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Conservation Markating:The Case of Vetiver Grass Technology (VGT) in Illu Aba Bora Zone

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Abstract
Vetiver[1] Grass in Ethiopia, particularly in coffee growing areas, was known since 1960's, but there are no evidences who and why it was introduced in the coffee farming system. Following the expansion of State owned Coffee Estates in the mid 1980's; Vetiver was planted as weed barrier, especially to halt the expansion of Coach Grass into the coffee farms. Based on this role, vetiver was nomenclature in Amharic as *Yeserdo Sar Mekelakeya* (Coach Grass Barrier). Systematic efforts to develop Vetiver Grass Technology (VGT) for soil and water conservation were first initiated by the Ex- Ministry of Coffee and Tea Development (MCTD) in the South West Coffee Growing areas in the early 1990's, taking cue from Thailand and Indian experiences. Vetiver Grass Technology was then extensively implemented as Hedgerows (Strips), as Inter-Bund Management and as Bund Stabilization across the coffee growing areas. Encouraging results were also recorded in halting soil erosion as well as in reducing water course pollution from wet coffee processing plants. But Menscen fÜr Menschen (MfM) taking cue from the MCTD initiatives, extensively implemented Vetiver system in the 'Illubabor Eco Development Program'. From 1991 to 1998 more than 7,500 hectares of farmland were treated with VGT. And about 5,000 farmers participated in enhancing VGT based farming system. VGT adapted well and protected the soil being eroded. And many NGOs taking clue from MfM popularized VGT in there project areas. Vetiver Technology is now popular in all Regional States of Ethiopia. The effectiveness of VGT across the nation is therefore on the rise and will ultimately inherent the throne as the core strategy for erosion control. Surprisingly a new theory 'Conservation Marketing' (i.e. Vetiver Clump Sales) is emerging, which has already captured transactions. In year 2013 alone, farmers of Metu Woreda, Illu Aba Bora Zone generated about 1.2 million Birr (65,000 USD) through conservation marketing. Farmers who have adopted VGT are harvesting enough clamps and generating net income on every treated farmland, while multiplication on their own nurseries offer them job opportunities and better income; raising their living standards.
Keywords: Vetiver, *Yeserdo Mekelakeya*, eco friendly, vitiver clump, conservation marketing

1. INTRODUCTION

As recently as 30 years ago much of the Illu Aba Bora Zone, in Ethiopia, had a dense natural forest of Montana Rainforest. It was largely uninhabited except for a scattering of isolated forest dwellers who gathered forest produce as a livelihood. A few farming communities also existed on top of hills as well as along the Highways and roads that connect Woredas to Metu town, the zone capital. The most frequently cited causes of deforestation in Illu Aba Bora zone is the conversion of forest land for agricultural purposes. Here we can distinguish two phases. The first is related to the historical resettlement program of 1984/85 where about 20,000 households resettled, mostly from the drought stricken areas of northern and central part of Ethiopia to relatively fertile, largely forested and lower populated areas of Illu Aba Bora. The second or modern phase of deforestation was exploitations of the forest for export profits, that is smallholder coffee modernization and tea estate establishment. Of course illegal logging and squatters also contributed to the deforestation.

The dominant slope of farmlands developed for agricultural development was in the slope range between 8-20% with long slope lengths. Land in this class is generally subjected to sheet, rill and in some cases it may be affected by gully erosion where the rills have been formed by runoff across the slope from adjacent terrain units. Although the farmlands are suitable to variety of crops, maize is the dominant crop growing in the area. Maize requires deep fertile and well drained soil rich in organic matter. Since maize plant particularly in seedling stage are highly susceptible to water logging to assure that water does not stagnate on the soil surface farmers traditionally construct non conservation oriented drainages across the slope for a successful cultivation of maize. As farmers witnessed from the very beginning, on maize farmlands converted from forests, rill and gully erosion were observed; crop yields have fallen. This situation puts under threat the environmental protection in general and the soil practice in particular. And threatened the livelihoods of the new settlers as well as the

[1] Vetiver grass (*Vetiveria zizanioides*) a native grass of India has been extensively used for land protection and an essential oil used in perfumery industry mainly in Southwest Asia. Vetiver with its deep-root system penetrates straight into the soil and spread like an underground barrier capable of filtering sediments and protecting the soil surface from runoff, but it is incapable of propagating itself by seed.

overwhelming hosting populace. To tackle this problem change was therefore needed on the land use, land management, ground cover, slope length and slope gradient.
In recognition of the serious problems of soil erosion, particularly on cultivated land, Menschen fur Menschen (MfM) initiated in 1991 the idea of using VGT as a panacea to a host of environmental problems. VGT is a low cost, extremely effective system that offers proven solutions for soil and water conservation. MfM promoted VGT from 1991 to 1998 and more than 7,500 hectare of farmland was treated with this technology. The VGT were implemented fully with the participation of farmers (about 5,000 farmers participated). Farmers themselves determined the space between the two hedgerows based on the convenience to plough with oxen i.e. the land between two hedgerows is wide enough to turn oxen while ploughing. In fact most farmers have established 4 to 5 hedgerows in a hectare of farmland (see picture 1).

Picture 1: Farmland treated with VGT

VGT demonstrated various kinds of miraculous characteristics and functions, such as rapid growth, huge biomass, massive and long roots, strong abilities to control erosion and stabilize slopes and adopted as one of the most effective and low cost methods of environmental protection, in the farming systems of Illu Aba Bora. Brehanu Debele (1999) also indicated that VGT was widely acknowledged as being effective measures in arresting soil erosion and as having the potential to improve land productivity and farming communities in the project area adopted the technology. Even other farmers outside the project area were also copying, while some also indicated that improvement of soil productivity was observed within two years. The proven results demonstrated by MfM disseminated within Illu Aba Bora as well as elsewhere in Ethiopia and become a principal interest of development practitioners as a method for soil and water conservation.
Many NGOs taking clue from MfM initiatives therefore popularized Vetiver Grass Technology as environmental enhancement in their project areas. VGT is now popular in Amhara, Tigray and Southern Nation and Nationalities Regional States as well in Oromiya and Gambela Regional states. This in turn open up market opportunities for vetiver clamp sells. Farmers in Metu, Yayu, Hurumu Woredas in particular and all other farmers in Illu Aba Bora zone emerged in Vetiver clamp sells. Vetiver grass technology has now established niche markets, thus there is not much need for conventional advertisement.

2. MATERIAL AND METHODS

The study area is located in the western part of Ethiopian in Illu Aba Bora Zone, Oromya Regional State, Ethiopia, at an altitude between 1400 to 2000 masl. The area where the study was conducted is the Illu Aba Bora Integrated Rural Development Project which was implemented by MfM from 1990 to 2000. The total area of the project was about 9,961 km^2, which was about 59% of the total area of the zone. The mean annual rainfall and temperature is about 1800 mm and 21^0C, respectively. The topography of the area is characterized by undulating slopes divided by valleys of perennial streams surrounded by Montana rain forests
All relevant documents of IIRDP were reviewed. Discussions were held with officials from the Zone and the Woredas (districts) offices. Extensive field visits were also made in eight sampled Woredas where interviews were held with key informants, farmers and farmers groups as well as agriculture office staffs. In addition to individual and group interviews, focused discussion with some innovative farmers who have adopted vetiver technologies was also conducted.

3. RESULT AND DISCUSSION

This paper aims to bring the Vetiver grass technology to the public's attention through its commercialization. Since VGT commercialization is important for the success of environmental protection in Ethiopia; for two

reasons. First farmers can see the immediate economic benefits of the grass before they plant to protect their farmlands from erosion. Secondly interested users of the technology will not hesitant, because of lack of sufficient supply of the seedlings. Currently, Vetiver Farms in Illu Ababa Bora Zone are the largest commercial vetiver nursery in Ethiopia, supplying the needs of both government and NGO projects. Other farmers elsewhere can also take advantage of the emerging market opportunities.

3.1. The Emerging Conservation (VGT) Markets

Observing the effectiveness of Vetiver technology across the IIRD project area in particular and Illu Aba Bora zone in general; the acceptance of vetiver technology across Ethiopia is on the rise and will ultimately inherent the throne as the core strategy for erosion control. Surprisingly a new theory is emerging 'Conservation Marketing' which has already captured transactions. In year 2013 alone, farmers of Metu Woreda generated about 1.2 million Birr (65,000 USD) from the sale of Vetiver Clamps, whereas individual farmers expressed that they benefited at a range of Birr 2,000 to 5,000 (USD 108 -268) from conservation marketing (Vetiver clamp sales)[2].

In recognition of the serious problem of soil erosion, particularly on cultivated land of Ethiopia and Peoples' notices on what VGT can do, is already fueling the rapid advancement of VGT in environmental protection. It is a low cost, extremely effective system that offers proven solutions for soil and water conservation, watershed management, wastewater treatment, embankment stabilization, flood control, disaster and pollution mitigation, agro forestry management, and many other environment-friendly applications being used.

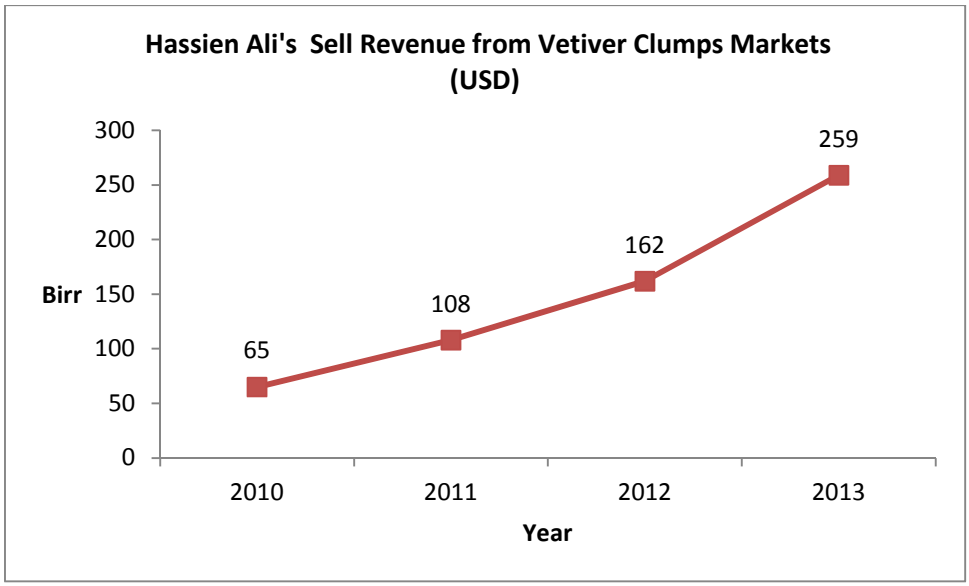
The VGT marketing (conservation marketing) is a new and innovative eco-technology marketing, which has the potential to meet all the right criteria necessary to meet the increasing demands for environmental enhancement. To date farmlands in Illu Aba Bora Zone are the only largest and reliable 'Vetiver Technology Commercial Markets' with potentials to supply the demands of government, bilateral, NGO and private projects across the nation.

"Reliable Vetiver Clamp market is Wealth", and farmers who have adopted VGT are harvesting enough clamps and generated net income on every treated farmland, while multiplication of vetiver clamps on their private nurseries offers them job opportunities and better income. Farmers are therefore grateful to VGT for linking them to a reliable Vetiver Clamp markets, which enables them to earn extra income and raising their living standards(see photo 2).

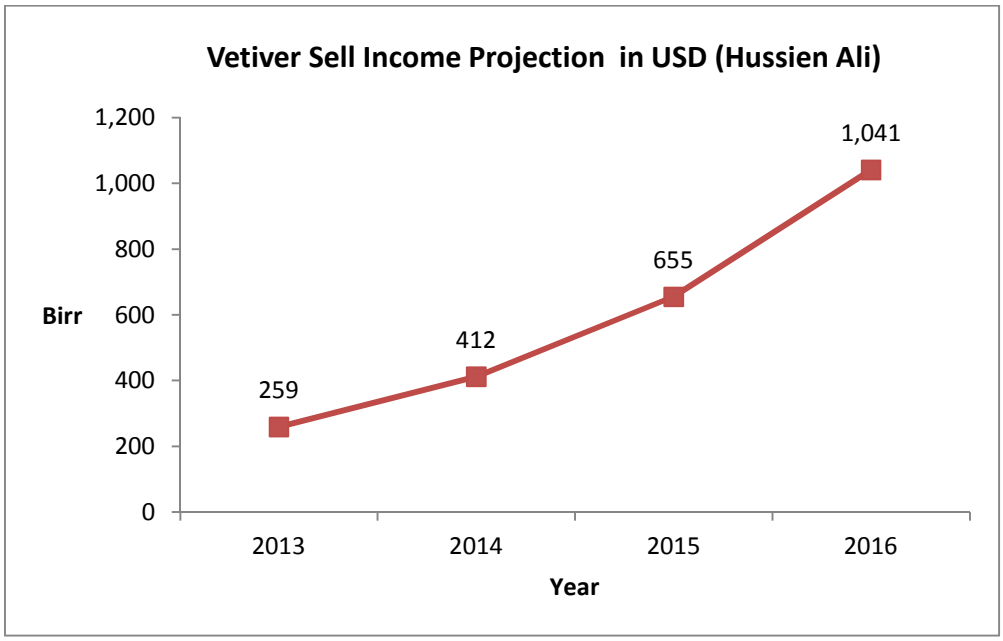
Photo 2: a Farmer's Vetiver clamps multiplication Plot

Ato (Mr) Hussien Ali, was once destitute settler but now a well to do farmer, is one of the role models in Vetiver Clamp trader in Metu Woreda. Like the majority of his colleagues, he started selling Vetiver clamps since 2009, and with a selling price of USD 0.16 per vetiver clamp (i.e. D 0.16 per 50 vetiver splits) his income was in increasing trend and reached Birr 259 in year 2013; as illustrated in following graph

[2] Information collected from Metu Woreda Agriculture Office



If we assume that this vetiver clamps marketing trend continues with the same selling price, Ato Hussien's Income will reach USD 1,041 in year 2016.



Conservation Marketing is therefore a Vetiver Technology business model created based on the experience in Illu Aba Bora Zone. The Conservation Marketing business model has proven to be effective in increasing farm income. This model not only creates a supply chain for Vetiver clumps, but also creates a sustainable land management oriented markets. By which communities benefit by effectively protecting farmlands their own way out of poverty and allowing more parents to pay for their children's schooling. It is also an opportunity for more families to invest in small business to future boost their income and VGT creates a viable arena for individual and community social networking and economic growth.

3.2. Prospects of Conservation Marketing

Despite all the efforts and resources that have been committed to soil erosion control in the past 50 years, Ethiopia is among countries with the highest soil erosion (see fig 1). With respect to the total available land about 342,000 km ^{2} that is about 31% out of total land area of the country is being eroded (ATA 2013). The erosion rate in Ethiopia is also estimated at about 137 ton/ha/year. This is a call for an intensive soil and water conservation works.

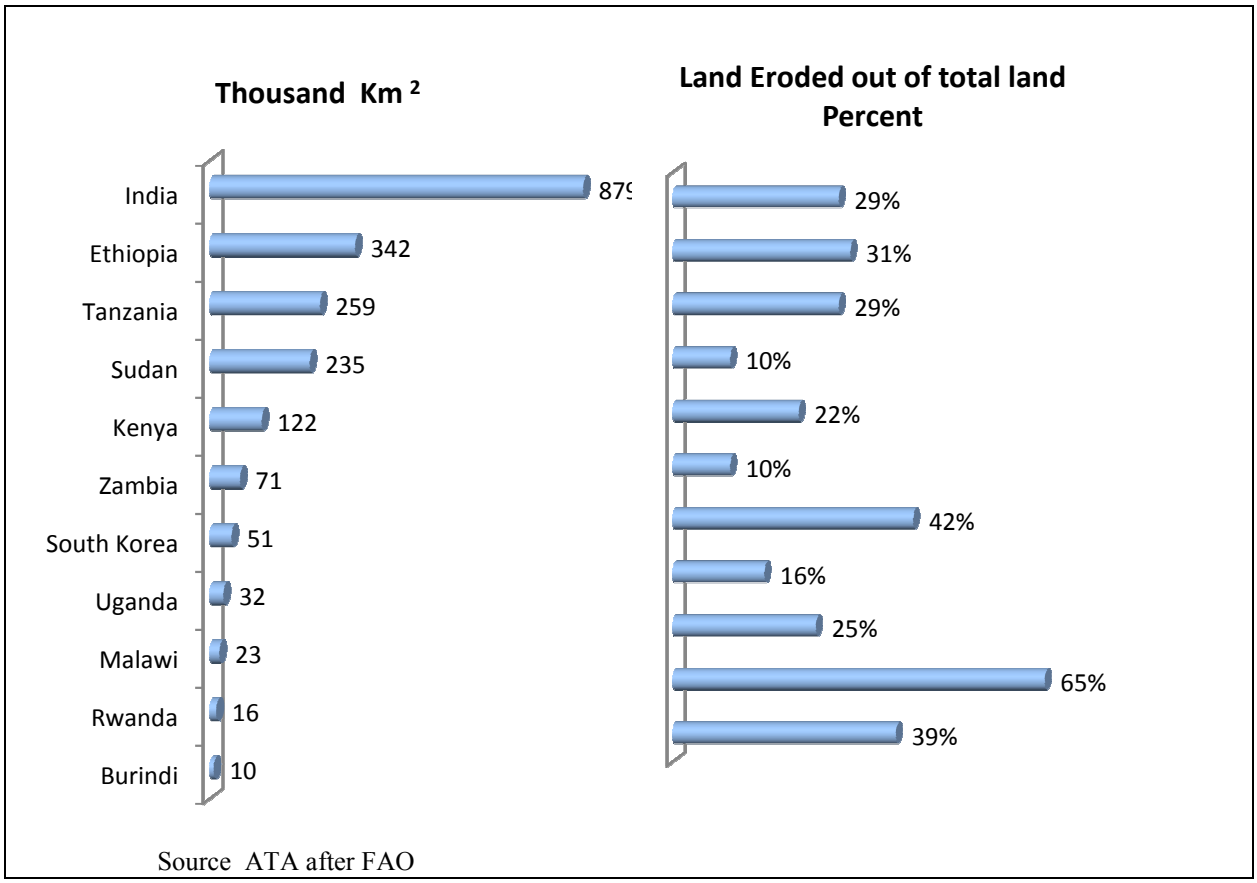


Figure 1: Eroded landmass in Different Countries

Primarily, if we assume that at least 10 % of this massive land unit being eroded (i.e. about 34,200 km^2) is protected by VGT. Planting of two rows of vetiver splits at spacing of 10cm between splits and 5 hedgerows per hectare would require 10,000 slips (200 clumps) per hectare. Crude estimate of the potential market of VGT to protect the estimated 34,200 km^2 (10% of the land area that require conservation) would require about 684 million clamps that would worth 2 billion Birr (110 million USD).

The point here is not to provide a precise estimate of market size. Rather, it is to demonstrate that with a fraction of the potential market of VGT it is possible to value over 2 Billion Birr (about 110 million USD). Nevertheless, Vetiver (conservation) market could be quite substantial. Innovations in these markets have the potential of generating millions, and indeed billions, of dollars in soil and conservation works alone.

Secondly the Ethiopian government has launched a Road Sector Development Program to address the limited coverage and poor state of the road network, as well as the growing transport needs of the country. Vetiver grass is therefore receiving growing attention for its special properties in stabilizing road slopes and resisting soil erosion. The applications of Vetiver grass for highways are on the roads back slope and side slope, shoulder slope and other slope protection works. The Experience of the 'Chinese Road Company' that built about 170 km highway from Metu Town to Gambela Town has extensively used vetiver technology in Highway Slope Stabilization. And the other Chinese Engineer in charge of the current road construction from Metu to Beddele town admitted that Vetiver Technology as effective as rock baskets (gabions), in stabilizing roadside slopes. The Chinese Road Company experience is therefore a model that the Ethiopian Road Authority, Regional Road Bureaus and Road Construction Companies can officially accept Vetiver technology for standard highway embankment stabilization. Thus with the expansion of road networks, Conservation marketing (Vetiver Clump Sell) is untapped market.

Thirdly, climate change is having serious environmental, economic, and social impacts on Ethiopia. In particular, subsistence farmers, whose livelihoods depend on the use of natural resources, are likely to bear the brunt of adverse impacts. Mitigation/ adaptation are widely recognized as vital components of response to climate change and to reduce significantly vulnerability. Vetiver grass is valued for its fast growing tufted roots that penetrate vertically deep into the soil promise with initial growth rate of 3 cm per day reaching over 2 meter in just six months to 6 meter in three years (Khan,2006). In the context of soil carbon sequestration, these fast growing roots trap significant amount of atmospheric CO_2, facilitate uniform dispersal of stored carbon into the soil on account of their fibrous nature and provide enhanced opportunities for soil microbial action; Whereas the above-

ground green part absorbs atmospheric CO_2 through photosynthesis. Thus Conservation Marketing (Vetiver Clamp Sale), which is already emerging for soil and water conservation, can be promoted as multipurpose soil carbon sequestrations technologies. Carbon sequestration in agricultural lands from Vetiver System can therefore be permanent as long as the farmers are involved in conservation marketing as well as in carbon credit trading. Thus carbon trading is value-added benefit of the conservation marketing.

VGT's other proven solutions for watershed management, wastewater treatment, flood control, pollution mitigation, and mine rehabilitation are also other added values of VGT. The prospect of Vetiver clamp marketing will be therefore sustainable for many years to come. Planting material can be propagated at individual and community level for commercialization. The most direct interested in Vetiver clump commercialization are likely to be farmers that have had substantial prior success with intensively managed VGT such as farmers in Metu, Yayu, Hurumu, Bure, Ale and etc Woredas in Illu Ababa Bora Zone. Other farmers elsewhere also appear to be well positioned to take advantage of the emerging conservation marketing.

4. CONCLUSION

In Illu Aba Bora Zone, like elsewhere, the Vetiver Technology has demonstrated its important roles in conserving and protecting arable lands, as well as stabilizing stream banks and highway slopes from any form of soil erosion. This coupled with its physiological characteristics, such as highly tolerant to droughts and water logging, frost, heat, extreme soil pH, sodicity, salinity, Al and Mn toxicity makes it suitable for a wide range of environmental conditions. It could be established in all varied environments from wet to dry conditions and could thrive in a wide range of soils from sandy to rocky, saline or alkaline (World Bank, 1990). Strategic plantation of vetiver in crop fields, river banks, and highway slopes embankments could potentially contribute also to carbon sequestration vis-à-vis eco-technological management of land, soil, crops, and its by-products offer a range of uses in handicrafts, animal feed, bio-energy and construction applications.

VGT fits well in its multifarious environmental applications, but it is one of the most versatile technologies, which is not being utilized at its fullest extent in Ethiopia. The newly emerged theory of 'Conservation Marketing that is sale of Vetiver Clamp is therefore an opportunity and a driving force behind the multiple uses of VGT. This is therefore a panacea for subsistence farmers to get involved in conservation marketing to make use of this valuable opportunity which can lead to increased incomes.

REFERENCES

1. PCDPID-MfM, 1990. Eco Development Program Implementation Guideline, Prepared by Program Coordination Office, Metu
2. MfM Agro Ecology Department 1996. Project Document For Illubabor MfM Agro Ecology Department (1996-1998) Metu
3. Berhanu Debele, 1999. Evaluation of the Agro ecology Department of Illubabor Integrated Rural Development Project; Prepared for project coordination office , Menschen fÜr Menschen Foundation, Ethiopia
4. Menschen fÜr Menschen, 2013. Illu Aba Bora Integrated Rural Development Project Terminal Evaluation Report; KDA Management Consultancy,
5. Tessema Chekun, 1992. The Potentials use of Vetiver grass for soil conservation in smallholder farmers; Proceeding of the First Agricultural Conference for NGOs in Ethiopia, Agri Service Ethiopia and Action Aid, Addis Ababa.
6. _____ 1992. Vetiver Hedges: A New Hope in Soil and Moisture Conservation, Ministry of Coffee and Tea Development, Addis Ababa.
7. _____1996. Farmers Perception on Soil and Moisture Conservation Measures: Case Study, Temenja Yazh Woreda, Keffa area, 1996, Paper Presented on the International Conference on Vetiver: Vetiver: A Miracle Grass, 4 –8, February 1996, Chiang RIA, Thailand.
8. _____2011. Vetiver in the context of climate change mitigation: the case of Ethiopia; A Paper presented at the 5th International Conference on Vetiver " Vetiver and Climate Change" Central Institute of Medicinal and Aromatic Plants, Lucknow, India, 29-31 October,2011
9. Ethiopian Road Authority (ERA). 2011. Ethiopian Road Network Development on Track, Ethiopian Road Authority, Addis Ababa
10. Khan A.G. 2006. Developing Sustainable Rural Communities by Reversing Land Degradation through A Miracle Plant – Vetiver Grass; University of Plymouth, UK
11. Ministry of Agriculture and Rural Development (MARD). 2010. Sustainable Land Management Technologies and Approaches in Ethiopia. Sustainable Land Management Project (SLM), Natural Resource Management Sector, MARD, Addis Ababa
12. World Bank. 1990. Vetiver Grass, The Hedge Against Erosion, The World Bank, Washington DC
13. Agricultural Transformation Agency (ATA), 2013. Status of soil resources in Ethiopia and priorities for sustainable management; GSP for Eastern and Southern Africa, Mar 25-27, 2013, Nairobi, Kenya

14. Ketema Addisu, Extension Process Owner, Agriculture Office, Illu Ababa Bora Zone, July 2013. Personnel Communication
15. Andualem Head Metu Woreda Agriculture Office, July 2013. Personnel Communication

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