Water Management which could be applicable at a landscape level.

The game is a simple representation of current and future land practice options which could be implemented at a catchment scale. The game relies on players interacting to decide a best set of practices that together will form a strategy for that particular landscape. There is no absolute winner! This is very much work in progress.

At the NBDC Stakeholder Forum and Project Meeting, participants explored a 'happy strategies' game devised to help the Nile 3 project mix and match promising practices with the needs of specific watersheds/landscapes of the Project sites (Jeldu, Diga and Fogera) in mind.

2 The game

2.1 The different parts of the game

Practice card (34): present rainwater management practice with purpose and suitability conditions.

Innovation card: blank practice cards on which participants can describe practices that are not yet in the game.

Intervention card: blank color cards on which participants can describe interventions that would support/enable the implementation of the strategy.

Landscape poster (3 real landscapes and a dummy landscape): describes the site-specific characteristics.

The central practice bank: a committee of 3-4 knowledgeable people that lead the game that can advise participants and have the right to change or trade practice cards.

Landscape manager: a facilitator for each group that keeps track of the process.

2.2 Rules

First a conceptual landscape is presented as well as the concepts of practice (farmer's decision making to do something on his farm), intervention (farmer cannot directly influence, NGO, policy, education, market creation…) and strategy.

The three NBDC study sites were used as "landscapes" for which the strategy should be developed. The game was played with stakeholders present at the NBDC stakeholder forum, and who therefore know the area and the NBDC study sites. Therefore a short description of the poster was sufficient.

Then participants were asked to select a practice card and join a "landscape" where a "landscape manager" facilitates the discussions.

In a first round participants are asked to look at their card, if they disagree with the content they correct the card.

In a second round all practices gathered around a landscape will try to define a strategy, by trying to locate practices along the slope of the landscape and form synergies. The resulting strategy should:

- *Consist of practices that match the landscape (i.e. the suitability conditions are met)*
- *Have practices in all sections of the landscape*
- *Have an overall positive impact on the landscape (in terms of productivity, livelihoods, sustainability, …)*

In order to form a coherent strategy, cards can be exchanged at the help desk:

- *An innovation card can be exchanged into an existing practice card or filled in at the central practice bank*
- *two practices can be exchanged into a new one at the central practice bank*
- *a card can be exchanged with or donated to other landscapes*
- *cards can always be handed in at the central practice bank*

The help desk keeps track of the exchanges and helps to fill out the innovation cards.

When participants don't talk about practices but about interventions, the landscape manager hands out intervention cards.

3 The developed strategies for Diga

3.1 Site description

Location: East Wellega Zone, Oromia regional state 1,140 – 2,342 masl

Population: 68,910 (Average 7 head/HH)

Agro-ecological zones: Lowlands (60%) and midlands (40%)

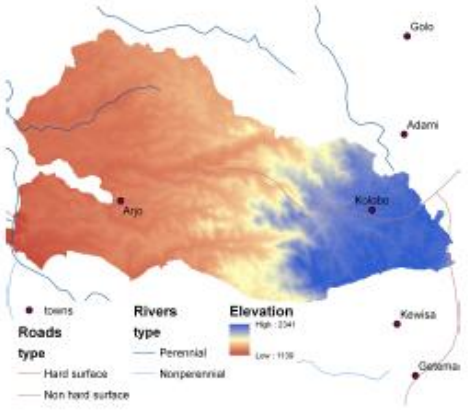
Crops (midlands): Teff, Millet, Maize

Crops (lowland): Maize, Sorghum, Sesame

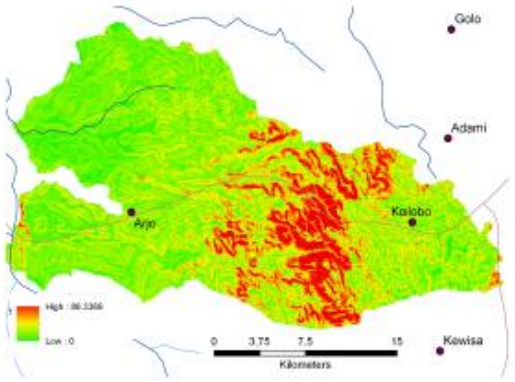
Farming system: Mixed crop-livestock system practices

Diga

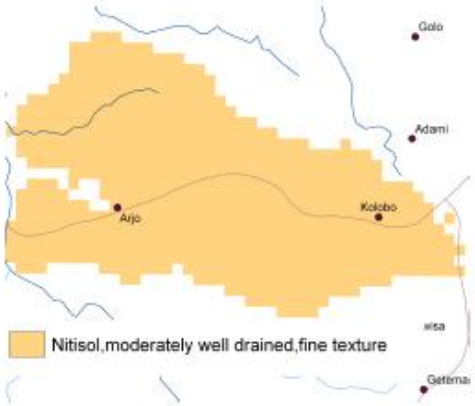
Altitude



Slope



Soil



Slope		0-86	Needed land	% holding less than 1 ha	51%
Elevation		1100-2540		Rented land	7.20%
Rainfall	Average annual	1.55	Labor input	Average household size	5.4
	Coefficient of variation	92.2		Population density	183
Soil	Mod.-good drainage, fine texture	Nitisol	Capital investment	Pop. below poverty line	73%
				Access to credit	26%
			Fodder	Livestock intensity	51 (low)
			Market	Average time to market	6
Land degradation	% of land subject to erosion	13%	Cooperation	Level	medium

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3.2 Group 1

3.2.1 Final strategy:

- Biophysical SWC (Soil Water Conservation)
- Cut-off drains
- Conservation tillage
- Biological fertility
- Agro-forestry (innovation)
- Grass strips
- Cropping pattern (innovation)
- Flood diversion
- Water saving irrigation
- Pond
- Diesel pump

Photo credit: ILRI/Apollo Habtamu

3.2.2 Interventions:

- Selecting then presenting options and exploring participatory approaches to involve community

3.2.3 Initial cards:

- Conservation tillage
- Grass strips x 2
- Flood diversion
- Pond
- Diesel pump
- Biological fertility management

3.2.4 Discussions (trade-offs/synergies):

Happy Strategies game - Group discussion with An Notenbaert

Photo credit: ILRI/Apollo Habtamu

3.3 Group 2

3.3.1 The final strategy:

- Animal movement/conservation tillage
- Dairy cattle (innovation)
- Roof water harvesting
- Mango tree (innovation)
- Micro-basin
- Biological fertility management
- Diversion
- Diesel pumps

Photo credit: ILRI/Apollo Habtamu

3.3.2 Interventions:

- Veterinary service
- Value chain for mango
- Dairy cattle
- Access to credit
- Pump maintenance
- Water User Association
- Stakeholder integration

3.3.3 Initial cards:

- Diesel pump 2x
- Herringbone
- Micro basin
- Diversion
- Conservation tillage
- Roof harvesting 2x
- Limiting animal movement

3.3.4 Discussions (trade-offs/synergies):

- Diesel pump could be made available for a group of people and not on an individual base.
- Conservation tillage and limiting animal movement should be implemented simultaneously at farm scale
- Roof water harvesting is useful along the whole slope and in some case could be used with the pump
- mango trees are a good innovation in agro-forestry
- Herringbone / Pump → Soil fertility
    - Soil fertility = Liming
- Livestock fattening could be a potential for productivity increase. Also the milk demand is increasing in the nearby cities. Therefore, orient the farming system in this area to more intensive livestock could be an opportunity to lift farmers out of poverty. This would imply new cattle breeds (innovation).

Happy Strategies game - Group discussion with Catherine Pfeifer
Photo credit: ILRI/Apollo Habtamu

3.4 Swaps & Innovation for Diga at the help desk:

- Diesel pumps & Herringbones exchanged by Biological fertility management (Legume inter cropping/ crop rotation)
- Mango trees
- Biophysical conservation
- Dairy cattle breed
- Agro-forestry
- Cropping pattern
- Crop-livestock mixed system

3.5 Diga strategies discussion

From both groups emerges that practice for Diga should include agro-forestry (including mango) and whatever fertility management practices (biological fertility management, conservation agriculture, cropping patterns…). Also both strategies contain river diversion, and

pumps. However the two groups differ in their livestock orientation. Group 1 mainly focuses on crop, whereas group 2 suggests intensifying the livestock product in order to meet an emerging milk demand.

In terms of interventions, both groups came up with more stakeholder participation and integration. The second group also focused a lot on the needs connected with an intensified livestock system, namely the access to the new cow breeds and veterinary services.

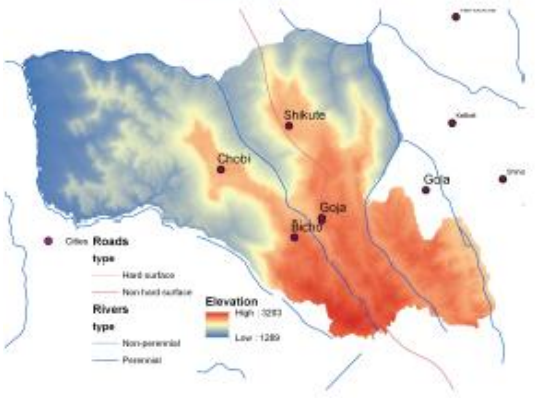
4 The developed strategies for Jeldu

4.1 Site description

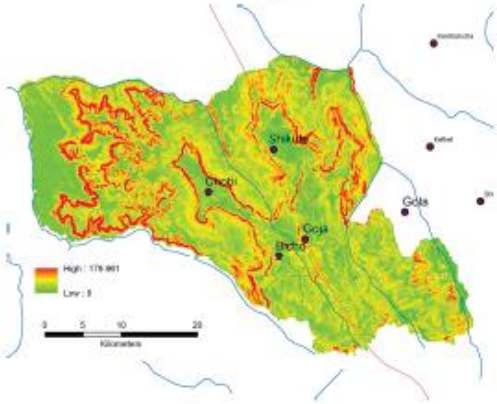
Location: West Shoa Zone, Oromia Regional State 1,325-3,200 masl
Population: 202,655 (Average 7 head/HH)
Agro-ecological zones: Highland (45%), Midland (30%), Lowland (25%)
Crops (Highland): Barley, Wheat, Potato
Crops (Midland): Wheat, Barley, Teff
Crops (Lowland): Sorghum, Maize, Teff
Farming system: Mixed crop-livestock system practices

Jeldu

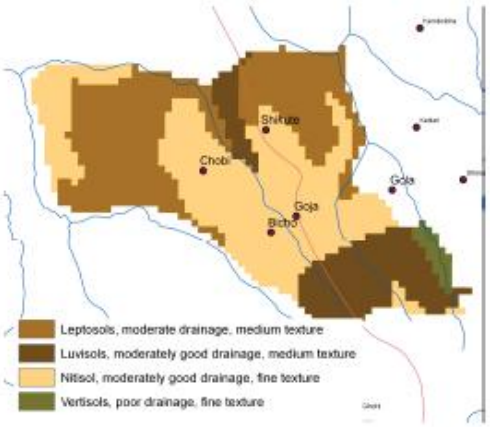
Altitude



Slope



Soil



Slope		0-170%	Needed land	% holding less than 1ha	43%
Elevation		1200-3200		Rented land	6.4%
Rainfall	Average annual	1.09	Labor input	Average household size	5.5
	Coefficient of variation	78.7		Population density	150
Soil	Moderate drainage, fine texture	Leptosol	Capital investment	Pop. below poverty line	70%
	Mod.-good drainage, medium	Luvisol		Access to credit	31%
	Mod.-good drainage, fine texture	Nitisols	Fodder	Livestock intensity	115 (high)
	Poor drainage, fine texture	Vertisols	Market	Average time to market	8 hours
Land degradation	% of land subject to erosion	50%	Cooperation	Level	medium

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4.2 Group 1

4.2.1 Strategy:

- Hill side terraces/ Large half moon/ Micro-dam construction/ Diversion
- Integrated soil fertility management/ Grazing land management
- Grass strip along contours/ Limiting animal movement
- Post harvest commodity storage (Potatoes)/ Marketing (innovation)

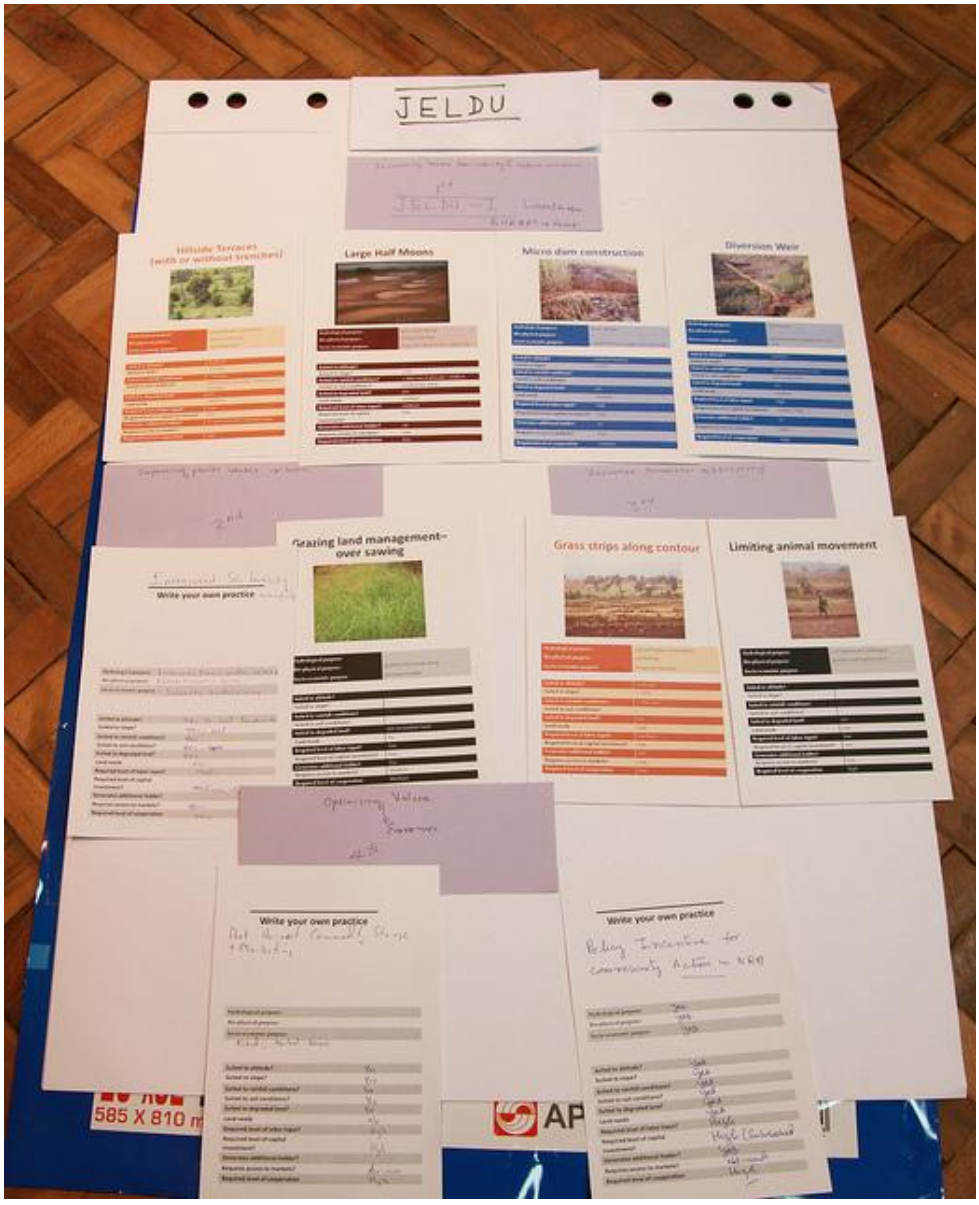


Photo credit: ILRI/Apollo Habtamu

4.2.2 Initial cards:

- Hill side terraces with trenches
- Cut off drain water ways
- Large half moons
- Diesel pump
- Grazing land management over sowing
- Micro-dams

4.2.3 Discussion

- Increase water availability + reduce erosion
- Improving plant water uptake
- Increasing conversion efficiency
- Optimizing economic value (New)
- Policy incentives for community NRM.

4.3 Group 2

4.3.1 Strategy:

Highland:

- Mixed tree cover (innovation)
- Biological fertility management

Midland:

- Check dams
- Hillside terrace
- Micro-basins

Lowland:

- Treadle pump
- Cut-off drains
- Sand dams
- Grazing land management

Photo credit: ILRI/Apollo Habtamu

4.3.2 Interventions:

- Intervention approached and accepted
- Interventions we need money + labor to install terraces
- Money (Treadle pump)
- Access to credit

4.3.3 Initial cards

Not tracked

4.3.4 Discussions (trade-offs/synergies):

Group discussion about hill slope what interaction where and what impact:

No.	Practice	Landscape	Impact (Bio-physical)	Impact (Socio-economic)
1	Grazing management	Highland	Reduces erosion, Water quality parameter	Sustainable food + income
2	Biological soil fertility	Highland	Soil fertility Income yield	Diversification of crops
3	Establishing trees	Highland	Soil erosion context Increased infiltration, Carbon sequestration	Income generation
4	Check dams	Midland	Soil and water conservation	High maintenance cost
5	Micro-basins questioning appropriate	Midland	Soil moisture	
6	Hillside terrace	Midland	Soil and water conservation Monitor soil productivity	High cost and labour
7	Treadle pump	Lowland	Water management	Increased production in the dry season
8	Cut-off drains	Midland-Highland	Soil and water conservation	Productivity
9	Sand dams	Lowland	Water consumption	Water-irrigation Supply-drinking

- Productivity
- Livelihoods
- Sustainable
- High stocking
- High % below poverty
- Nothing about crops

- Zero-grazing coupled with planting trees
- Agreed & discussed establishing trees
- What of seasonal tenure?

- **Happy Strategies game - Group feedback with Simon Langan**
- Photo credit: ILRI/Apollo Habtamu

4.4 Swaps & Innovation for Jeldu at the help desk

- Biological fertility exchanged by innovation card (access to credit)
- Cut off drains exchanged by diversion weir
- Post harvest commodity storage and marketing (New)
- Soil fertility management (New)
- Policy & institutional interventions (New)

4.5 Jeldu strategy discussion

For the Jeldu site, the two groups developed very different strategies. Group 1 developed 4 strategies, that shows which of practices should be implemented simultaneously. However no discussion is available about how the 4 developed strategies influence each others. Also the forth strategy, which is now an innovation could in fact be considered as interventions.

Group 2 developed an extensive strategy that covers the whole gradient of the slope. It consists of fertility management and agro-forestry, which should consist of mixed forest cover (innovation) in the highlands, of erosion control in the midlands, and water storage and lifting technologies in the lowland.

In terms of interventions came out mainly access to credit and cash as well as a labor mobilization mechanism.

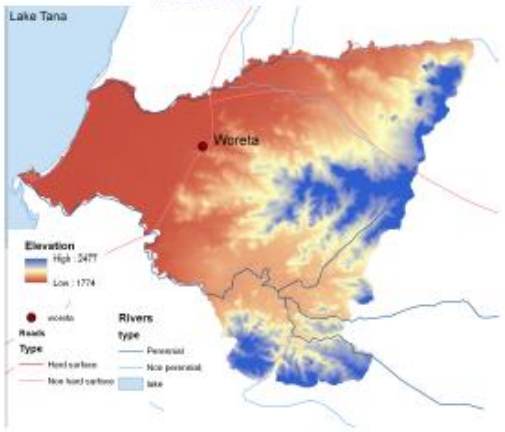
5 The developed strategies for Fogera

5.1 Site description

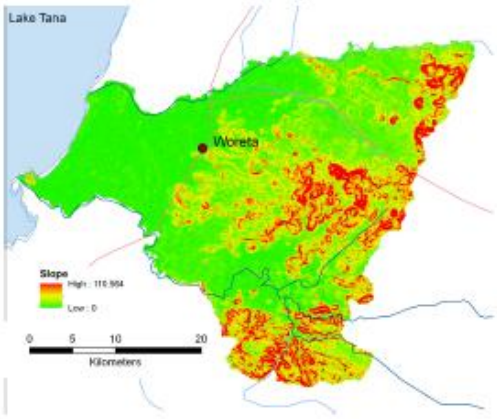
Location: South Gondar Zone, Amhara Regional State 1,774-2,400 masl
Population: 207,120 (Average 8 head/HH)
Agro-ecological zones: Highland (25%), Midland/Plain (75%)
Crops (Highland): Barley, Niger seed, Wheat
Crops (Midland): Rice, Maize, Millet, Teff
Farming system: Mixed crop-livestock system practices

Fogera

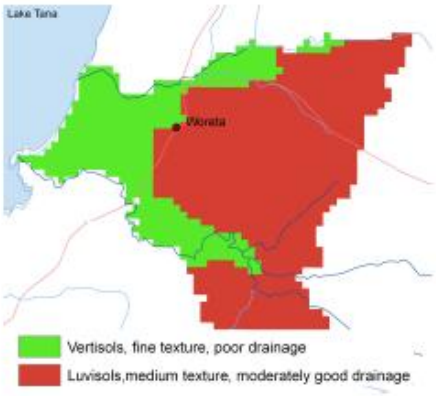
Altitude



Slope



Soil



Slope		0-100	Needed land	% holding less than 1 ha	39%
Elevation		1770-2500		Rented land	16.90%
Rainfall	Average annual	1.11	Labor input	Average household size	4.6
	Coefficient of variation	58.3		Population density	224
Soil	Poor drainage, fine texture	Vertisol	Capital investment	Pop. below poverty line	74%
	Mod.-good drainage, med.	Luvisol		Access to credit	15%
			Fodder	Livestock intensity	91 (medium)
			Market	Average time to market	4
Land degradation	% of land subject to erosion	18%	Cooperation	Level	high

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5.2 Group 1

5.2.1 Strategy:

- Fanya juu
- Hillside terraces
- Grass strips along contours
- Limiting animal grazing
- Diesel pump
- Treadle pump, Hand dug wells
- Check dam, Afforestation
- Scattered trees on farmland (innovation)

Photo credit: ILRI/Apollo Habtamu

5.2.2 Interventions:

- Advice on- soil fertility management, fertilizer application
- Improved agricultural extension services
- Policies on land use, free grazing, population
- Value chain linkages (e.g. Cooperatives)
- Organization of institutional set up among farmers
- Diversification of crops , introduction of different variety
- Grass strips Fanya juu for middle and upland to stop degradation & downstream flooding
- Hillside terraces
- Limiting animal movement: all zones

5.2.3 Initial cards:

- Hand dug wells
- Treadle pump
- Level Fanya juu
- Hillside terraces
- Limiting animal movement
- Grass strips along contour: middle zone
- Check dam
- Zai pits

5.2.4 Discussions (trade-offs/synergies):

- Check dams along with fanya juu, terraces, grass strips etc.
- Stop gullying
- Fogera plain: treadle & diesel pump (river)
- Hand dug wells (flat areas)
- Need drainage on plains (lowland): not enough cards
- Highland crops, much degradation, hillside terrace, forestry → leading to flooding in lowland

5.3 Group 2:

5.3.1 Strategy:

- Upland: Terraces with tree planting (innovation)
- Midland: Checkdams, Grass strips along contours, Pond, Micro-dam and Terraces tree planting
- Lowland: Hand-dug wells, Diversion weir, Diesel pump, Treadle pump, Fertility management (innovation), Grazing land management over sowing

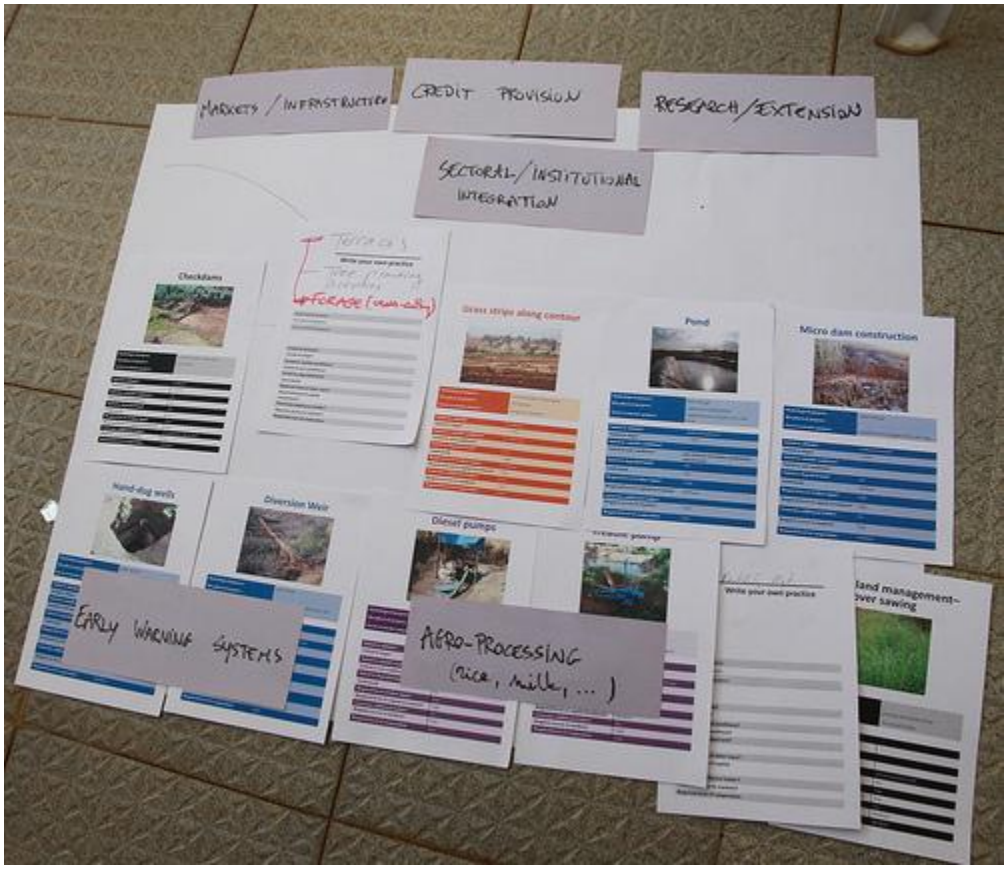

Photo credit: ILRI/Apollo Habtamu

5.3.2 Interventions:

- Cross cutting: Markets/infrastructure, Credit provision, Research/extension, Sectoral & institutional integration
- Focused in lowlands: Early warning system, Agro-processing (rice, milk)

5.3.3 Initial cards:

- Grazing land management over sawing: free grazing pattern
- Grass strips along contour: erosion control, feed for livestock
- Hand dug wells: cash crops
- Treadle pump
- Zai & planting pit
- Micro-dam construction
- Diesel pump: irrigation
- Diversion weir
- Pond: irrigation/vegetables
- Family drip irrigation

5.3.4 Discussions (trade-offs/synergies):

Photo credit: ILRI/Apollo Habtamu

- Need to start with problems i.e. floods no need for technologies to conserve water
- Be clear about boundary of “landscape”

- Quality of the technologies
- What are the synergies amongst practices with + “interventions”
- Needs a manager that can take decision against rules (rules need to be implemented according to the spirit

5.4 Swaps & Innovation for Fogera at the help desk:

- Zai & planting system + Pond exchanged by innovation (forestry)
- Zai & planting system + Family drip irrigation exchanged by innovation (fertility management)
- Innovation (New)

5.5 Fogera strategy discussion

For Fogera, both groups came up with relatively similar strategies, both focusing on trees, one with scattered trees in the fields the other with trees combined with terraces. Both also look at grazing land and livestock fodder management. The second group focuses a bit more on soil fertility management.

In terms of interventions, market and value chains, as well as improved extension service comes out in the two groups.

6 Lesson learnt

6.1 From developed strategies

For each landscape, two different strategies have been developed. Table 1 shows the selected practices and the landscape which they have been selected for. The most selected practices are the terraces, river diversion, limiting animal movement, grass strips, diesel pump and trees in the fields. Because these practice come up in different landscape, they could be interesting practices to scale out.

Table 1 : practices part of the final strategies per landscape and in total

Practice	Diga	Jeldu	Fogera	*Total*
Biophysical Soil Water Conservation	1			*1*
Hill side terraces		1	2	*3*
Fanya juu			1	*1*
Soil and water conservation	*1*	*1*	*3*	*5*
Biological fertility management	2			*2*
Integrated soil fertility management		1		*1*
Conservation tillage	2			*2*
Cropping pattern (innovation)	1			*1*
Fertility management	*5*	*1*		*6*
Flood diversion	1			*1*
Cut-off drains	1			*1*
Diversion	1	1	2	*4*
Diversions	3	1	2	*6*
Pond	1			*1*
Roof water harvesting	1			*1*
Hand dug wells			1	*1*
Water harvesting	2		1	*3*
Check dam			1	*1*
Micro-basin	1			*1*
Large half moon		1		*1*
Micro-dam construction		1		*1*
Degraded land rehabilitation practices	1	2	1	*4*

Limiting animal movement (grazing)	1	1	1	*3*
Dairy cattle (innovation)	1			*1*
Grazing land management		1		*1*
Grass strip along contours	1	1	1	*3*
Post harvest commodity storage (innovation)		1		*1*
Livestock oriented practices	*3*	*3*	*2*	*8*
Diesel pump	2		1	*3*
Treadle pump			1	*1*
Water saving irrigation (drip)	1			*1*
Water lifting	3		2	*5*
Afforestation			1	*1*
Scattered trees on farmland (innovation)	1		2	*3*
Mango tree (innovation)	1			*1*
Agro-forestry	*2*		*3*	*5*

Though the combination of practices differed in each landscape, the objectives of the combinations were relatively similar. Most important seem to be fertility management, water harvesting and livestock oriented practices.

In Diga, agro-forestry oriented towards fruit or fuel, soil and water conservation and small scale irrigation (diversion/pumps) are combined. Interventions are related to emerging market opportunities mainly for fruit, dairy and meat.

In Jeldu, the focus is more on fertility management and soil and water conservation. It includes moving away from Eucalyptus towards a more diverse land cover. Interestingly, in Jeldu no agro-forestry oriented practice were proposed; despite of all the Eucalyptus planting that takes place in this site.

In Fogera, the practices aim at improving the tree cover, manage grassland and fodder access better, as well as soil and water conservation/ storage. Interventions are market related in optimizing the existing supply chains. For this site, no fertility management practice was introduced into the strategy. This could suggest that fertility is not such an issue or already well managed.

In all three landscape, the strategy contained practices about crop land, grazing land and livestock, about improved access to water during the dry season, and fertility management and rehabilitation of degraded land. Also, strategies tend to increase infiltrations in the uplands, soil and water conservation in the midlands as well as more efficient use and access to water in the lowlands.

On a broader scale a strategy could consist of a combination of practices that combines practices from the 5 following categories:

	Cropland	Grazing land	Degraded land
Upland	Increase infiltration	Increase fodder quantity and quality	Rehabilitated degraded land
Midland	Increase soil and water conservation		
lowland	Increase water access and efficient use		

In terms of interventions the use of participatory approaches, access to credit and improving the value chain have been suggested mostly as shown in Table 2. Also agro-processing has been suggested twice. Interestingly improving extension service has come up only once.

Table 2 : summary from the interventions in the different sites

Interventions	Diga	Jeldu	Fogera	*Total*
Participatory approaches	2	1		*3*
Veterinary service	1			*1*
Value chain	1	1	1	*3*
Dairy cattle	*1*			*1*
Access to credit	1	1	1	*3*
Pump maintenance	1			*1*
Water User Association	1			*1*
Community incentives		1		*1*
Research/extension			1	*1*
Early warning system			1	*1*
Agro-processing		1	1	*2*

Note that the differentiation between practice and intervention has not always been clear to the participants. The summary into practice and intervention is based on the authors understanding and not on the group results.

6.2 From the game itself

Several positive aspects of the game could be identified. It allowed people to talk easily about multi objective multi criteria problems. Participants could learn from each other. Also some cards could be validated.

Also some lessons could be learnt. The quality of the facilitation at the landscape really matters for the quality of the discussions and strategy development. The concept of interventions was not always understood by the facilitator consequently some innovation cards were used for interventions. Finally, one and a half hour is simply too short for reporting back.

For future improvements, there is a need for a clearer landscape definition. Furthermore, participants often talked about combination of practice based on bio-physical characteristics and not too much in terms of synergies.

7 Conclusion

The happy strategy game is a great tool that allows participants to engage easily in a discussion on complex issues that aim at optimizing multi-objective and multi-input problems.
In addition, this exercise has shown that the objectives behind the strategies are relatively similar and can be used to define strategies at landscape scale.

The “Happy Strategies” game will be played in a different format for the 3rd International Forum on Water and Food to be held in Tshwane, South Africa on November 14-17, 2011. During this forum it will include more livestock oriented practices and the participants will play with a "fairy tail" landscape and a smaller set of cards.