

CHAPTER 1

PROJECT IDEAS FOR WATER AND AGRICULTURAL SECTORS

1.1 Brief Summary of the Project Ideas for Water and Agricultural Sectors

The proposed project idea is an integrated project that will introduce 10,000 surface runoff water harvesting systems, 50,000 roof rainwater harvesting units and 500,000 drip irrigation systems to communities for agriculture and household use.

This project idea was conceived in a brainstorming session in a stakeholder's workshop and through consultation with Adaptation Technical Working Group and later developed by the Consultant.

Although the two sectors of water and agriculture form the backbone of this country's social economic development, the two sectors are largely sensitive to climate change. Rainwater harvesting and storage and irrigated agriculture technologies would be ideal measures to address this challenge. Although these technologies have been used in parts of the country for many years, they have not been widely adopted due to several financial and non-financial barriers (discussed in Report II). The purpose of the proposed project is to address these barriers in order to enhance the adoption and diffusion of these technologies. The proposed project will be piloted in 10 selected Counties in the arid and semi- arid areas (ASALs) of Kenya and later replicated to other counties in Kenya.

1.2 Specific Project Ideas: Integrated Climate Change Adaptation Project in Water Harvesting and Drip Irrigation in Selected Counties

1.2.1 Introduction/Background

The proposed project idea is an integrated project on surface runoff and roof rainwater harvesting and drip irrigation technologies for agriculture and household use. The project idea was developed through a participatory and all inclusive process involving key stakeholders through workshops, brainstorming sessions with the Adaptation Technical Working Group, and individual consultations with relevant technical officers.

The proposed technologies are available locally but they are not widely used due to underlying barriers particularly in the arid and semi-arid areas. The main barriers to the adoption and diffusion of the technologies are initial high cost of installation of the systems, lack of incentives and financial credits, and inadequate technical capacity and information on technologies and their benefits. The purpose of the proposed project is to address these barriers in order to enhance the adoption and diffusion of the technologies. The proposed project will be piloted in 10 selected Counties in the arid and semi- arid areas of Kenya, where the effects of climate change and variability are most serious. Each County will start-off with a demonstration centre which will enable farmers to access, learn and appreciate the benefits of the technologies and therefore adopt the technologies.

Other methods that will be used to transfer and diffuse the technologies will be awareness creation, field trips and hands-on training as well as provision of extension services by water and agricultural extension officers. It will also involve developing and

implementing policies to make easily available cheap financial credits and incentives to the local communities.

The project implementation will reduce impacts of climate change on availability of water resources and agricultural development. It is expected that the project will lead to employment creation, improve food security, health and livelihoods for local communities, and enhance gender and children social and economic opportunities. The best practices will be replicated in other ASAL counties.

The **goal** of the proposed project is to enhance transfer and diffusion of climate change adaptation technologies in rainwater harvesting and drip irrigation in selected counties in Kenya, for socio-economic development.

1.2.2 Objectives

- i) To construct 10,000 community surface run-off rainwater harvesting systems in 10 ASAL areas Counties by 2017.
- ii) To install 50,000 roof rainwater harvesting systems in the 10 Counties in the ASAL areas by 2017
- iii) To introduce 100,000 drip irrigation systems to individual farmers and institutions, in 10 Counties of the ASALs area by the year 2017.

1.2.3 Outputs

- i) 10 pilot surface run-off water harvesting and roof rainwater harvesting demonstration centres, each integrated with a drip irrigation demonstration site are established and functional in the first two years.
- ii) 10 irrigation demonstration projects are functional and ongoing in 10 counties.
- iii) 1,000 surface run-off water harvesting systems are established and functional in 10 counties by 2017.
- iv) 50,000 roof rain water harvesting systems are installed and functional in 10 counties by 2017.
- v) 100,000 drip irrigation systems are operational and functional in 10 counties by 2017.
- vi) 10 technicians per county to man the demonstration centres and provide extension services are trained within the first 2 years.
- vii) Local communities and institutions are trained and continuously made aware of the importance of adapting the technologies.
- viii) Advocacy for incentives including rebates, tax waivers and soft loans are launched.
- ix) Brochures, audio visual materials and bill boards are placed in strategic locations.

1.2.4 Relationship to the Country's Development Priorities

Kenya's development plans and strategies are anchored on Vision 2030, which is the Country's blue print for transforming the country to a newly Industrial Middle Income country, capable of providing high quality of life to all citizens, by the year 2030. The Vision and other country's strategies and action plans have identified several key sectors of development, which include water resources and agriculture. All economic sectors depend on water resource availability and adequate quantity and quality of

water is recognised as a basic requirement for Kenya's economic growth and performance (GoK 2010). Agriculture is the mainstay of the Kenyan economy and accounts for about 26% of GDP directly and another 25% indirectly through linkages with manufacture, distribution and other service related sectors (GOK, 2010).

The Constitution of Kenya (2010) also guarantees the right to water and food under the Bill of Rights. The proposed technologies will enhance the provision of these rights by providing water and food from irrigation.

1.2.5 Deliverables

The proposed integrated surface runoff and roof rainwater harvesting and drip irrigation project is expected to have the following deliverables:

- i) Training manuals and charts on water harvesting and drip irrigation technologies for technical personnel and local communities
- ii) Workshops and training seminars reports
- iii) Annual and quarterly project review reports
- iv) Established and functional water harvesting and drip irrigation demonstration sites
- v) Survey reports on the project impact on socio-economic status of local communities including employment, improved livelihood, gender empowerment, children education
- vi) Visibility materials for further enhancement, transfer and diffusion of technologies are developed.

1.2.6 Project Scope and Possible Implementation

The project broadly responds to National goals relating to the adaptation to climate change, which is negatively impacting on the social economic development. The National Climate Changes Response Strategy (2010) fully acknowledges the reality of climate change and proposes policy decisions on climate change adaptation measures. In line with this is the National Policy for the Sustainable Development of Northern Kenya and other Arid Lands emphasizes how to ensure food and nutrition security in arid and semi-arid lands, where rainfall is unpredictable, a the problem is certain to increase as the impact of climate change deepens.

The scope is national but the pilot project will target 10 counties in ASAL areas. Several integrated environmental projects have been implemented in this country and experience shows that implementing stand alone projects is not cost effective. Therefore, the proposed project will link to the current and past projects in the ASAL areas. These include e.g. sand dams that have in the past been constructed in south eastern regions of Kitui and Machakos, and have helped to alleviate water problems associated with prolonged dry seasons in these regions. The project will also build on the completed World Bank project on Natural Resources Management in 28 arid and semi-arid districts in Kenya. The water harvesting and drip irrigation projects will build on these projects among others and therefore enhance resilience to climate change for the local communities.

1.2.7 Project Activities

The project activities and associated actors are sequentially presented in Table 1.1.

Table 1.1: Projected Activities and Actors

	Activity	Actors
1.	Organise stakeholder meetings to identify and select participating counties and location of the demonstration sites	NEMA and Key Stakeholders
2.	Administrative activities including recruitment and retraining of staff	NEMA and Project Implementation Committee (PIC).
3.	Undertake baseline surveys on the impacts of climate change and variability and identify natural resources, economics, cultural and social barriers and enabling environment to the adoption and diffusion of rainwater harvesting and drip irrigation technologies	Project staff assisted by PIC
4.	Undertake training needs assessment	Project staff assisted by PIC
5.	Construction of water harvesting and drip water irrigation demonstration facilities	Project staff and local labour
6.	Give the hands-on training on the use of the identified technologies.	Project staff and PIC
7.	Preparation of publicity materials, training curriculum and learning materials for community groups, governmental and non-governmental organisations and community based organisations.	Project Staff with locally procured firms
8.	Demonstrate the application and benefits of the integrated project at household, community, and institutional levels.	Project Staff and PIC
9.	Undertake awareness creation in the participating counties through farmers' field days, print and electronic media in local languages, and during chief's barazas and agricultural shows.	Project Staff and PIC
10.	Carryout exchange programmes between and within counties where technologies are being practised.	Project Staff and PIC
11.	Identify and document best practices for replication in other parts of the country.	PIC and project staff
12.	Identify barriers to and challenges on the implementation of the technologies and come up with appropriate measures and mitigation.	Project Staff and PIC
13.	Initiate follow-up activities by water and agriculture extension officers.	PIC and project staff
14.	Soliciting of funds including soft loans, grants, and seeking collaboration with micro-financing institutions.	PIC

1.2.8 Timelines

The whole project will be implemented in 5 years and the activities will be implemented as indicated on Table 1.2.

Table 1.2: Timelines for the Integrated Project

	Objectives/Activities	Timeline/ Year (Yr)
1.	Establish pilot rainwater harvesting centres in 10 selected counties	Yr 1 - 2
2.	Establish pilot drip irrigation centres in 10 selected counties	Yr 2 - 3
3.	Train technicians and farmers in surface run off and rainwater harvesting and drip irrigation technologies	Yr 2 - 3
4.	Awareness creation and diffusion of the technologies to the local communities	Continuous
5.	Visibility materials for further enhancement, transfer and diffusion of technologies	Yr 2 - 5

1.2.9 Budget/Resource Requirements

The proposed budget for the integrated project is Kshs 16.5 Billions. The itemised budget is presented in Table 1.3.

Table 1.3: Summary of the Proposed Budget

Serial No.	Project Component	Cost per County (Million Kshs)	Total Cost (Million KShs)
1.	Establishment of functional surface water harvesting and related activities	410	4100
2.	Establishment of functional roof rainwater harvesting and related activities	200	2000
3.	Establishment of functional drip irrigation facilities and related activities	170	1700
4.	Establishment of administrative centres at the headquarters and project sites	200	2000
5.	Procurement of vehicles, equipment, stationery and related activities	100	1000
6.	Staff employment/ Remuneration, consultancies and related activities	200	2000
7.	Reimbursable	100	1000
8.	Monitoring and evaluation	20	200
8.	Miscellaneous Expenses	250	2500
Total Budget (Million KShs)		1650	16500

The project will be funded through community contributions, government budgetary allocations, soft loans from micro-financing institutions, grants from development partners and Non-governmental Organisations, and private sector.

The Government budgetary allocations will fund government technical and extension officers, research on the technologies, and devolved funds for implementation of the technologies and infrastructure.

The communities will contribute labour and land for implementation of the climate change adaptation technologies within the counties. For purposes of sustainability and

ownership of the projects the communities will be expected to implement the projects through acquiring soft loans, for implementation of the projects, which they will be expected to pay back. The government will put in place enabling framework to enable local community to access soft loans from micro-finance institutions.

The development partners will co-finance special funds for micro-finance, training and awareness creation materials, vehicles and equipment, exchange visits and consultancy services. NGOs and private sector in partnership with the government will be expected to contribute to diffusion of the technologies.

The project implementation will be carried out in partnership with community, government, private sector, NGOs and Development partnership.

1.2.10 Measurements/Evaluation

A participatory evaluation, monitoring and evaluation system will be put in place. This will include a quarterly monitoring system to identify planned outputs, achievements and challenges of technology up-take and diffusion. A mid-term evaluation and end of project evaluation will be undertaken. This will form a basis for lessons learnt and project replication.

1.2.11 Possible Complications

Out of the three proposed technologies, the challenge that was highlighted most as risk to the implementation of the integrated project is political goodwill (Report III). This was seen in terms of possible government's inadequate support to climate change adaptation initiatives and poor cooperation and collaboration among government agencies in implementing the project. The challenges will be addressed through awareness creation and exposure of Policy Makers to the costs of not undertaking climate change adaptation measure and the benefits of implementing the technologies.

Inadequate awareness and negative attitudes could also bring complications as many people generally resist change and would likely not put in place measures for adaptation. The project will create awareness to local communities on the socio-economic benefits of adopting these technologies. Training is expensive and this could be a challenge in the capacity building of technicians and key stakeholders. However, it is expected that the resources to facilitate training will be provided by the government in partnership with donors and private sector.

The other challenge is difficulties in obtaining funding for the project due to lack of donor financial support and competition with other organs of the government like health and education for limited government funds. Poor loan recovery measures would constrain revolving loans proposed in agriculture sector. This challenge will be overcome through development of policy on provision of incentives in form tax rebates and soft loans, and creation of special irrigation and water harvesting funds. Scarcity of resources like land is likely to be a challenge to the project implementation but can be overcome through involvement and intervention by local communities.

Climate related factors such as prolonged drought and the associated impacts on water harvesting for drip irrigation maybe a major constraint to the implementation of the

proposed integrated project. However, issues of climate are external but can be overcome by putting in place early warning systems.

1.2.12 Responsibilities and Coordination

The overall coordination of the project will be undertaken by National Environment Management Authority (NEMA) under the oversight of Ministry of Environment and Mineral Resources (MEMR). The government ministries responsible for water resources and agriculture will facilitate the implementation of rainwater harvesting, drip irrigation and agricultural activities in collaboration with local communities and development partners. The Ministry of Finance will provide the counter devolved funds for the up-take of the project including provision of financial incentives and soft loans.

The project will be implemented through a project steering committee at the national level, which will comprise all partners and stakeholders. Project implementation committees will also be established at the County levels and will include the key partners, stakeholders and a representation of gender and people with disabilities.