

A Community Assessment of Climate Change Innovations In Chololo Ecovillage

This report summarises the outcomes of a community workshop held in Chololo on 2 August 2013.

The purpose of the workshop was to assess the effectiveness, gender friendliness, and affordability of the 25 innovations introduced by the Chololo Ecovillage project, so as to be able to prioritise innovations for scaling up. The workshop used participatory methods, particularly community matrix ranking, to assess the innovations. Participation increased as the day went on – from 39 up to 55 participants, around 60% female. The process grouped the innovations into four main headings: Agriculture, Livestock, Natural Resources, and Water.

1 Agriculture

1.1 CROPS

Participants listed the crops they grew, in order of importance

Importance	Crop
1	Pearl Millet
2	Sorghum
3	Groundnut
4	Cowpea
5	Pigeon pea
6	Maize

1.2 YIELDS

Participants reported average yields per acre for key crops this year.

Importance	Crop	Lowest Yield 2013 (bags/acre)	Average yield 2013 (bags/acre)	Lowest Yield 2013 (Kg/acre)	Average yield 2013 (Kg/acre)
1	Pearl Millet	1.5	3-3.5	150-165	300-385
2	Sorghum	2	3-4	200-220	300-440
3	Groundnut	0.3-1	4-7	???	???

1.3 TAKE-UP OF AGRICULTURE INNOVATIONS

Participants (39) reported their take-up of the main agricultural innovations

Agriculture Innovations	Take up (age)
Good Agricultural Practices	100%
Ox-tillage implements: ox-plough, Magoye ripper, ox ridger	100%
Intercropping	100%
Farmyard manure	95%
Soil moisture conservation measures (e.g. contours, fanya juu)	40%
Community seed production	15%
Chololo pits	3%

Conclusions on take-up of agriculture innovations:

From these results we see that the most popular agricultural innovations taken up are:

- Good Agricultural Practices,
- Ox-tillage implements,
- Intercropping, and
- Farmyard manure

The soil moisture conservation measures have less take-up, possibly due to the limited availability of hands-on training resources in this area. Community seed production take-up figures reflect the small numbers of farmers who were involved in this highly specialised activity.

1.4 Innovation assessment methods

a) Effectiveness: Participants were first asked to indicate the effectiveness of each of the innovations, by each ticking the 4 most effective, using different colour marker pens for men and women.

b) Women's benefit: Female participants (only) were then asked to vote by show of hands on whether each innovation benefitted women, and state why each were of benefit.

c) Affordability: Participants were asked to indicate whether they would take up each of the innovations: not at all, only if free, only with a loan, or with their own money.

Innovations (Agriculture)	Effectiveness			Does it benefit women?	Why do women benefit?
	Total	Male	Female		
Improved seeds	77%	14	16	100%	"When there is food there is peace"
Ox-tillage implements	77%	13	17	70%	Labour-saving
Soil moisture conservation	72%	7	11	46%	Plants can stay longer
Farm yard manure	62%	10	14	70%	Higher yield

Intercropping	41%	6	10	100%	“We get all the crops”
Good Agriculture Practices	27%*	6	4	97%	More yield
Community seed production	5%	1	1	-	-
Chololo pits	3%	1	-	-	-

* Possibly an anomaly due to misunderstanding of the scope of GAP when the question was being asked. See take-up table above.

1.5 Conclusions on effectiveness and gender friendliness of agriculture innovations:

From the table above we see that the most effective innovations are

- Improved seeds
- Ox-tillage implements
- Soil moisture conservation
- Farmyard manure

While the most beneficial to women are identified as:

- Improved seeds
- Intercropping
- Good Agriculture Practices
- Ox-tillage implements
- Farmyard manure

Innovations (Agriculture)	Affordability			
	Don't want to buy	Only if free	Only with a loan	With their own money
Farm yard manure	0	0	0	100%
Intercropping	0	0	0	100%
Good Agricultural Practices	0	0	0	100%
Ox-tillage implements	1	0	54%	86%
Improved seeds	1	0	44%	82%
Soil moisture conservation measures	1	0	0	82%
Chololo pits	-	-	-	-
Community seed production	-	-	-	-

1.6 Conclusions on affordability of agriculture innovations:

It is clear that the following are readily affordable to farmers:

- Farmyard manure
- Intercropping
- Good Agriculture Practices

While the following may require loans or subsidy to ensure take-up:

- Ox-tillage implements
- Improved seeds

1.7 Food security

Participants predicted how long their harvest would last this year.

Harvest	Predicted food availability limit	Number of participants	Months of food availability	Months of hunger
April	May	1	11	1
April	October	6	6	6
April	December	7	8	4
April	January	6	9	3

These figures show that the period of food deficit is expected to vary from 1 month to 6 months, while the average period of food deficit this year will last 4.7 months.

2. Livestock Innovations

Innovation (Livestock)	Effectiveness	Women benefit	Don't want to buy	Only if free	Only with a loan	With their own money
Disease management	100%	87%	0	0	3%	97%
Bulls	92%	Not yet*	0	89%	23%	0
Cocks	86%	65%	0	44%	27%	46%
Goat bucks	70%	39%	0	29%	44%	3%
Leather making	29%	12%	1	0	16%	21%
Fish farming	29%	47%	0	24%	0	31%
Bee keeping	19%	16%	0	8%	18%	0
Planting fodder crops	10%	0	20*	13%	5%	18%

* Bulls have yet to be evaluated as they were bought as calves and have taken time to reach maturity.

** Participants reported that there is no land available for planting fodder crops

2.1 Conclusions on livestock innovations:

Disease management emerges as a clear and affordable favourite innovation. Improved cocks, while effective and beneficial to women, are only affordable to around half of the farmers. Fish farming and leather making are attractive and affordable to a minority of participants. Improved bulls would require major subsidies while goat bucks would need significant access to loan finance or subsidy. Bee keeping is as yet unproven in Chololo.

3. Natural Resource Innovations (50 participants)

Innovation (Natural Resources)	Effectiveness	Women benefit	Don't want	If free	If Loan	Own money
Tree planting	100%	68%	0	0	0	80%
Fuel efficient stoves	78%	50%	0	4%	2%	66%
Land use planning	72%	54%	n/a	n/a	n/a	n/a
Agroforestry	32%	30%	20%*	0	0	64%
Biogas	12%	4%	2%	10%	44%	0
Forest management	8%	52%	n/a	n/a	n/a	n/a

* Participants said most would prefer fruit trees (in agroforestry)

Participants were then asked: How can you protect the village land & forest? They responded that since the project interventions, the bylaws regulating forest protection had been enforced, suggesting this was an effective way of protecting the forest.

3.1 Conclusions on natural resource innovations:

Tree planting is the favourite, most beneficial and affordable innovation. Fuel efficient stoves are also a very popular and affordable choice. Land use planning is seen as effective and beneficial. Take up of agroforestry would be enhanced by a focus on fruit trees. Biogas is seen as a minority option for those with access to loan finance.

4. Water Innovations (55 participants: 31 women)

Participants were asked to rank the effectiveness and gender benefit of water innovations. Personal affordability was not explored as the water innovations are communal resources. Participants were probed to identify the top priority innovations.

Innovation (Water)	Effectiveness	Women benefit (women only vote)	Priority
Borehole rehabilitation	100%	100%	1
Roof catchment water harvesting	100%	100%	
Water resource management	100%	100%	
Sand / Sub surface dam	100%	27%	2

4.1 Conclusions on water innovations:

All the water innovations were seen as effective, with borehole rehabilitation, and dams as the first and second priority, suggesting that innovations that provide open access to more water are favoured.

5. New Innovations

What new innovations would you like to see? They replied:

- Irrigation from a new borehole or chacko dam
- Small scale businesses
- Ox carts

6. Overall conclusions

The participant scores are analysed in the tables below, using percentage bands from 0-10 (10=high)

Table 1 gives equal weighting for all three criteria.

Rank	Innovation	Effectiveness	Gender	Affordability	Score (+++)
1	Disease management	10	9	10	29
2	Improved seeds	8	10	9	27
3=	Intercropping	5	10	10	25
3=	Good Agriculture Practices	5	10	10	25
3=	Tree planting	10	7	8	25
6	Farm yard manure	6	8	10	24
7=	Ox-tillage implements	8	8	6	22
7=	Soil moisture conservation	8	5	9	22
9	Cocks	9	7	5	21
10=	Fuel efficient stoves	8	5	7	20
10=	Borehole rehabilitation	10	10	?	20
10=	Roof catchment water harvesting	10	10	?	20
10=	Water resource management	10	10	?	20
14	Sand / Sub surface dam	10	3	?	13
15	Land use planning	7	5	?	12
16	Agroforestry	3	3	6	12
17	Goat bucks	7	4	0	11
18	Fish farming	3	5	3	11
19	Bulls	10	?	0	10
20=	Leather making	3	1	2	6
20=	Forest management	1	5	?	6
20=	Bee keeping	2	2	2	6
23	Biogas	1	0	4	5
24	Planting fodder crops	1	0	1	2
25	Community seed production	1	0	?	1
26	Chololo pits	0	0	?	0

Table 2 below ranks the innovations based on affordability alone

Rank	Innovation	Effectiveness	Gender	Affordability	Score (+++)
1	Disease management	10	9	10	29
2=	Intercropping	5	10	10	25
2=	Good Agriculture Practices	5	10	10	25
4	Farm yard manure	6	8	10	24
5	Improved seeds	8	10	9	27
6	Soil moisture conservation	8	5	9	22
7	Tree planting	10	7	8	25
8	Fuel efficient stoves	8	5	7	20
9=	Ox-tillage implements	8	8	6	22
9=	Agroforestry	3	3	6	12
11	Cocks	9	7	5	21
12	Biogas	1	0	4	5
13	Fish farming	3	5	3	11
14=	Leather making	3	1	2	6
14=	Bee keeping	2	2	2	6
16	Planting fodder crops	1	0	1	2
17	Goat bucks	7	4	0	11
18	Bulls	10	?	0	10
19=	Borehole rehabilitation	10	10	?	20
19=	Roof catchment water harvesting	10	10	?	20
19=	Water resource management	10	10	?	20
19=	Sand / Sub surface dam	10	3	?	13
19=	Land use planning	7	5	?	12
19=	Forest management	1	5	?	6
19=	Community seed production	1	0	?	1
19=	Chololo pits	0	0	?	0

Table 3 below ranks the innovations giving double weight to affordability, and equal weight to the other two criteria.

Rank	Innovation	Effectiveness	Gender	Affordability	Score (+++)
1	Disease management	10	9	20	39
2	Improved seeds	8	10	18	36
3=	Intercropping	5	10	20	35
3=	Good Agriculture Practices	5	10	20	35
5	Farm yard manure	6	8	20	34
6	Tree planting	10	7	16	33
7	Soil moisture conservation	8	5	18	31
8	Ox-tillage implements	8	8	12	28
9	Fuel efficient stoves	8	5	14	27
10	Cocks	9	7	10	26
11=	Borehole rehabilitation	10	10	?	20
11=	Roof catchment water harvesting	10	10	?	20
11=	Water resource management	10	10	?	20
14	Agroforestry	3	3	12	18
15	Fish farming	3	5	6	14
16	Sand / Sub surface dam	10	3	?	13
17	Land use planning	7	5	?	12
18	Goat bucks	7	4	0	11
19	Bulls	10	?	0	10
20	Biogas	1	0	8	9
21=	Leather making	3	1	4	8
21=	Bee keeping	2	2	4	8
23	Forest management	1	5	?	6
24	Planting fodder crops	1	0	2	3
25	Community seed production	1	0	?	1
26	Chololo pits	0	0	?	0

Overall Top Ten Innovations

Rank	Innovation
1	Disease management
2	Improved seeds
3	Intercropping
4	Good Agriculture Practices
5	Farm yard manure
6	Tree planting
7	Soil moisture conservation
8	Ox-tillage implements
9	Fuel efficient stoves
10	Cocks