



Defending dignity.
Fighting poverty.



Practical Experience and Lessons Learned on Equitable Payments for Watershed Services (EPWS) Scheme in Ulugurus, Tanzania

**A Joint CARE&WWF Programme in
Tanzania.**

Presented

on 13th November 2012

**During 2nd TARGETED REGIONAL WORKSHOP
FOR GEF IW PROJECTS IN AFRICA AT UN
CONVENTION CENTRE IN ADDIS ABABA, The
ETHIOPIA**

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- **Background and objectives**
- **Implementations: Phases (I&II) with highlights of Phase III**
- **Achievements**
- **Sustainability arrangements**
- **Limitations**
- **Lessons learned**

Introduction.

- **Sharing CARE-WWF practical experience and lessons learned of EPWS pilot programme in natural resources management as well as alleviating poverty in Tanzania**
- **EPWS originates from the broader concept-PES**
 - **encourage and finance conservation efforts as well as**
 - **crucially improve the livelihoods of the rural poor community**

Some key questions/assumptions tested

- **How can EPWS be implemented equitably? (fair participation and benefiting)**
- **Can EPWS work for poor or can EPWS be pro-poor?**
- **What kind of conservation practices to be implemented that will be adopted by local people and yield results?**

Others scholars look at the same questions



FAIRLY EFFICIENT OR EFFICIENTLY FAIR: SUCCESS FACTORS AND CONSTRAINTS OF PAYMENT AND REWARD SCHEMES FOR ENVIRONMENTAL SERVICES IN ASIA

Beria Leimona and Sara Namirembe
Co authors: Meine van Noordwijk, Laxman Joshi,
Rachman Pasha, Betha Lusiana,
Elok Mulyoutami, Ni'matul Khasanah, Andree Ekadinata

- **2010:** case studies showing the application of strict conditionality of PES and monetization of ES **not working**
- Lack of money available for conservation fund
- Paying local communities undermining social norms
- Social jealousy of non-participants – no multiplier effects of the payment
- Lack of scientific skills, institutional capacities, data for ES monitoring

Balancing act is needed

ES Provisions
and
Environmental
Goal

Efficiency



Fairness



Pro-poor design
and benefits
Free and prior
informed consent



Adapted from van Noordwijk et al (2011)

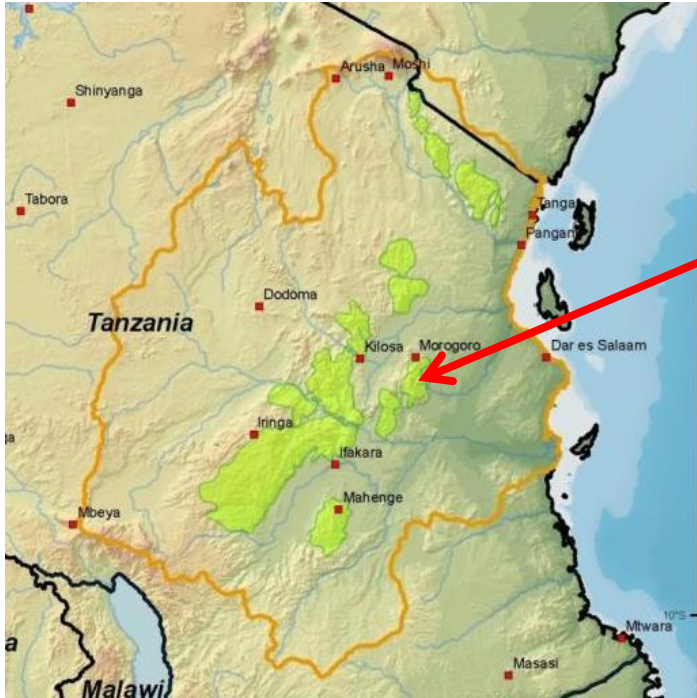
EPWS Objectives

- **To modify unsustainable land use and improve “watersheds” for reliable supply/flow and quality of water**



- **To improve social and economic status of community members through substantial benefits accrued from both improved agronomic practices and high value crop production thus reducing poverty and malnutrition.**

Background .. Location in Tanzania



***Ulugurus the EPWS
site in Tanzania***

***Generally, there is high
rainfall (>2000mm/yr) to
ensure enough water supply***

***Over 151,000 people reside in
the Uplands of Ulugurus***

***Crucial for delivery range of
ecosystem services: Water, Forests,
Fresh air, landscape beauty***

***Global priority for biodiversity
conservation***

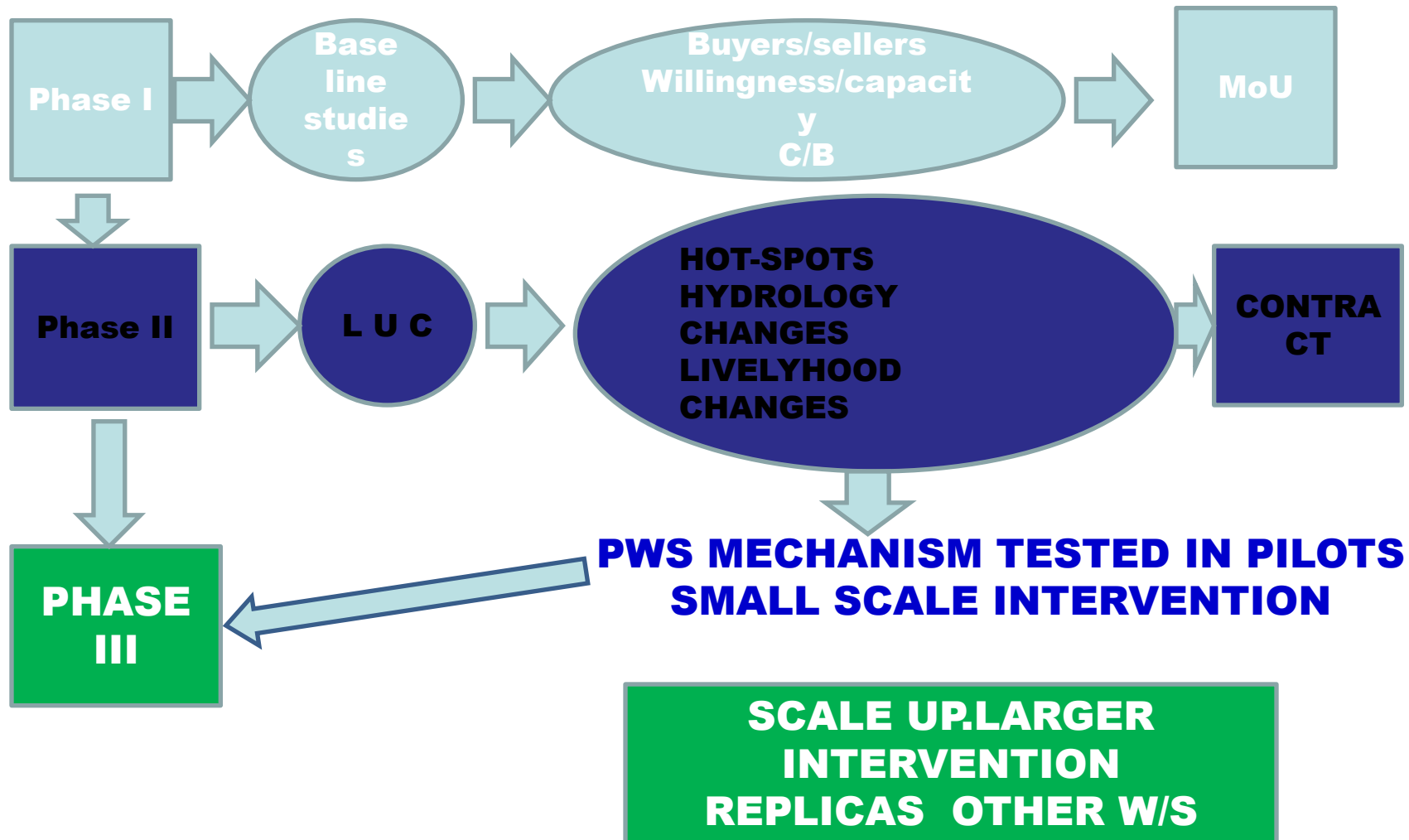


Background of EPWS progr.

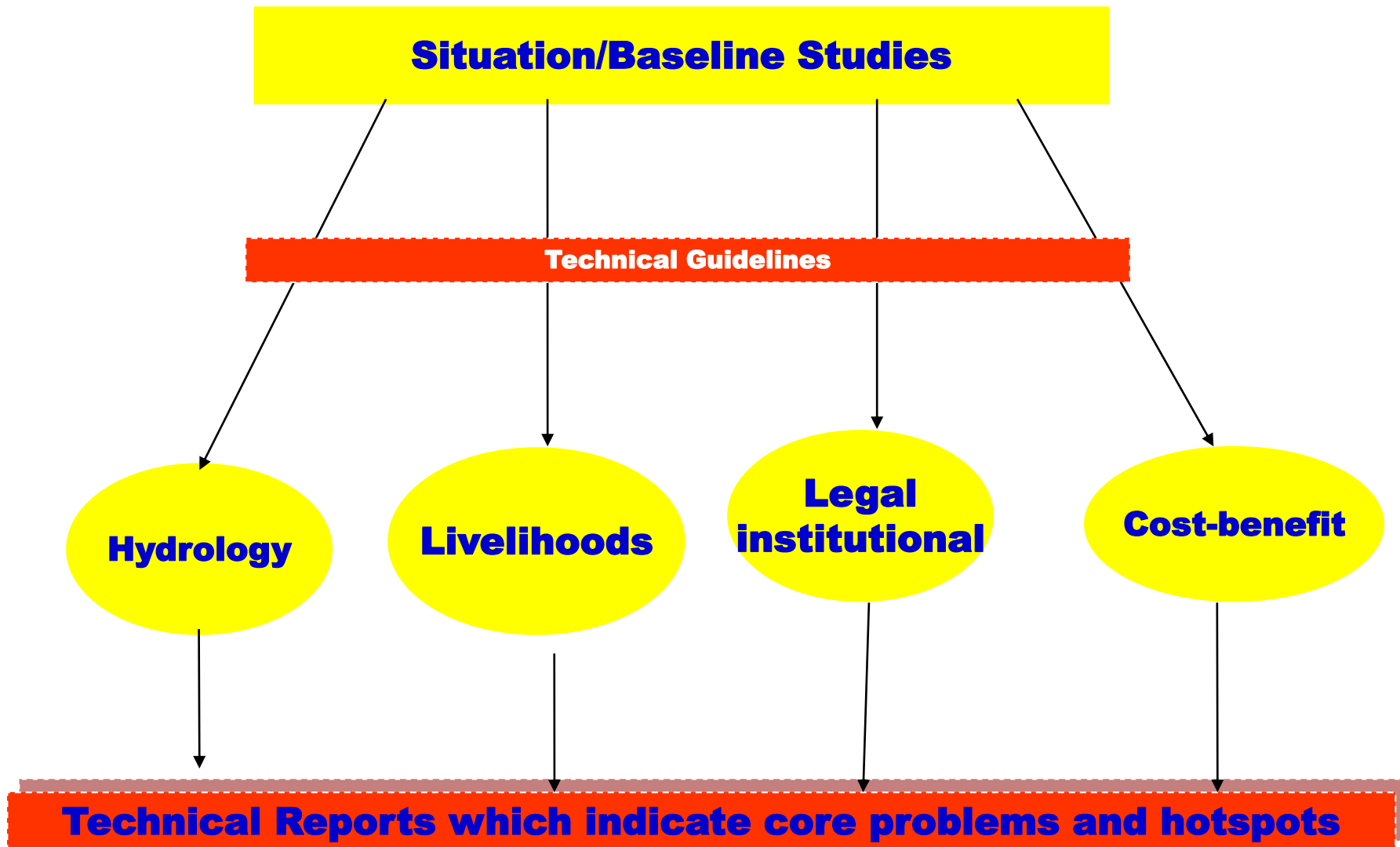
The program implemented in phases for learning lessons for next step/s.

- **Phase 1: Feasibility assessment (2006 – 2007)**
 - **Gathering knowledge to structure the new market for WS**
 - **Building a business case for investment through justifiable “business criteria”**
- **Phase 2: LUC and payments (2008 – 2012)**
 - **To establish markets for WS in trial sub-catchments as an effective natural resource management tool**
- **Phase 3 for scaling up and replications**

Phased approach in graphic as designed by Julio Tressiera

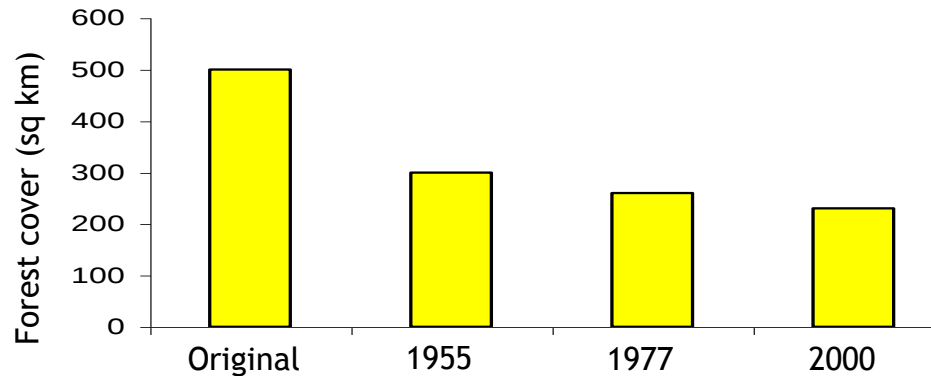


Feasibility assessment for EPWS implementation



Findings: Uluguru Watershed problems

- **About 31% of Ulugurus pop'n live below poverty line, depend on subsistence agriculture**



Unsustainable land use practices ('slash and burn', shifting cultivation)

- ***accelerate to soil erosions which cause sediment load,***
- ***hence increased turbidity in river***
- ***high treatment costs (\$300,000 per month)***

Decreased water flows in Ruvu river





Identification and roles of sellers and Buyers

- **Mfizigo catchment a hotspot in Kibungo Juu, thus**
- **Sellers: Kibungo Juu communities**
 - **Recognized the existence of water problems**
 - **Recognized the contribution of their activities to the problem**
 - **Shown willingness to change their land use practices**
 - **Legal entities which can:**
 - **Sign contracts with buyers**
 - **Receive payments (under local government)**
- **Buyers: DAWASCO and Coca Cola KLtd as**
 - **Water is critical/core for their business & reliant on river water**
 - **Recognized high treatment costs and lack of alternative water supply for their business**
 - **Show willingness, capacity and accept to pay**

AGREEMENT SIGNED BETWEEN SELLERS AND BUYERS

CBA: done for deciding what to implement

- Indicative minimum costs per hectare of Programme implementation.**
- Whether WS sellers are likely to experience positive net benefits associated with Programme implementation. Where net benefits are positive, the scheme is likely to satisfy the “equitability criterion” necessary for Phase II roll-out.**
- An indication as to the scale of net benefits to WS sellers associated with the Programme.**

Costs Considered

- **Costs considered within the CBA are the likely total costs of land-use change incurred by watershed service (WS) providers different scenarios.**
- **Such costs consisted of the costs of**
 - 1 implementation (one-off costs incurred in the first year) and**
 - 2 opportunity costs for land taken out of productive use**

Benefit Considered

- **Payments / compensation made under the PWS Programme equivalent to the compensation variation (or costs to WS providers) for implementing on-farm conservation measures as required under the PWS Programme.**
- **Improved on-farm productivity.**
- **[Reduced soil erosion.]**

Benefit Cost Ratios and Equitability Ranking

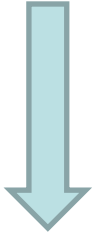
	Intervention	Present Benefit s (USD)	Present Costs (USD)	Benefit Cost Ratio	Equitabilit y Ranking
Scenario 1	Excavated bench terraces on farmland	3,105	3,105	1	=3
Scenario 2	Fanya juu / fanya Chini on farmland	887	622	1.4	1
Scenario 3	Agroforestry	2586	4,246	0.6	4
Scenario 4	Grass / vegetative strips / strip farming	467	435	1.07	2
Scenario 5	Contour ploughing / planting	0	0	0	=3
Scenario 6	Riparian restoration /km	435	435	1	=3

Interpretation and Conclusion

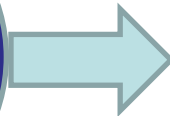
- ***Based on the results of Benefit Cost Ratio:***
 - **All scenarios offer net benefits as compensation or payments under the PWS scheme are set at the compensation variation – or the total costs of land use change**
 - **Higher ratios offer greater benefits relative to costs for upstream sellers, and from the sellers' perspective would be the more equitable solution**
 - **The most cost-effective solution is grass / vegetative strips.**
 - **The most equitable solution for Phase II is Fanya Juu / Fanya Chini which is more likely to bring about improved on-farm productivity for PWS Programme Participants.**

Phase II: EPWS programme implementation (adopted from Julio again)

MoU btn
sellers and
buyers



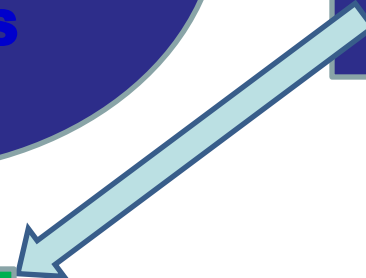
**Implementing
improved Land
Use Changes
and pilot
payment
mechanism**



**AT HOT-SPOTS
•HYDROLOGY
CHANGES
•LIVELYHOOD
CHANGES**



**Agreement to
scale up**



**SCALE UP.LARGER INTERVENTION
REPLICATIONS TO OTHER W/S:
PHASE III**

Land use change intervention

- **Various soil conservation measures proposed by feasibility studies:**

- **Bench terraces,**
- **Fanya Juu terraces**
- **grass stripping,**
- **agroforestry/reforestation,**
- **Contour planting**
- **Riparian restoration**



- **To be fair the program extension services to farmers:**

- **Group formation**
- **Trainings**
- **Inputs**

Fanya Juu and Bench terraces



**Number of farmers
excavating terraces has been
increasing yearly from 54 in
2009 to 400 in 2012**



Agroforestry and reforestation in Kibungo Juu



**Tree planting: over 300,000
have been planted between
2009 and June 2012**



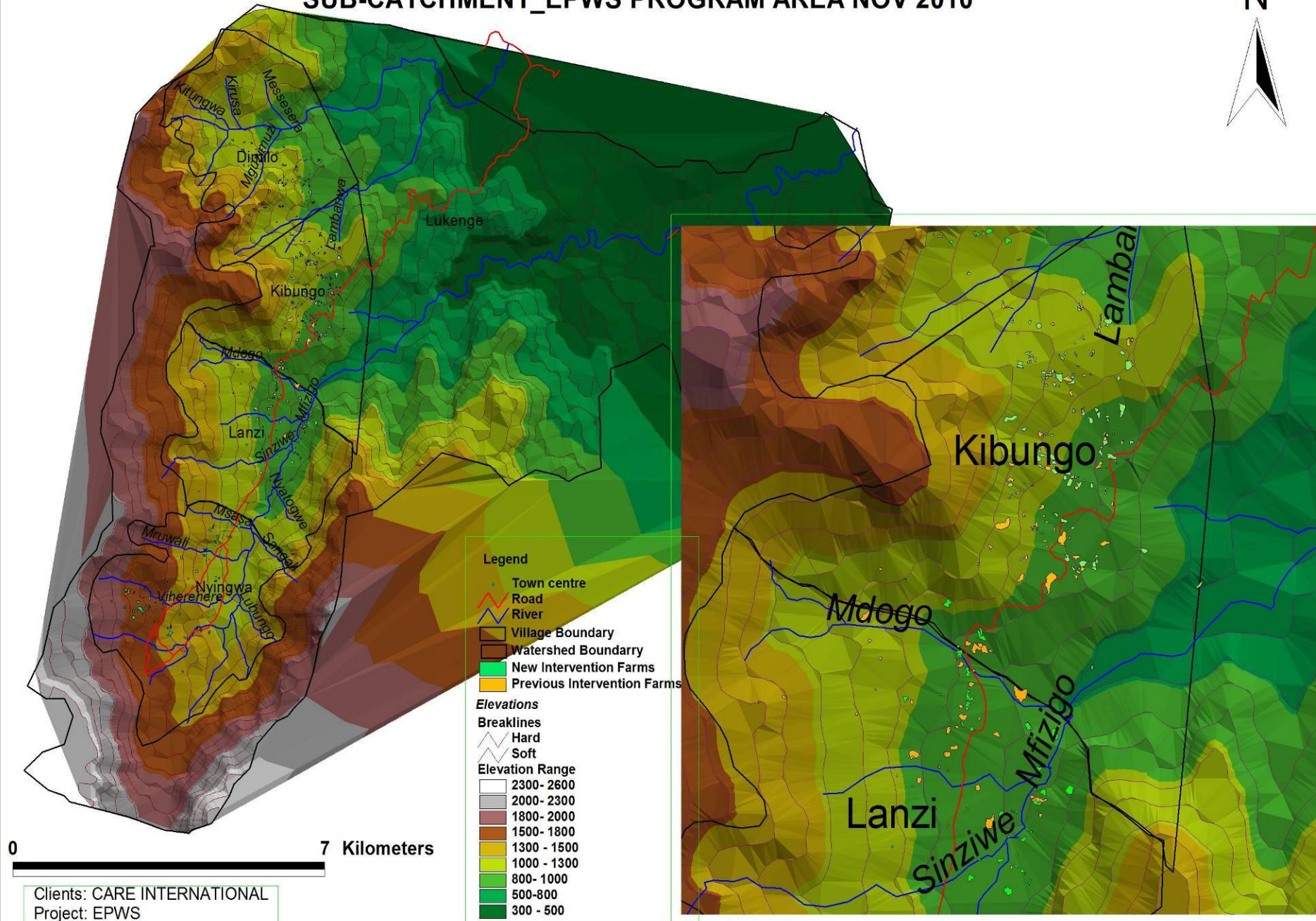
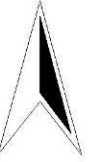
SWC beyond terraces and trees

- **Contour farming with mixed cropping maize and cover crops: Beans and groundnuts**



MAP FOR SLOPES, WATER SYSTEM AND INTERVENTION FARMS DISTRIBUTION AT KIBUNGO JUU SUB-CATCHMENT_EPWS PROGRAM AREA NOV 2010

N



Clients: CARE INTERNATIONAL
Project: EPWS
Consultant: Heri Kayeye SUA

Monitoring of interventions' impacts (HYDROLOGY)



**Hydrological
monitoring**

**Weather
monitoring**



Monitoring of interventions' impacts (LIVELIHOODS)



**Participatory monitoring
on
crop production**

**Well Being Analysis
for
Kibungo Juu people**



Piloting Payment mechanism:

(Phase II) cont....

- **Facilitate compensation or payments under the PWS scheme which are set at the compensation variation of land use change practice in terms of**
 - **Labour costs**
 - **Opportunity costs**
- **DAWASCO has started paying sellers in Ulugurus**

Piloting Payment mechanism: Arrangements

- **EPWS is a performance based initiative**
 - **Payments are made to the participating farmers as rewards for undertaking conservation activities**
 - **The calculations are made based on:**
 - **the opportunity cost of amount of land that one intervenes: consideration was to crops,**
 - **the labour costs: determined thru local market price for agric activities**
 - **make prices differences between one technology to the other**

How were the payments determined?

Labour and opportunity cost used to determine payments amount

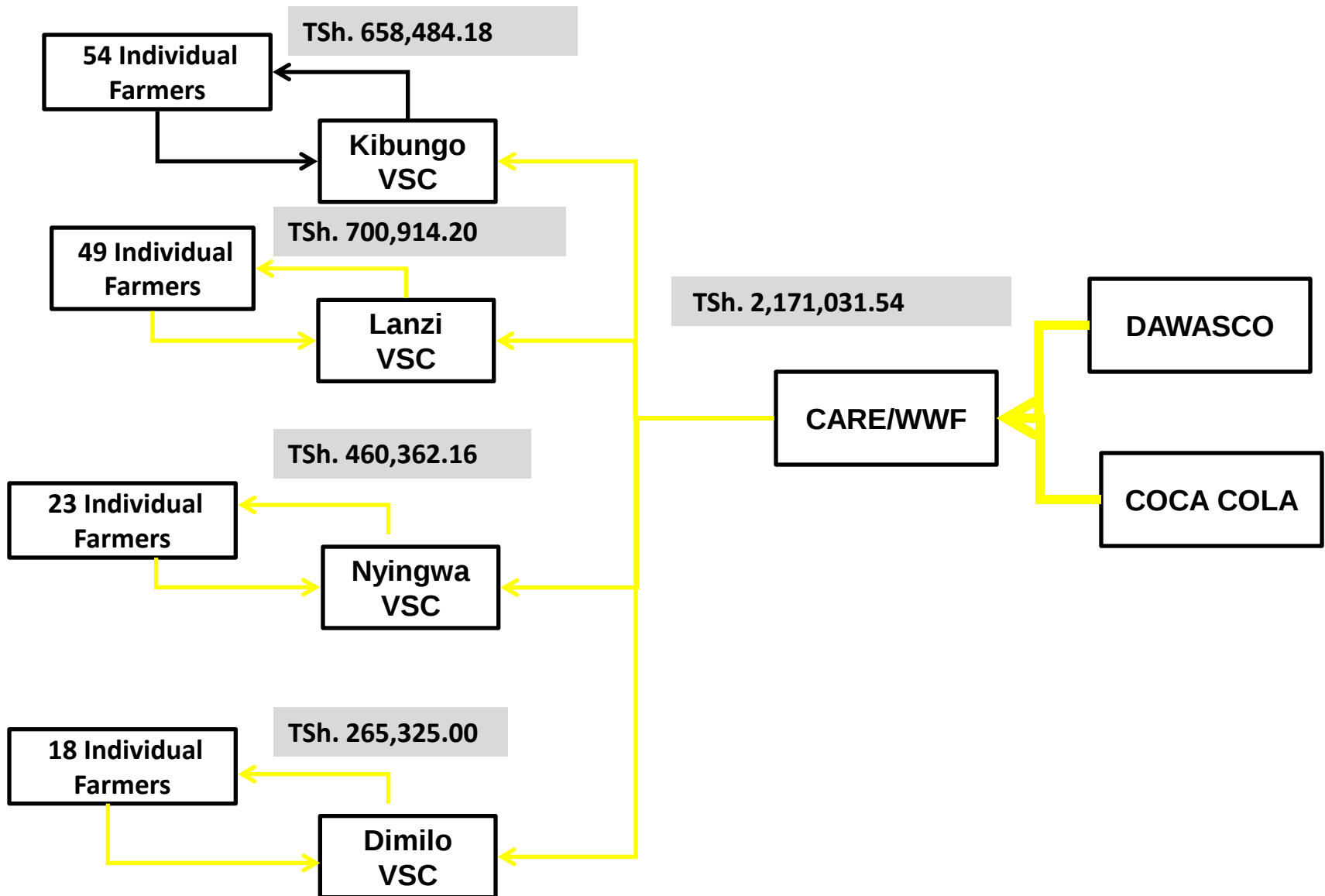
Method	Land removed from production (use in first year)	First year opportunity cost USD	Labor in USD.	Labor days/ha	First year labor cost (USD/ha)	Total cost (USD/ha)	Total cost (USD/acre)
Bench terrace	100%	128	1.2	140.0	168	296	119.8384
Fanya juu	20%	25.6	1.2	103.7	124.488	150.088	60.764
Reforestation	100%	128	1.2	50.0	60	188	76.1136
Agroforestry	17%	21.76	1.2	9.0	10.8	32.56	13.1824
Grass strip	17%	21.76	1.2	9.0	10.8	32.56	13.1824
Riparian restoration	100%	128	1.2	8.0	9.6	137.6	55.7088
Contour farming	14%	17.92	1.2	12.0	14.4	32	13.0848

Payments arrangements cont...

- **Village council(s) with support of CARE/WWF:**
 - **Surveyed the individual farms and map the area to confirm land size and technology applied by respective farmers**
 - **Collects funds from buyers (currently DAWASCO), then**
 - **Distributes the funds to respective participating farmers**

Last payments were effected in May 2010:

- **a total of 134 farmers and 3 institutions have been paid about tshs 2.17m for converting their farms with improved land use practices**



Note: All village councils were paid about tshs. 85,946/=

Local ownership strategies

- **Put in place functional Intermediary Group (IG) which is composed of members from local communities (sellers), downstream water users (ES buyers), government agencies (including water, forest, environment and Agriculture authorities) as well as CSOs**
- **Formed farmer groups and association**
- **Facilitated extension services**
 - **Conducted various trainings**
 - **Paraprofessionals**
 - **Exchange visits**
 - **Distribution of equipment's and farming inputs**
- **Collaboration with other stakeholders**

Sustainability

- **Farmers are aware and highly motivated to apply LUC techniques after realising positive results in the field**
- **Revisiting the initial agreements and sign a new one between buyers and sellers: Bringing more buyers and sellers on board**
- **Continuous advocacy and lobbying for proper inclusion of PES in the National institutional frameworks**
- **Engaging government especially local government authority to support the programme ownership at local level**
- **Other institutions have been scaling up and replicating the PES Schemes**
 - **The Wildlife Conservation Society of Tanzania (WCST) in Mindu dam catchment**
 - **WWF Tanzania Country Office in the Sigi River catchment in the East Usambara Mountains.**
 - **ICRAF has implemented PES scheme in one part of Ulugurus. They actually focused on carbon financing by involving local communities to plant and manage trees.**
 - **The Ministry of water has enacted water act in 2009 which include PES as a conservation instrument and she is in the process of formulating regulation to enforce this PES law.**
 - **Similarly PES issues are included in the recently revised National Forestry Policy.**
 - **The UN Food and Agricultural Organization (FAO) has been assessing the potential for PES scheme in Kagera River basin in Bukoba.**

What are we achieving from EPWS implementation

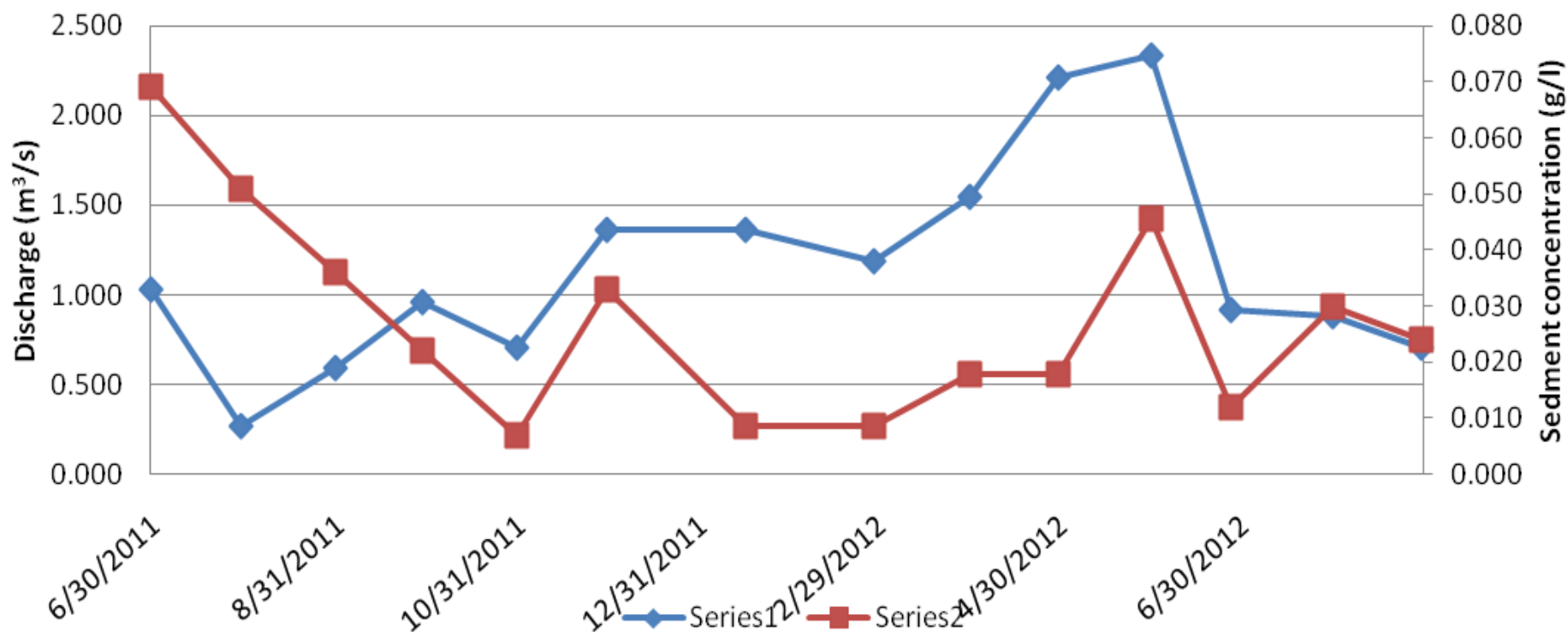
1st achievement is extension services and adoption of LUC

About 1200 farmers participate and benefit from the programme of which 42% are women



Hydrological achievement: decreased sediment load

Discharge and Suspended Sediment Relationship in Mfizigo River
(Lanzi Gauging Station). From June-2011-May-2012



Key:

Red one is Suspended Sediment concentration in (g/l)

Blue line is Discharge (m^3/s)

Increased crop yield as result of improved SWC measure

- Improved production yields of various crops



Crop	Baseline (2008)	Current change (May 2012)
Maize	< 400kg/acre	>1600kg /acre
Beans	<120kg/acre	≥950kg/acre
Cabbage	Nil	≥9600 pcs/acre
Tomato	Nil	≥9000kg/acre
Union	Nil	≥4000kg/acre



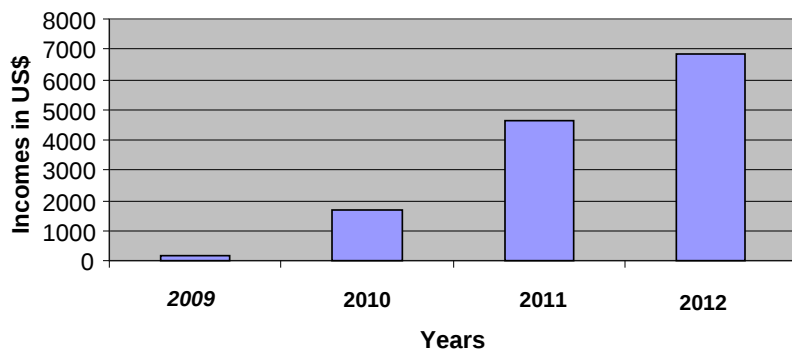
Increased incomes as Benefits from the programme implementation

- **Linking farmers with markets**
- **Generating high incomes (US\$13,000) through selling crops: Cabbage, tomato, Unions**

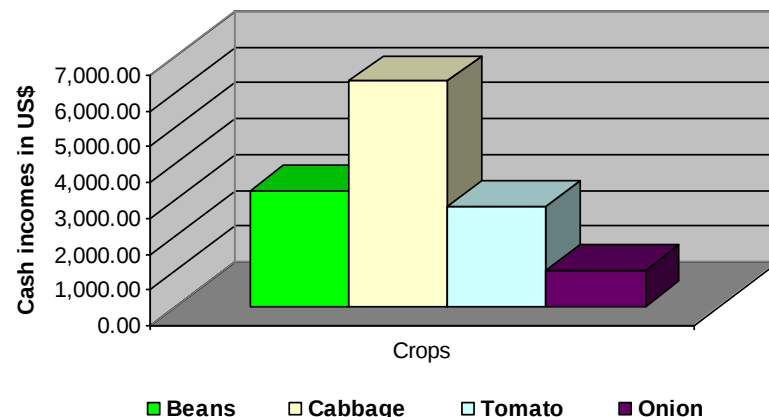


Farmers came to sell their cabbage to town market

Cash incomes generated between 2009 and May 2012



Cash Incomes generated by Crops between 2009 and May 2012



Limitations on EPWS implementation

- Initial costs are high and thus needs external support**
- PES is a new concept, the Experts on PES and/or PWS processes are limited in the country**
- Getting sellers is simple while engaging buyers is challenging**
- Landless people are eliminated unintentionally: an issue for PRO-POOR PES**
- Tangible impacts of the EPWS solution cannot be realized in short term**
- Inadequate institutional framework for implementing PES successfully**

Lessons learned from EPWS program implementation

Lessons learned about project approach and initial assumptions

- **Upfront funding from donors may be needed to demonstrate viability to buyers and sellers (as with carbon payments / REDD+)**
- **Buyers likely to cover farm-level costs only – but not wider costs of monitoring, project delivery etc**
- **PWS needs effective law enforcement and governance (eg illegal mining, pollution) to function: Government involvement**



What hinders adoption of SWC measures?

- **Assumption behind PES is that payments can reduce barriers to adoption for farmers**
- **However: Other factors:**
 - **Fears over tenure / eviction**
 - **Historical associations with terraces**
 - **Land ownership/tenure**
 - **Additional investments needed: water, manure (livestock)**
- **Lesson: Non-financial incentives may be more important than financial ones**
- **Lesson: “Do no harm” principle**



What enables adoption of SWC measures?



- **When combined with high-value crops – land use interventions are highly profitable**
- **Increased production, increased and diversified incomes (short and longer term)**
- **Value of payment very small**
- **Increased social capital (groups)**
- **Farmer-to-farmer learning and exchange**
- **Lesson: Opportunity cost – negative. Payment is not about compensation, but investment**

What has been learned about pro-poor approaches?

Challenges associated with increasing participation of the poor:

- Poorer farmers have little or no land**
- Poorer farmers very risk-averse**
- Labour and time**
- Living from “hand to mouth” – long term investments impossible**
- May be unable to carry out physical work (elderly, disabled)**



What has been learned about pro-poor approaches?

Without specific measures from outset, participation by the poor will be limited

- **Broad consultation early on, identify vulnerable groups**
- **Ongoing discussions with vulnerable groups**
- **Monitoring participation**
- **Group formation, labour pooling**
- **Reducing scale of implementation**
- **Identifying / negotiating for un-used areas of land**
- **Targeting less labour intensive activities to poor**

What has been learned about institutional structures?

- **Farmer Groups** - important social benefits (pooling labour etc)
- **Useful communication channel for project**
- **Umbrella organisation formed to “give greater voice” – WAKUAKUVYAMA Many potential benefits:**
 - **Representing sellers interests – eg aggregation**
 - **Linking to other organisations / support**
 - **Marketing of farm produce**
- **Lesson Learned: Building organisations from the grassroots up takes time and resources if potential benefits are to be realised**



END Thank you

