

JOINT UN CLIMATE CHANGE PROJECT

(Energy, Environment and Climate Change)



SUSTAINABLE CHARCOAL PRODUCTION TECHNOLOGIES IN IN KENYA THE CASE OF KWALE, NAROK AND TAITA TAVETA COUNTIES

FINAL REPORT ON FIELD PROJECT ACTIVITIES



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ABBREVIATIONS

ACK	Anglican Church of Kenya
ASAL	Arid and Semi-arid Lands
CBOs	Community Based Organizations
CPAs	Charcoal Producer Associations
CPGs	Charcoal Producer Groups
CSOs	Civil Society Organizations
EMCA	Environmental Management and Coordination Act
ENSDA	Ewaso Nyiro South Development Authority
GAF	Green Africa Foundation
GHG	Green House Gas
GoK	Government of Kenya
HH	House Holds
ICT	Information Communication Technology
KEFRI	Kenya Forestry Research Institute
KFS	Kenya Forestry Service
KIDA	Kikesa Integrated Development Association
KNBS	Kenya National Bureau of Statistics
KWS	Kenya Wildlife Services
KYG	Kenya Young Green
MENR	Ministry of Environment and Natural Resources
NAMAs	National Appropriate Mitigation Actions
NCCAP	National Climate Change Action Plan
NCCRS	National Climate Change Response Strategy
NCG	Narok County Government
NGOs	Non-Governmental Organizations
SDGs	Sustainable Development Goals
SLM	Sustainable Land Management
UNDP	United Nations Development Programme
USD	United States Dollars

EXECUTIVE SUMMARY

The UN Joint Project on Climate Change seeks to ensure the promotion of renewables and sustainable biomass production in the ASALs by supporting the development of a charcoal framework that can be further developed by the GoK into a fully-fledged Nationally Appropriate Mitigation Action (NAMA). This program endeavors to pilot sustainable charcoal production technologies in three counties (Kwale, Taita Taveta and Narok).

Based on the above, UNDP commissioned a scoping mission in the three Counties of Kwale, Narok and Taita Taveta to assess the current status of charcoal producer groups, existing charcoal policies, methods of charcoal production, challenges realised, training needs and mitigation measures required.

The key findings from the scoping mission indicated that the following challenges needed capacity building interventions:

- Charcoal is still a major source of fuel and a source of livelihood. The indigenous trees are preferred for charcoal production and are being cut for crop and livestock farming.
- Charcoal production is undertaken on large scale in all the three Counties using traditional kiln technology that is inefficient and has low recovery rates.
- Registered CPAs and CPGs have inadequate capacities to govern their own institutions and market their charcoal production. Adoption of charcoal rules by duty bearers and rights holders was not up to date.
- Charcoal trade is controlled by middlemen from outside the three targeted Counties who have created market linkages and have strong base of financial resources.

Seven capacity building trainings were delivered to 7 CPAs in Kwale and Taita Taveta Counties. The training curriculum reached 198 participants and covered 15 topical areas in technology dissemination, conservation and woodland management, governance, communication skills and enterprise and marketing issues.

Two stakeholders' meetings were organized by UNDP in Narok County to consolidate views on viable strategies of engagement on sustainable charcoal production. The meetings drew action plans as a road map for future engagement in sustainable charcoal production technologies.

Emerging issues were brought out from all the three interventions in form of challenges and opportunities. The recommendations point at:

- Replication of the project interventions in other targeted sites with practical demonstrations.
- Support registered groups to establish clear operational structures.
- Support establishment of organized demonstrations at CPGs using appropriate equipment.
- Consider creation of working partnerships at the County level.

- Tailor make the charcoal rules into simplified and translated versions in line with specific county needs.
- Undertake wood fuel/ charcoal value chain assessment study in each County context.
- Build the capacity of charcoal makers in energy saving stoves and solar power.

1.0 INTRODUCTION

Kenya's 2010 National Climate Change Response Strategy (NCCRS) recognized the importance of climate change impacts for Kenya's development. In 2012, the Government of Kenya (GoK) initiated the process of elaborating a National Climate Change Action Plan (2012) as a means to enable Kenya to reduce vulnerability to climate change and to guide the transformation towards a low carbon, climate resilient development pathway in line with Kenya's Vision 2030. The National Climate Change Action Plan (NCCAP) takes forward the implementation of the NCCRS. The NCCAP identified mitigation options to be implemented in the energy sector including development of National Appropriate Mitigation Actions (NAMAs) in biomass related technologies.

Charcoal provides domestic energy for 82% of urban and 34% of rural Households (HH) in Kenya. According to the last national charcoal survey done in Kenya (2005)¹, the amount of charcoal produced each year in Kenya is about 1.6 million tonnes worth Kshs 32 billion (400 million USD). Meanwhile of Kenya's total land area of 57.6 million hectares, 84% is arid and semi-arid (ASAL). Given the low national forest cover of about 6%, it is estimated that over 75% of the 1.6 to 2.4 million tons of charcoal used in the country annually is unsustainably harvested from these arid and semi-arid lands. Therefore in the short and long-run, it is projected that the majority of Kenyan households will likely continue depending on traditional fuels to meet their daily energy needs for possibly many decades to come. The availability of such biomass as well as preservation of carbon stocks can be greatly improved through afforestation, restocking and more efficient harvesting, production and stove technologies, many of which are now commercially available. Hence, sustainable charcoal (production and use) practices offer an opportunity to improve existing charcoal production and consumption, reducing the pressure on carbon stocks and reducing Green House Gas (GHG) emissions while simultaneously increasing energy access and incomes to drive local economic development.

The UN Joint Project on Climate Change seeks to ensure the promotion of renewables and sustainable biomass production in the ASALs. This is through supporting the development of a charcoal framework that can be further developed by the GoK into a fully-fledged Nationally Appropriate Mitigation Action priority and piloting sustainable charcoal production technologies in three counties (Kwale, Taita Taveta and Narok).

The promotion of biomass using climate change project is based on the premise of the following two factors: First there is continued acknowledgement by various studies and reports, that charcoal, and by extension biomass, is and will continue to form the core part of energy for domestic use in both rural and urban areas in Kenya (Kenya National Bureau of Statistics, Kenya Forestry Service all estimate that 80% of Kenya's domestic energy needs are met by biomass, with charcoal leading). Secondly, Charcoal presents a critical energy form that effectively demonstrates the nexus between climate change (mitigation and adaptation, to some extent) and poverty for Kenya. As Kenya's energy demands continue to grow (with continued population rise), more charcoal will therefore be required to sustain the domestic energy needs.

¹ *National Charcoal Survey: Exploring the potential for a sustainable charcoal industry in Kenya*, Energy for Sustainable Development Africa (2005)

The resultant deleterious impacts on Kenya's forest cover is now evidenced by the continued loss of forest cover, contributing to more carbon emissions and exacerbating poverty levels, especially for communities that rely on charcoal production and sale for their incomes.

This is a report on the initiatives of the adoption of sustainable charcoal (production and use) technologies and practices that aims to greatly contribute to improvement of the quality of livelihoods for communities relying on this industry, while conserving the ecosystems and managing the emissions (mainly through continued deforestation and charcoal/biomass use).

It is a result of UNDP working partnership with the Ministry of Environment and Natural Resources (MENR), and the Kenya Forestry Research Institute (KEFRI) collaborating on a pilot basis to introduce energy efficient charcoal kilns and practices in the three (3) counties of focus. The initiatives aimed at enhancing cross-unit synergies and building on existing structures and networks.

The report covers three (3) main activities undertaken by partners in the three Counties of Kwale, Taita Taveta and Narok under the UN Joint Project on Climate Change. The three major activities are as follows:

- i. A scoping mission assignment of Charcoal Production Technology landscape in Kwale, Taita Taveta and Narok Counties;
- ii. A summary of 7 capacity building training on Sustainable Production Technologies undertaken under joint initiatives of UNDP, KEFRI and KFS in Kwale and Taita Taveta Counties;
- iii. Proceedings of stakeholders meetings in Narok County (Narok and Kilgoris) on Sustainable charcoal production.

The following section provides a summarised analysis reports of each of the above three activities in a sequence.

2.0 ACTIVITY REPORTS

2.1 Analysis of the project interventions

This section of activity reports is organized into three parts. Part one presents an analysis of finding from the scoping mission by a joint team from UNDP and KEFRI. Part two covers an analysis of sustainable charcoal production technologies capacity building trainings in Kwale and Taita Taveta Counties. Part three covers an analysis of stakeholders meetings conducted in Narok County to determine next steps of engagement with UNDP on sustainable charcoal production capacity building initiatives.

2.2 Analysis of the Scoping Missions

A joint scoping mission of KEFRI and UNDP was conducted in the three counties of Kwale, Narok and Taita Taveta between April to September 2015 to assess charcoal production status in view of adoption of charcoal rules, existing technologies in charcoal production, the preferred species for charcoal production and environmental management status.

The scoping mission in the three targeted Counties was conducted on the scheduled dates as indicated in *table 1*: For more information and details on scoping mission see attachments *annex 1 section 1* for scoping mission reports;

Table 1: Scheduled dates for the mission report

S/No.	County	Scheduled dates
1	Kwale	6 th / June /2015 to 3 rd /July /2015.
2	Taita Taveta	28 th /April /2015 to 1 st /May/2015.
3	Narok	10 th -13 th September 2015.

The analysis of findings from the scoping mission for each County is presented here-with;

2.2.1 Analysis of scoping mission report for Taita Taveta County

This section provides an analysis of the scoping mission for Taita Taveta County. The section is organized in sub-topics of analysis on charcoal producer groups, adoption of charcoal rules 2009, adoption of new charcoal technologies, the preferred species for charcoal production and emerging issues from the scoping study.

2.2.1.1 Analysis on charcoal Producer groups in Taita Taveta County

The scoping mission established that there were only Three (3) CPAs with a total of 668 members in Taita Taveta County. These are namely Mwatate, Taveta and Ore. Each CPA has different number of CPGs as listed in the break down on *table 2* overleaf.

Table 2: Breakdown of Taita Taveta County CPAs and CPGs

Name of CPA	Name of CPGs	Number of Members
MWATATE	Landi	51
	Mwatate	98
	Bura	26
TAVETA(DAWIDA)	Kishushe	136
	Paranga	135
	Sangenyi	20
	Wundanyi	33
ORE	Murunganyo	15
	Kagire/Ndara	89
	Ngoria	28
	Kasigaye	37
TAVETA	None	-
Total		668

It is worth noting that Taveta Sub-County had no CPA in existence during the period of the scoping mission yet issue of the prosopis growth was very alarming.

2.2.1.2 Analysis on adoption of charcoal rules 2009

The scoping study established that the charcoal policy guidelines 2005 and 2009 are in place in the three (3) sub-Counties where the CPAs are operational. It was also revealed by the County conservator that CPAs are plant trees in the ranches and on community farms. The formation of CPAs has enhanced relationships and good linkage between KFS and the community of forest management. Movement permits of charcoal are issued by KFS strictly to registered CPAs only. The CPAs earn revenue of ten Kenya shillings on every bag of charcoal sold from members.

It was ascertained that the existing CPAs were newly formed and therefore had no clear charcoal policy guidelines to guide their operations. CPAs officials have inadequate governance skills to run day to day operations of their association. The CPAs had no adequate skills to manage of group dynamics aspects.

2.2.1.3 Analysis of adoption of new charcoal technologies

The scoping study established that the traditional charcoal kilns was the most widely used technology in the 3 sub-Counties with CPAs. It was also recognized that drum kilns technology was introduced by Kenya Forest Network in Mwatate sub-County. A few members were also using improved traditional/Casamance kilns technology which was introduced by KEFRI through SLM Project in Voi sub-County.

Although the drum kiln charcoal production technology was introduced to the communities, the scoping mission found out from Landi CPG beneficiaries that proper guidelines were not given to beneficiaries on the usage of the drum kilns by Kenya forest Network.

2.2.1.4 Preferred species for charcoal production

The most preferred tree species for charcoal production in Taita Taveta were *Acacia tortilis*, *Acacia oloifera* and *Acacia Nilotica*. The other tree species used in charcoal production were *Acacia Melifera*, *Acacia Senegal*, *Terminalia brownie* and *Acacia Robusta*.

2.2.1.5 Institutions working with communities on charcoal production issues

It was established that only two (2) institutions were working in collaboration with Kenya Forestry Service and the communities on charcoal production in Taita Taveta County. These institutions were KEFRI through SLM Project in Voi sub-County and the Kenya Forest Network which introduced the drum kilns technology in Mwatate sub-County.

2.2.1.6 Issues raised by stakeholders during the scoping study

The Taita Taveta Scoping study raised the following issues of which mitigation measures were provided by a joint evaluation team from KEFRI and UNDP as shown in table 3 below.

Table 3: Issues raised during the scoping mission

S/No.	Issue Raised from scoping mission	Mitigation measure to address the issues
1	Invasion of <i>prosopis</i> weed in Taveta Sub-County	Formation of CPA in Taveta to manage and Utilize <i>prosopis</i>
2	Use of Inefficient charcoal technologies	Training on use of sustainable charcoal production technologies.
3	Inadequate governance and group dynamic skills by CPA members	Proposed CPA training on governance and leadership for selected group members.
4	Over exploitation of forest cover through charcoal production from ranches.	Proposed CP training on tree nursery establishment and woodland management.
5	Conflict between registered charcoal producers and Kenya Wildlife Services	Proposed to invite KWS representative during the charcoal stakeholders' workshop.
7	Lack of means of transport to get on market.	Proposed CPA training on charcoal stock management, entrepreneurship and marketing.
8	Overdependence on charcoal production as a source of livelihood	Proposed CPA training on alternative means of livelihood for local communities.

2.2.2 Analysis of scoping mission report for Kwale County

This section gives an analysis of the scoping mission for Kwale County. The section is organized into five (5) sub-topics of analysis on charcoal producer groups, adoption of charcoal rules 2009, adoption of new charcoal technologies, the preferred species for charcoal production and emerging issues from the scoping study.

2.2.2.1 Analysis on charcoal Producer groups in Kwale County

The scoping mission established that there were four (4) CPAs with 2735 members in Kwale County. They are namely Kinango, Samburu, Msambweni 1, Msambweni 2 and Samburu CPAs.

The scoping mission team also visited a small micro-enterprise in Bamburi, Mombasa namely Wema briquetting center to establish activities of innovative chain actors in charcoal value chain. Each CPA had different number of CPGs as illustrated in the breakdown in *table 4*.

Table 4: Breakdown of Kwale County CPAs

Name of CPA	Name of CPGs	Number of Members
KINANGO	Green Tree	270
	Miti Mingi	290
	Panda Miti	137
MSAMBWENI 1(LUNGA LUNGA)	Jirani	200
	Kasemeni	400
	Sega	40
MSAMBWENI 2(KILIMANGONDO)	Bahatisha	450
	Jikomboe	27
	Upendo	450
SAMBURU	Mackinon Road	256
	Malalo Mane	60
	Mwangaza	155
Total		2735

2.2.2.2 Analysis on adoption of charcoal rules

The analysis of the scoping mission report recognized the following aspects in regard to adoption of charcoal rules 2009:

- There are established tree nurseries in the CPGs. The existing CPGs had established tree woodlots. The charcoal collection centers are in existence at CPG level. The KFS was in charge of management of all Gazetted forests. The CPA and CPG officials were aware of requirements of CPAs and CPGs registration and the need to use new charcoal technologies in charcoal production and the need to establish woodlots.
- The KFS was working in collaboration with CPAs and CPGs in implementing the charcoal rules through trainings on farm plantation management, sustainable harvesting and utilization of trees.
- It was discovered that the charcoal section is devolved to the Kwale County Government. It was also established that Farm Forestry is devolved to the County Government and therefore all on farm forest products are devolved to the county Government.

2.2.2.3 Analysis of adoption of new charcoal technologies

The scoping mission found out that the use new technologies in charcoal production was not intensive in Kwale County. All the CPAs and CPGs are using traditional earth kilns. The adaptation of improved charcoal production technologies by producers was very low, but a few CPGs like *Upendo* and *Bahitisha* from *Msambweni* had experience of producing charcoal using improved traditional/*casamance* charcoal kilns.

2.2.2.4 Preferred species for charcoal production

The most preferred tree species for charcoal production in Kwale County were *Acacia tortilis*, *Acacia oloifera* and *Acacia Nilotica*. The other tree species used in charcoal production were *Acacia Melifera*, *Acacia Senegal*, *Terminalia brownie* and *Acacia Robusta*.

It was also established that the following tree species were in the CPGs and CPAs nurseries and woodlots: *Acacia mearnsii*, *Acacia polyacantha*, *Casuarina equisetifolia*, *Commiphora Africana*, *Commiphora campestris*, *Eucalyptus camaldulensis*, *Senna spectabilis* and *Terminalia brownie*.

2.2.2.5 Institutions working with communities on charcoal production issues

The scoping mission established that KFS and the County government were the only key institution that forestry management. The County government of Kwale was working on devolved policies on farm forest wood products. The KFS was tasked with the management of Gazetted forests. The KFS was working with CPAs and CPGs in implementing the charcoal rules 2009.

There were also some unregistered groups in Kwale County that were engaged charcoal trading business through importation of good quality charcoal from Tanzania.

2.2.2.6 Issues raised by stakeholders during the scoping study

It was noted from the scoping study that the climatic conditions in Kwale County are not favourable for sustainable growth of woodlots. Kwale County has erratic rainfall patterns which subjects the tree survival in the woodlots to be very low.

The charcoal prices are low because there are other selling points which are not channeled through the CPA or CPGs. Some community members who are not registered are doing charcoal business making the prices to fluctuate.

The Charcoal rules 2009 are not followed to the letter by duty bearers and rights holders. The rights holders feel that the identification of real charcoal producers is not clear. This has led to low charcoal prices. It was also noted that there is no clear channel on Issuance of charcoal permits between KFS and Kwale County Government.

The leadership of the CPAs and CPGs have low capacity in management of their own organizational matters. The exploitation of opportunities in the charcoal value chain has not been fully utilized. For instance, though the charcoal briquettes have been introduced as efficient means of utilizing charcoal dust, agricultural waste and forest residues less efforts has been undertaken by CPGs and CPAs to popularize the briquette products on market.

A summary of issues raised by stakeholders during the scoping mission in Kwale County of mitigation measures by a joint evaluation team from KEFRI and UNDP is summarized in *table 5*.

Table 5: Issues raised by stakeholders in the scoping mission in Kwale County

S/No.	Issue Raised from scoping mission	Mitigation measure to address the issues
1	Use of Inefficient charcoal technologies	Training on use of sustainable charcoal production technologies.
2	Erratic rainfall that is inadequate with nursery management and woodland survival.	Proposed the use of water tanks or training of CPA on innovative water harvesting techniques for nursery and woodlot management.
3	Inadequate governance and group dynamic skills by CPA members	Proposed CPA training on governance and leadership for selected group members.
4	Over exploitation of forest cover through charcoal production from ranches.	Proposed CP training on tree nursery establishment and woodland management.
5	Conflict between registered charcoal producers and Kenya Wildlife Services	Proposed to invite KWS representative during the charcoal stakeholders' workshop.
7	Clear identification of charcoal producers and trading laws as in the Charcoal rules 2009.	Proposed CPA training on charcoal rules, inventory and stock management, entrepreneurship and marketing.
8	Overdependence on charcoal production as a source of livelihood	Proposed CPA training on alternative means of livelihood for local communities.

2.2.3 Analysis of scoping mission in Narok County

The scoping mission established that there were four (4) CPAs in Narok County that were not actively engaged in charcoal production. They are namely Narok South, Narok North, Transmara West and Transmara East. The study established that other charcoal producers with 42 members were in operation but not in line with the charcoal rules 2009. They were namely *Olelieng* charcoal group and *Natotua* Conservation Association Group in *Ololunga*. Each established CPA had different number of CPGs whose names were not established by the scoping mission as indicated in tables 6 and 7.

Table 6: Existing CPAs in Narok County

Name of CPA	Sub-County	Number of CPGs	Number of Members
Narok South	Narok South	Enkutuk, Endim, Ewaso Nyiro, Lamek	480
Narok North	Narok North	Olchoro, Entoltol, Enturumet	250
Transmara West	Transmara West	Sitoka Environmental, Namunyak, Elesentu Eriekiskishomi, Iretet self-help group	250
Transmara East	Transmara East	Kuresok empowerment CPG	240
Total			1220

Table 7: Other informal charcoal producers

Name of group	Area of location	Number of Members
Olelieng charcoal group	Ololunga	12
Natotua Conservation Association Group	Ololunga	40

2.2.3.1 Adoption of charcoal rules

It was recognized that in Enkutuk, Endim CPG in Narok South had established tree nurseries and tree woodlots. They also had existing informal collection center at Ololunga. The groups were also engaged in other alternative income generating activities like bee-keeping, briquettes production and crop farming. The Narok CPAs had no physical offices and governance of the associations was not well structured. The CPAs had challenges with the law enforcement agencies who often raided their collection centers to impound charcoal.

The study also learnt that all registered CPAs in Narok County had 1220 registered members. Their governance structures are not well established and functional. The Narok South CPA works in partnership with learning institutions and have established woodlots in Christian Outreach Academy and Ntulele Primary school.

The association members lacked technical skills in establishing tree nurseries and woodlots. Although the group has existing charcoal collection centers, they face stiff competition from unregistered groups selling charcoal in Narok town. The CPAs products were not branded and packaged in a professional manner to compete in the flooded market.

The scoping study also established that there were other informal charcoal producers not registered as CPAs. The Olelieng charcoal group in Ololunga, operational with 12 members and Natotua had 40 members but was not aware of charcoal rules and regulations. They have collection stores that were always closed because they operated in fear of raids from multiple law enforcers.

The Natotua Conservation Association Group had an operational tree nursery with *eucalyptus grandis*, *Wabergia ugandensis*, *acacia tortilis* and *olea Africana* trees species. It has established a woodlot of *eucalyptus grandis* and conserved the indigenous trees on their farms, with engagement in bee-keeping as alternative source of livelihood.

2.2.3.2 Existing charcoal technologies

The scoping mission established that charcoal producers in Narok County use only traditional earth kilns which in turn produce low yields and poor quality charcoal. The improved charcoal production techniques which are efficient and produce higher yields and good quality charcoal have neither been adopted by producers nor disseminated by duty bearers in the County.

2.2.3.3 Institutions working with communities on charcoal production issues

The scoping mission established that multiple stakeholders were engaged in regulating charcoal production and trading business in Narok County. KFS and the County government were the only key institutions that were engaged in forestry management. The County government of Narok

was engaged in the process of devolving charcoal rules. The KFS was tasked with the management of Gazetted forests. Other institutions noted by the scoping mission to be key charcoal trading regulation business were Kenya Wildlife Services and Kenya Police Service.

The Ministry of Energy, Ministry of Environment and Natural resources, the Maasai Mara University and Ewaso Nyiro South Development Authority (ENSDA) were notable in initiating the actions to rehabilitate the Mau catchment area. There were several other local CSOs involved on small scale conservation of forest cover and wildlife in Narok County.

There were also so many unregistered individual charcoal producers and groups in the County. The scoping report noted that many individual groups were engaged in charcoal trading through transportation to Narok town and outside the County.

2.2.3.4 Issues raised from the scoping mission

The scoping mission noted with a lot of concern that Narok County had a different picture of activities related to degradation of the forest cover, human activities and wildlife. *Table 8* overleaf presents a snapshot of some keys issues and proposed mitigation measures that were established from the mission.

Table 8: Issues raised from the scoping mission

S/No.	Issue Raised from scoping mission	Mitigation measure to address the issues
1	Only 2 CPAs are registered in the County and are not actively engaging in charcoal production and trading activities.	Training CPA members on new charcoal production technologies and entrepreneurship.
2	There are many existing unregistered charcoal producers and traders operating in the County.	Charcoal value chain guideline to be developed through the county Government.
3	Indigenous trees are felled for production of charcoal.	Training and introducing best fast growing charcoal trees and conservation of indigenous trees.
4	Charcoal producers are not conversant with charcoal policies.	Creating awareness campaign on charcoal rules to all charcoal producers
5	Law enforcers do harass registered charcoal producer groups.	Mounting stakeholders meeting involving all Key Government departments & NGOs.
6	Governance in charcoal producer groups in not well structured and functional.	Proposed CPA training on governance and leadership for selected group members.
7	There is wildlife and human habitat conflicts	Train CPA members of alternative sources of livelihoods.

3.0 ANALYSIS OF THE CAPACITY BUILDING TRAININGS ON SUSTAINABLE CHARCOAL PRODUCTION IN KWALE AND TAITA TAVETA COUNTIES

This section provides analysis of capacity building trainings on sustainable charcoal production undertaken under a UN Joint Project on Climate Change in Kwale and Taita Taveta Counties. It provides an analysis of trainings according dates of sessions, participants statistics, emerging issues and challenges encountered in delivery of the trainings. The report is organized at each specific County.

3.1 Analysis of trainings in Kwale County

There were 4 main trainings in Kwale County. A total of 116 participants were trained in 4 different sessions. A summary of specifications of the trainings is listed in *table 9* below.

Table 9: A summary of capacity building trainings in Kwale County

S/No.	CPA Name	Venue of Training	Dates of training	Number of participants	Gender specifications of participants	
					Male	Female
1	Kinango	Kilibasi (3 CPGs)	23/05/2016-26/05/2016	30	16	14
2	Msambweni 1	Lunga Lunga ACK Church (3 CPGs)	14/02/2016-20/02/2016	30	18	12
3	Msambweni 2	Kilimangodo ACK Church (3 CPGs)	28/02/2016-03/03/2016	30	18	12
4	Samburu	Samburu(Ore) (3 CPGs)	8/11/2015-14/11/2015	26	19	7
Total Number of Participants				116	71	45

3.2 Analysis of trainings in Taita Taveta County

There were three (3) different training sessions conducted for 82 participants in Taita Taveta County. There were also interventions supposed to assist in the formation of a CPA in Taveta Sub-County. A summary of specifications of the trainings is as listed in *table 10*.

Table 10: A summary of capacity building trainings in Taita Taveta County

S/No.	CPA Name	Venue of Training	Dates of training	Number of participants	Gender specifications of participants	
					Male	Female
1	Mwatate (4CPGs)	Landi	25-31/10/2015	26	19	7
2	Taveta/Dawida	Kishushe Center	11/-14/ 4/2016-	30	16	14
3	Ore(5 CPGs)	Maungu	22-28/11/2015	26	19	7
Total Number of participants				82	54	28

3.2.1 Objectives of the trainings

The purpose of the Sustainable Charcoal Production Technologies for 7 CPAs drawn from two (2) Counties of Kwale and Taita Taveta was to build the capacity of the participants on sustainable charcoal production technologies.

Specific objectives were:-

- To equip participants with knowledge on environmental issues, and how charcoal related activities are contributing to climate change.
- To equip selected members of the Samburu CPA with knowledge on efficient charcoal production technologies and increase adoption rates among the CPA members.
- To familiarize and domesticate the 2009 charcoal rules and regulations for environmental conservation and improved livelihoods.
- To promote establishment of wood lots/wood fuel plantation for charcoal production through species selection, community seed collection and handling, tree nursery establishment and management.
- To address challenges and opportunities for the production and marketing of charcoal products through branding, trading and marketing of charcoal products.
- To build capacities of CPA/CPGs members on governance, leadership and group dynamics for sustainability.
- To equip participants with knowledge on alternatives nature-based sources of livelihoods.

3.2.2 Training management

3.2.2.1 Resource persons

The resource persons were drawn from Kenya Forestry Research Institute Karura, Kenya Forestry Service, KIDA, KYG, Green Africa Foundation (GAF) (NGOs) and a UNDP consultant. The list of resource persons who were involved in the training is as presented in *table 11*.

Table 11: List of Resource Persons

S/NO	NAME	ORGANIZATION	GENDER
1	JAMES KAMWEMWE	KEFRI	M
2	SAMSON MOGIRE	KEFRI	M
3	NELLIE ODUOR	KEFRI	F
4	EMILY M. KITHEKIA	KEFRI	F
5	Dr. JAMES KIMONDO	KEFRI	M
6	KEFA K ABONGO	KYG	M
7	VINCENT TENGEYE	CONSULTANT	M
8	MATHEWS CHIRASHA	CONSULTANT	M
9	ALFRED MULLI	KIDA	M
10	SILAS B TSUMA	KFS MSAMBWENI	M
11	JOSEPH M MWANYIA	KFS MSAMBWENI	M
12	RUWA KALAMA MASHA	KFS KINANGO/SAMBURU	M
13	MWAMELA WELLINGTON	KFS WUNDANYI	M
14	WILLIAM OCHI	KFS VOI/MWATATE	M
15	ALAN ONGERE	CONSERVATOR TAITA TAVETA	M
16	MILTON OBADO	GREEN AFRICA FOUNDATION	M
17	BAO O NYAMBATI	KEFRI	M
18	PETER NDUGU	KEFRI	M
19	MR. OMARI	KFS MSAMBWENI	M

3.2.2.2 Organizers of the trainings

The trainings were organized and coordinated by KEFRI in collaboration with KFS contact person in each sub-county in collaboration with CPA chairpersons. The logistics of the training was handled by UNDP office.

3.2.2.3 Participants reached

The training interventions reached 198 participants as direct beneficiaries (116 for Kwale County and 82 for Taita Taveta) in the two targeted Counties. The participants were drawn from 7 CPAs (4 in Kwale and 3 in Taita Taveta Counties). *For more details refer to table 10 on page 16.*

3.2.2.4 Training methods

The trainings were conducted through lectures, presentations, question and answer, discussions, case studies, issuing of operational guidelines and practical demonstrations. Each facilitator had a unique approach in presenting a session as outlined in *table 12* overleaf

Table 12: Training methods

S/No.	Session topic	Methods/Approach of delivery
1	Workshop preliminaries	Presentation, lecture, question, answer and discussions
2	Overview of charcoal production technologies.	Lecture, presentation, question and answer.
3	Practical set-up of kilns (traditional and improved).	Lecture, presentation, question and answer and practical demonstrations.
4	Charcoal production rules	Lecture, presentation, question and answer
5	Monitoring progress of kilns	Ocular observations and discussions.
6	Species selection of wood fuel for production	Lecture, presentation, question and answer and practical demonstrations.
7	Seed collection and handling	Lecture, presentation, question and answer and practical demonstrations.
8	Tree nursery establishment and management	Lecture, presentation, question and answer and practical demonstrations.
9	Establishment of woodlands/tree planting	Lecture, presentation, question and answer
10	Sustainable woodland management for fuel production	Lecture, presentation, question and answer.
11	Alternative Livelihoods for Charcoal producers.	Lecture, presentation, case examples and question and answer.
12	Communication and facilitation skills in charcoal business.	Lecture, group exercise, presentation, question and answer.
13	Governance, leadership and group dynamics.	Lecture, presentation, case examples and question and answer.
14	Charcoal storage, packaging and marketing.	Lecture, presentation, case examples and question and answer.
15	Harvesting charcoal from Kilns	Practical demonstration and calibration
16	Development of specific action plans for CPGs	Lecture, group work, presentation, question and answer
17	Workshop wrap-up, way forward and closing remarks.	Lecture, speeches , question and answer

3.2.2.5 Training materials

The materials that were used for delivery of the Sustainable Charcoal Production Technologies in each of the seven training sites (CPAs) are as presented in *table 13 below*.

Table 13: Training materials used for delivery of the trainings

S/No.	Type of training material	Purpose	Source
1	Vertical drum kiln	Practical demonstration	Delivered by UNDP
2	Horizontal drum kiln	Practical demonstration	Delivered by UNDP
3	Portable metal kiln	Practical demonstration	Delivered by UNDP
4	Chimneys & air inlets for demonstration of improved traditional kilns	Practical demonstration	Delivered by UNDP
5	Dried Wood fuel	Practical demonstration	Trainees
6	Farm tools(shovel, machete, spades	Practical demonstration	Trainees
7	Stationery (marker pens, masking tapes, flipcharts, note books, ball pens)	Lecture, presentations and question and answer.	UNDP

3.2.2.6 Training program highlights

The trainings were delivered on schedule as highlighted in *table 14* below.

Table 14: Training Schedules

Day	Topic	Responsibility
One	Travel from base to training site(Kwale- Lunga Lunga)	Facilitators
Two	Workshop preliminaries	KEFRI, UNDP, KFS
Morning	Charcoal production Technologies	KEFRI
	Practical set-up of improved earth and traditional earth kilns.	KEFRI and trainees
Afternoon	Charcoal production laws (2009)	KFS
	Monitoring of the progress of improved earth and traditional earth kilns.	KEFRI and trainees
Three	Monitoring of the progress of improved earth and traditional earth kilns.	KEFRI and Trainees
Morning	Setting –up of horizontal, vertical and improved portal metal kilns	KEFRI
	Species selection of wood fuel production	KEFRI
	Alternative Livelihoods for Charcoal producers	KEFRI
Afternoon	Sustainable woodland management for fuel production.	KEFRI
	Communication and facilitation skills in charcoal production.	KEFRI
	Monitoring of improved earth, traditional earth kilns and horizontal, vertical and improved portal metal kilns	KEFRI and Trainees
Four	Monitoring of improved earth, traditional earth kilns	KEFRI and Trainees
Morning	Harvesting of horizontal, vertical and improved portal metal kilns	KEFRI and Trainees
	Seed collection and handling	KEFRI
	Tree nursery establishment and management	KFS
Afternoon	Establishment of woodlands/tree planting	KFS
	Charcoal branding, packaging and marketing.	Consultant
	Monitoring of improved earth and traditional earth kilns	KEFRI and Trainees
Five	Monitoring of improved earth and traditional earth kilns	
Morning	Governance, leadership and group dynamics	Consultant
Afternoon	Monitoring of the improved earth and traditional earth kilns	KEFRI and Trainees
Six	Harvesting of improved earth and traditional earth kilns	KEFRI and Trainees
Morning	Development of CPA Action Plans	KEFRI and Trainees
	Presentation and re-alignment of CPA action plans	Trainees
Afternoon	Workshop Wrap-up and way forward and official closing ceremony	KEFRI UNDP and KFS
Seven	Travel to training site to base	Facilitators

It is worth to note that the actual training scheduled for Wundanyi and Kinango were conducted within four days instead of the scheduled 5 days training. This in a way affected the quality delivery for some sessions due to minimal time allocation.

3.2.3 Analysis of outputs, outcomes and impact of the trainings

3.2.3.1 Training outputs

The capacity building sessions training sessions yielded the following two major outputs as indicated below:

1. 198 participants were trained on 15 topical issues in two Counties as indicated in *table 12*.
2. 7 training reports produced from 7 trainings sessions in two Counties. See *annex 1*: section 2 on *Sustainable Charcoal Technologies Training Reports*.

3.2.3.2 Training outcomes and impact

In any given capacity building intervention, it is very difficult to document immediate outcomes and impact from the training interventions. For this project the UNDP has scheduled the monitoring and evaluation sessions in July-August in the 3 Counties to ascertain the outcomes from the capacity building trainings in Kwale and Taita Taveta County.

3.3 ANALYSIS OF THE STAKEHOLDERS MEETINGS IN NAROK COUNTY

Two stakeholders meetings were organized by UNDP in Narok and Kiligoris on 4th and 5th of May respectively. The meetings were a follow-up of the UNDP, KEFRI and KFS scoping mission that was conducted before commencement of the “Joint UN Climate Change Project” empowerment activities.

The main goal of the stakeholders’ meetings was to consolidate views of the community, County leaders, CBOs, NGOs and relevant National Authorities on sustainable strategies to use engage in conservation of water towers in Narok County (Mau and Mara catchments). The specific objectives of the two meetings were:

- 1) To level stakeholders’ expectations on sustainable charcoal production and charcoal policies and regulations and;
- 2) To draw a roadmap of engagement on sustainable charcoal production in the County.

Tables 15 and 16 present the statistical analysis of participants of the Narok and Kiligoris meetings respectively.

Table 15: Participants statistical analysis of the Narok meeting

S/No.	Institution	Male	Female	Total
1	Narok County Government	4	2	6
2	Narok County Assembly	1	-	1
3	National Government and Interior Coordination	1	-	1
4	Farmers	1	1	2
5	Maasai Mara University	-	2	2
6	Kenya Forestry Research Institute (KEFRI)	3	2	5
7	Kenya Wildlife Services	1	-	1
8	Kenya Forest Service (KFS)	2	-	2
9	State department of Environment (ENVO)	1	-	1
10	Ministry of Agriculture County Government	1	-	1
11	Ewaso Nyiro South Development Authority(ENSDA)	2	-	2
12	National Environmental NGO's	4	1	5
13	Group Ranch representatives	2	-	2
14	Community Based Organizations (CBOs)	3	1	4
15	Community Forest Associations(CFAs)	3	-	3
16	Charcoal Producers Association	2	-	2
17	Community Wildlife Associations	2	-	2
18	UNDP Consultant	1	-	1
19	UNDP staff	2	-	2
20	Documenters	-	2	2
	Total	36	11	47

Table 16: Participants statistical analysis of the Kiligoris meeting

S/No.	Institution	Male	Female	Total
1	Narok County Government	5	3	8
2	Narok County Assembly	1	-	1
3	National government and Interior Coordination	1	2	3
4	ENSDA	1	-	1
5	Farmers	1	1	2
6	Local Cooperative	-	1	1
7	Maasai Mara University	-	1	1
8	Kenya Forestry Research Institute (KEFRI)	3	2	5
9	Kenya Forest Service (KFS)	1	-	1
10	Ministry of Environment (ENVO)	1	-	1
11	National Environmental NGO's	3	-	3
12	Group Ranch representatives	4	-	4
13	Community Based Organizations (CBOs)	4	-	4
14	Community Forest Associations (CFAs)	5	-	5
15	Community Wildlife Associations	2	-	2
16	UNDP Consultant	1	-	1
17	UNDP staff	2	-	2
18	Documenters	-	2	2
	Total	35	12	47

3.3.1 Emerging issues from the two stakeholder meetings

The following are snapshots of emerging matters on conservation as deliberated during the two stakeholders' meetings.

3.3.1.1 Situation of livelihoods and Eco-system in Narok County

It was established that local communities have resorted to cutting down trees in order to get clear fields for farming as a source of their livelihoods. Others resorted to cutting trees as a source of livelihoods. Controlling of charcoal production and trade in Narok County has been difficult and is quite challenging due to unclear and conflicting roles and responsibilities among different departments tasked with charcoal regulations.

3.3.1.2 Implementation of charcoal regulations

Stakeholders have over time developed diverse perceptions on tree resources. In fact majority of stakeholders in Narok County have no clear understanding of the regulations regarding charcoal.

The stakeholders realized that indigenous forests and breeding sites for wild animals have been interfered with. In fact most of the destruction was associated with cutting down trees for charcoal production.

The environmental inter-sectorial coordination team was not in place to guide implementation of environment protection and conservation issues in Narok County. Apart from inadequacies in coordination mechanisms of partners to enhance the eco-system, there was no collective goodwill

from the community and leadership to protect environmental degradation and conservation in the County.

There have not been any resilience mechanisms to enrich and plant new trees to replace the destroyed forest covers. In fact farming activities had been developed at the expense of the dwindling forest cover. Apart from the improved earth kilns, charcoal producers do not use sustainable charcoal production technologies in the County.

The key expected outcomes emanating from the discussions on reduction of degradation of the forest cover were highlighted as summarized below:

- Established and functional Inter-sectorial coordination team on environment and conservation in Narok County.
- Established multi-stakeholder management team.
- Enhanced ecosystem services and improved resilience in resource use.

In conclusion the following were underscored as the targeted measures that stakeholders need to undertake in order to restore the Masai Mara Ecosystem among others.

- Enrichment and enhancement of tree planting
- Use of sustainable technologies in charcoal production.

3.3.1.3 Environmental and social impact of charcoal production in Narok

It was established that the Mau and Mara catchment depletion charcoal production and utilization had the following environmental and socio-economic impacts.

Environmental impacts from charcoal production

- Increased deforestation and forest degradation.
- Destruction of water catchment areas
- Loss of biodiversity
- Destruction and loss of habitats
- Increased soil erosion
- Increased Emissions Of Greenhouse Gases (GHGs)
- Loss of Bee Forage and Fodder

Socio-Economic Impacts for charcoal production

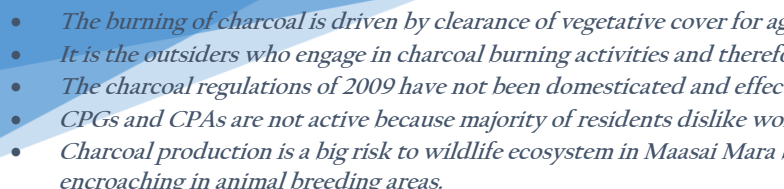
- Increased source of incomes
- Increased social and community interactions
- Increased Health Issues
- Increased incidences of respiratory disease.
- Less involvement in cultural activities.

3.3.1.4 Overview of charcoal rules in Narok County

The deliberations clearly established that the implementation of Forests (Charcoal) Regulations (2009) in Narok County have not been in force due to conflicting roles and responsibilities of the duty bearers. The institutional framework of CPGs and CPAs were not actively in force within the County.

The challenges faced by duty bearers in the regulatory framework include: Limitations of the mandate of controlling individual farmers producing charcoal from their private land; shortfall in instituting charcoal movement permits by traders who transport not more than 3 bags and; domestication of charcoal rules at devolved governance systems.

3.3.1.5 Challenges in the charcoal value chain

- 
- *The burning of charcoal is driven by clearance of vegetative cover for agriculture and livestock development.*
 - *It is the outsiders who engage in charcoal burning activities and therefore reap more benefits than locals.*
 - *The charcoal regulations of 2009 have not been domesticated and effectively implemented in the County.*
 - *CPGs and CPAs are not active because majority of residents dislike working in groups. formation*
 - *Charcoal production is a big risk to wildlife ecosystem in Maasai Mara because charcoal burning activities are encroaching in animal breeding areas.*
 - *The charcoal tracking system is not in place due to inactive CPAs in marketing charcoal and hence loss of revenue for the County Government from charcoal business.*
 - *The charcoal producers have not adopted modern charcoal production technologies, they still use traditional kilns which has low recovery rates.*
 - *There are no cheap and appropriate alternative sources of energy to supplement charcoal fuel.*

Source: Extracted from a presentation of Patrick Twala, Narok County Government

In the Narok County stakeholders' meeting, the following highlighted points were notable challenges identified in the charcoal value chain.

3.3.1.6 Perceptions of community Forest Associations

In the stakeholders' deliberations, it was revealed that the community forest associations (CFAs) had limitations as duty bearers in conservation. This was due to their limited powers to adequately monitor and advice on the illegal tree felling and uncontrolled mechanisms of forest destruction in group ranches.

Role of duty bearers in domestication charcoal rules

To level off expectations with the farmers as rights holders there is need for KFS and County Government and other civil society organizations to:

- *Educate community on charcoal rules 2009*
- *To get political will from local leaders.*
- *Domesticate charcoal rules 2009*
- *Put together charcoal producer groups as proposed in the charcoal rules 2009.*
- *Harmonize the charcoal trade by bringing together all stakeholders for consolidated interventions.*
- *Review the benefits from charcoal trade to ensure that producers earn a sizeable percentage of profits.*

The CFAs were concerned about local people not being aware of charcoal rules and regulations. On the other hand enforcement of charcoal rules is seen as punitive and not educative. The improved production technologies have not been adopted by local stakeholders. Although charcoal trade is an enormous business in

Narok County, the local farm owners gets only Kshs. 100 per sack of 90kg.

Therefore, for protection and conservation initiatives to be effective, the duty bearers need to undertake different targeted efforts as indicated beside in the text box.

For the duty bearers to achieve the above mentioned action points in points in control of damage on forest cover, conservation, rehabilitation and governance, the following consolidated strategies in the text box were proposed from the deliberations of the stakeholders meeting.

1. *To conserve forests:*
 - *There is need to build capacities of leaders and community on charcoal rule and laws.*
 - *There is need to raise awareness of leaders and rights holders at local and national level on the extent of damage and ensure that they are convinced willing put policies into practice (domesticate charcoal rules).*
2. *To produce charcoal in a sustainable manner.*
 - *There is need to mobilize the community to form groups and associations according charcoal rules 2009.*
 - *There is need to establish organized charcoal trading as per the requirements of charcoal rules 2009.charcoal trade.*
3. *To coordinate and manage charcoal activities.*
 - *There should be organized consolidated regulatory and monitoring interventions with clear roles and responsibilities.*

3.3.1.7 Perceptions of wildlife stakeholders

The stakeholders' deliberations noted with concern that clearance of forests for charcoal production is not only decreasing the acreage under forest cover, but also affecting the wildlife ecosystem in the Maasai Mara. The effects of cutting trees for charcoal production had several effects on wildlife ecosystem as highlighted overleaf.

- Charcoal production is an on-going, uncontrolled and alarming activity because trees are given out for free by community members in order to clear land for farming and pastures.
- The alternative sources of livelihoods for local communities are agriculture and livestock farming that are derived from clearing trees.
- Charcoal burning activities are encroaching in animal breeding areas and therefore a big risk to wildlife ecosystem in the Maasai Mara.
- There are no new initiatives from the community on wild conservation.
- The incidences wildlife poaching are of big concern to the Kenya wildlife Services.
- Trade is carried out using all modes of transport including donkeys, bicycles, pick-ups and Lorries.
- The forest owners get only Kshs. 100 per sack as a share of benefits.

The wildlife stakeholders proposed the implementation of the several action points in view of improving forests and wild conservation, sustainable charcoal production and trade. The action points could be achieved through consolidated highlighted below.

1. Conservation

- *Need to apply EMCA law to stop further felling of trees.*
- *Encourage local people to initiate alternative livelihoods linked to eco-tourism.*
- *Support and encourage locals to engage in tree planting initiatives.*

2. Domesticate charcoal production

- *Development of by-laws to get cess for the County government and CPAs.*
- *Initiate sustainable harvesting of trees for charcoal production.*
- *Domesticate charcoal rules and get goodwill from county government on sustainable charcoal production.*
- *Empower and support the Maasai people to initiate CPAs and CPGs.*
- *Survey and encourage people to use alternative sources of energy in cooking.*

3. Charcoal trade and sharing of benefits

- *Track certificates of origin and movement permits.*
- *Assist CPAs in setting up formal charcoal collection centers at specific points.*

To achieve the above, the wildlife stakeholders proposed several strategies to ensure implementation of the above proposals. The strategies are highlighted below.

- *Start tree planting campaigns, tree nursery establishment as an alternative livelihood linked to eco-tourism as community enterprises for conservation.*
- *Engage locals and leaders in stopping forest destruction through specific forums in local dialects.*
- *Domesticate and enforce charcoal rules and EMCA laws and ensure consolidated inter-agency interventions in charcoal production.*
- *Regulate charcoal trade and transportation as per the charcoal rules and guidelines.*
- *Initiate alternative livelihoods in form of conservation projects that will employ locals as an alternative source of income and to ensure sharing of benefits.*

3.3.1.8 Action points from the stakeholder the Narok stakeholders' meeting

The two Narok stakeholders meetings brought together the conservation duty bearers on a round table to forge on the best strategies to engage in sustainable charcoal production in Narok County. The general consensus for UNDP, KEFRI, KFS and other stakeholders in the environmental conservation sector was as follows:

- *The forest cover was dwindling and even the elephant breeding spot (Nyakweri) were threatened.*
- *There is a policy gap in implementation of sustainable charcoal production and environmental conservation action plans in Narok County.*
- *The existing community institutions (CFA and CPAs) lacked clear cut structures, roles and responsibilities to enforce sustainable charcoal production and environmental conservation activities.*
- *There are several NGO's and CBO's working on conservation initiatives within the County, but there is no coordinated synergies to address charcoal production which is jeopardizing the environment.*
- *The county government has inadequate capacity and expertise to develop environment and resource conservation policy*

Based on the mentioned conclusions, the following action points were highlighted to be part of the next level of engagement between UNDP, the County Government, KEFRI and KFS.

ACTION POINTS FROM NAROK STAKEHOLDERS' MEETING

The UNDP had solicited enough information for a concept note of fundraising on sustainable charcoal production in Narok County. UNDP representative also committed to review the current budget in order to generate some activities which could be implemented in Narok County before end of the project.

The NCG through the County Executive Committee member committed to;

- Chip into the current County Government budget in support of the development of the environment and conservation policy at County level and supporting the formation and building the capacity of Charcoal producer groups and associations in the County as part of the domesticating charcoal rules at the County level;
- Table the current status of Narok County deforestation to the cabinet in order to seek reforestation and conservation support activities through establishing tree nurseries.
- Seek partnership with existing stakeholders (community, law enforcement, regulators, researchers and CSOs) to put in place long-term measures for reforestation and conservation and; enforce the establishment and collection of charcoal cess to ensure that numbers are accounted for from the place of origin.
- Consider inter-parties efforts in establishing sustainable wildlife conservation initiatives. This will ensure that local communities actively participate and engage in eco-tourism as an alternative source of livelihoods and do mind to conserve and protect pertinent wildlife resources. This could be achieved through creating a buffer zone and providing incentives to reduce conflicts.

KEFRI committed to identify assist Narok County government to identify the best species and planning for reforestation in targeted points. Enrichment planting for willing individual farmers using participatory approaches around Nyakweri forest was highly recommended.

The KFS committed to:

- Seek consultative initiatives to control charcoal burning through sensitization of the public regarding the diminishing forest cover and the need to establish proper tree nurseries.
- Assist in mapping out the existing community led tree nurseries in order to identify targets for training on nursery enterprises and leaders in community forest initiatives.
- Review of Mau and Mara conservation plans and addressing the attitude change to plant and grow trees.
- Ensure a holistic environmental and conservation policy in form of: Establishment of a sustainable energy strategy that will give incentives for community members to promote SDG number 7 i.e women empowerment and promotion of conservation; establish a charcoal strategy with specific charcoal production and trading plans; establish a stakeholder working groups/forum that will ensure participatory management of forest resources at the County and Sub-County levels; undertaking a review of existing environmental and conservation resource maps in order to sensitize the leaders and public about their natural resource value.

4.0 EMERGING ISSUES FROM ALL INTERVENTIONS

This section brings out the underlying issues identified from the three project interventions of scoping mission, capacity building trainings and stakeholders meetings. The first part brings out the general challenges noted from all the project interventions. The second part points at the potential opportunities where actions can be directed.

4.1 Challenges

The challenges are presented based on the findings from the three project interventions of scoping mission in the three Counties, capacity building trainings in Kwale and Taita Taveta County and stakeholders meetings in Narok County.

Weak governance in the existing charcoal producer groups and associations: This aspect was noted as an enormous issue in Narok County. This is attributed to the fact that Maasai people do believe in individual efforts in wealth accumulation. Although the same issue was noted in Taita Taveta and Kwale Counties, it is worth to note that the capacity building sessions provided to groups will culminate to improved governance through implementation of action plans for individual CPGs.

Domestication of charcoal rules: The following issues were noted as challenges in domesticating charcoal rules in different Counties under the project.

- Overlapping policy regulations on charcoal production, forests and wildlife conservation in the three Counties of Kwale, Narok and Taita Taveta.
- There are no adequate interparty mechanisms to coordinate charcoal production and conservation initiatives within the existing devolved governance structures.
- There was low acceptance of adopting the improved charcoal production technologies due to low quantities (1 sack-3.5 sacks) of charcoal produced in one unit. This can be mitigated through awareness raising of groups and community members involved in charcoal production.
- The CPAs environmental conservation initiatives are limited by erratic rainfall patterns in Kwale and Taita Taveta Counties. This makes it hard for rehabilitated woodlots to grow naturally. This can be mitigated through adoption of alternative water harvesting techniques and identifying targeted sites for woodlot rehabilitation and enrichment.
- There are existing wealthy charcoal traders/brokers from outside Kwale, Narok and Taita Taveta Counties with existing market links outside the targeted Counties (Mombasa, Nairobi and Kisumu) that makes it hard for existing CPAs to compete with. This can be mitigated by capacity building mechanisms on entrepreneurship development and creating sustainable market linkages for newly established CPAs in targeted Counties.
- There was a phenomenon of cross border business of good charcoal quality trade from Tanzania in Msambweni, Kwale County. This aspect makes it hard for local consumers to fetch higher prices for their charcoal products which are comparatively low in quality.

There are conflicts on land use choice for conservation and other livelihoods activities: The community members are faced with either choosing to retain the forests cover or clearing land to undertake other alternative livelihoods like farming or livestock rearing. The following points indicate specific challenges documented in different areas:

- In Narok County the group ranches have been demarcated into individual farms.
- In Kwale and Taita Taveta Counties the group ranches are either leased out to foreigners (Somalis) for livestock fattening or taken up for mining. For example there is case of Wanjala mining in Wundanyi (Kishushe) which pose a big concern on environment destruction.
- In all the three Counties of Kwale, Narok and Taita Taveta, there were reports of harassment of registered charcoal producers by KWS personnel. This has lowered expectations of registered charcoal groups being rights holders in charcoal production and conservation activities. This can be mitigated by formation of County conservation core groups and community sensitization on roles and responsibilities on charcoal rules.

4.2 Opportunities

The analysis of the project activities indicate that there was a variety of challenges in form of governance of charcoal producer groups, coordination of regulating charcoal business and competition of land use for alternative livelihoods. In summary the following opportunities were identified which can form the basis for future project interventions.

- Domestication of charcoal rules: The onset of devolved governance system with legislative and executive powers at County level makes it easier to domesticate charcoal rules at the County level. This will make it easier for each County to set own coordination and monitoring structures to oversee implementation and regulation of the charcoal rules. Translating the rules and regulations into simple format and language understood by rights holders will help to translate policies and regulations into practice. In Kwale the wood fuel regulations are already in place and while in Narok County the domestication of charcoal rules are in pipeline.
- Building synergies for coordination on ecosystem conservation: The presence of many stakeholders in the sector in Narok and Kwale Counties calls for concerted efforts through creating of synergies to undertake conservation initiatives in targeted areas. This could be through formation of sector working committees to resolve conflicting roles and responsibilities.
- Adoption of improved charcoal production technologies: The access to rural electrification program makes it easier for local artisans to adopt and fabricate the improved charcoal production technologies in each targeted site of the project. This may lead to increase in

recovery rates and improved quality of charcoal produced. On the other hand this will create employment opportunities and increased incomes for those working in the informal sector within the targeted project sites.

- Access to information and markets: The growth of the ICT platform (telephone and internet) may enable and enhance search for appropriate technologies, e-marketing and knowledge management which are key needs for current institutions (CPAs and CPGs) in the sector.
- Exploration of alternative livelihoods: It is evident that there is plenty of natural resources in the three counties of Kwale, Narok and Taita Taveta. Some partners are already pursuing ecosystem related conservation projects. For example in Kinango, Kwale County, the Wildlife works is managing group ranches on behalf of the community. This initiative does not only preserve the ecosystem but also generates resources for the community through earning of carbon credits. This strategy can be a good entry point for generating other alternative eco-tourism livelihoods to the community that does not stress the forest cover.
- Linkages to current global trends: There is an emerging focus of many partners working on Sustainable Development Goals and conservation initiatives. The new goals recognize that ending poverty must go hand-in-hand with strategies that build economic growth and addresses a range of social needs including education, health, social protection, and job opportunities, while tackling climate change and environmental protection. Therefore, there is need for consolidated efforts to end poverty through commitment and ownership of every partner and governments responsibility. In line with achieving the SDGs targets environmental conservation initiatives will be key to tackling climate change.

4.3 CONCLUSIONS AND RECOMMENDATION

The report examines the activities of the Joint UN Climate Change Project on Energy, Environment and Climate Change. It covers three main activities undertaken by UNDP, KEFRI and KFS on Sustainable Charcoal Production technologies in Kwale, Narok and Taita Taveta Counties.

4.3.1 Conclusions

This report provides a snapshot of the current status on charcoal production in Kwale, Narok and Taita Taveta, trainings conducted in Kwale and Taita Taveta and deliberations with stakeholders on the future of sustainable charcoal production in Narok County. It provides specific insights into community practices and learning outputs from capacity building sessions, consultative meeting with partners on sustainable charcoal production technologies.

The findings show that overall 3 joint scoping missions by UNDP and KEFRI were conducted in Kwale, Narok and Taita Taveta counties from April to September 2015. 7 trainings sessions were delivered to a total of 198 beneficiaries from the already existing CPAs.

Charcoal is still a major source of fuel and community members depend on its production as a source of livelihood. Although globally charcoal consumption and demand may go down in some developing countries, in Kenya the consumption continue to increase due increased population, urbanization and high cost of alternative sources of energy. The indigenous trees like *Acacia tortilis*, *Acacia oloifera* and *Acacia Nilotica* are preferred for charcoal production and have been clearly being wiped out. The indigenous trees are exploited from community ranches to give room for crop farming, growth of livestock pastures and charcoal production.

Charcoal production is done on large scale in both in three Counties using traditional kiln technology that is inefficient and has low recovery rates. A few producers had adopted the improved traditional / casamanace in kilns in Kwale County and drum kilns in Taita Taveta County.

Charcoal trade is controlled by middlemen from outside the three targeted Counties who have created market linkages and have strong base of financial resources. Registered CPAs and CPGs have inadequate capacities govern their own institutions and market their charcoal production. Other unregistered groups in charcoal production and trade were operational in both Kwale and Narok Counties.

Adoption of charcoal rules by duty bears and rights holders was not up to date. The duty bearers lacked adequate coordination mechanism due to devolved governance system. Efforts to domesticate Charcoal rules were underway in Kwale and Narok Counties. The duty bearers lacked capacity to put up relevant structures for conservation and rehabilitation of forest covers. The registered charcoal producers operated in fear and were in conflict with many players including the Kenya Police, Kenya Wildlife Services and the County government who acted as regulators.

The impact of the 5 days trainings conducted for a few members of CPAs had not been realized. There were many other stakeholders working on conservation of the ecosystem in all the three counties under review. The notable ones include wildlife works, Ministry of Energy, Coast Development Authority and Ewaso Nyiro South Development Authority.

4.3.2 Recommendations

The following recommendations are considered to be relevant for UNDP in the design and delivery of relevant projects for sustainable charcoal production initiatives:

- To ensure that the impacts of the project are felt on scale, there is need to undertake the same project interventions in a few targeted sites with practical demonstrations. These initiatives may be integrated in form of adoption of new technologies, conservation, governance and

marketing techniques. This will create communities of practice which different actors can either scale up or replicate in view of tackling climate change in Kenya.

- To ensure that community members are actively engaged as rights holders in sustainable charcoal production, there is need to strengthen the capacities of existing institutions (CPA and CPGs) for conservation, improved production and trade of charcoal products. This can be achieved through supporting existing CPA and CPGs to establish and implement clear structures and procedures such as constitutions and set-up of collection and marketing centers.
- To ensure that beneficiaries adopt and emulate improved appropriate technologies, CPGs should be coached and mentored for serious uptake through organized demonstrations using equipment. The beneficiaries also need to be mentored to fabricate more equipment at local level to supplement the existing supplies from UNDP and KEFRI.
- To ensure that charcoal rules are implemented with fewer conflicts, there is need to create working partnerships at the County level. These proposed partnerships will create synergies in environmental conservation in form of environmental working groups and coordination forums through strengthening of existing structures and systems in monitoring adoption of charcoal rules.
- To ensure that policies are transformed into practice, the domestication of charcoal rules need to tailor the rules into simplified and translated versions in line with each county needs. The simplified rules should be accompanied by strong coordination and monitoring structures.
- To ensure that all opportunities are exploited in the charcoal market system, there is need to undertake a complete wood fuel/ charcoal value chain assessment study in each County context order to understand specific areas to intervene with market oriented strategies. This will inform the adoption of specific alternative livelihoods to undertake either from charcoal technologies such as fabrication of technology by artisans or engaging in tree nursery enterprises or briquetting. Other may arise from forest related products like wood curving from forest wastes, medicinal products from trees and other value addition products from fruits and eco-tourism.
- To ensure that charcoal is substituted as a source of fuel, there is need to build the capacity of charcoal makers with a range of suitable technologies for sustainable charcoal utilization like promotion of energy saving stoves for efficient utilization of wood fuel energy.

5.0 ANNEXES

ANNEXES		AREA	ATTACHMENT NO.
Annex 1	SCOPING MISSION REPORTS	Kwale	Attachment 1
		Narok	
		Taita Taveta	
Annex 2	SUSTAINABLE CHARCOAL TECHNOLOGIES TRAINING REPORTS(KWALE COUNTY)	Msambweni 1(Lunga Lunga)	Attachment 2
		Msambweni 2(Kilimangodo)	
		Kinango(Kilibasi)	
		Samburu	
Annex 3	SUSTAINABLE CHARCOAL TECHNOLOGIES TRAINING REPORTS(TAITA TAVETA COUNTY)	Ore CPA(Maungu)	Attachment 3
		Taita Taveta CPA(Landi)	
		Wundanyi/Davida CPA(Kishushe)	
Annex 4	STAKEHOLDER'S MEETINGS REPORTS(NAROK)	Narok and Kiligoris Combined	Attachment 4
Annex 5	PROPOSED OUTLINE OF SUSTAINABLE CHARCOAL PRODUCTION TRAINING MANUAL		Attachment 5
Annex 6	INCEPTION REPORT		Attachment 6