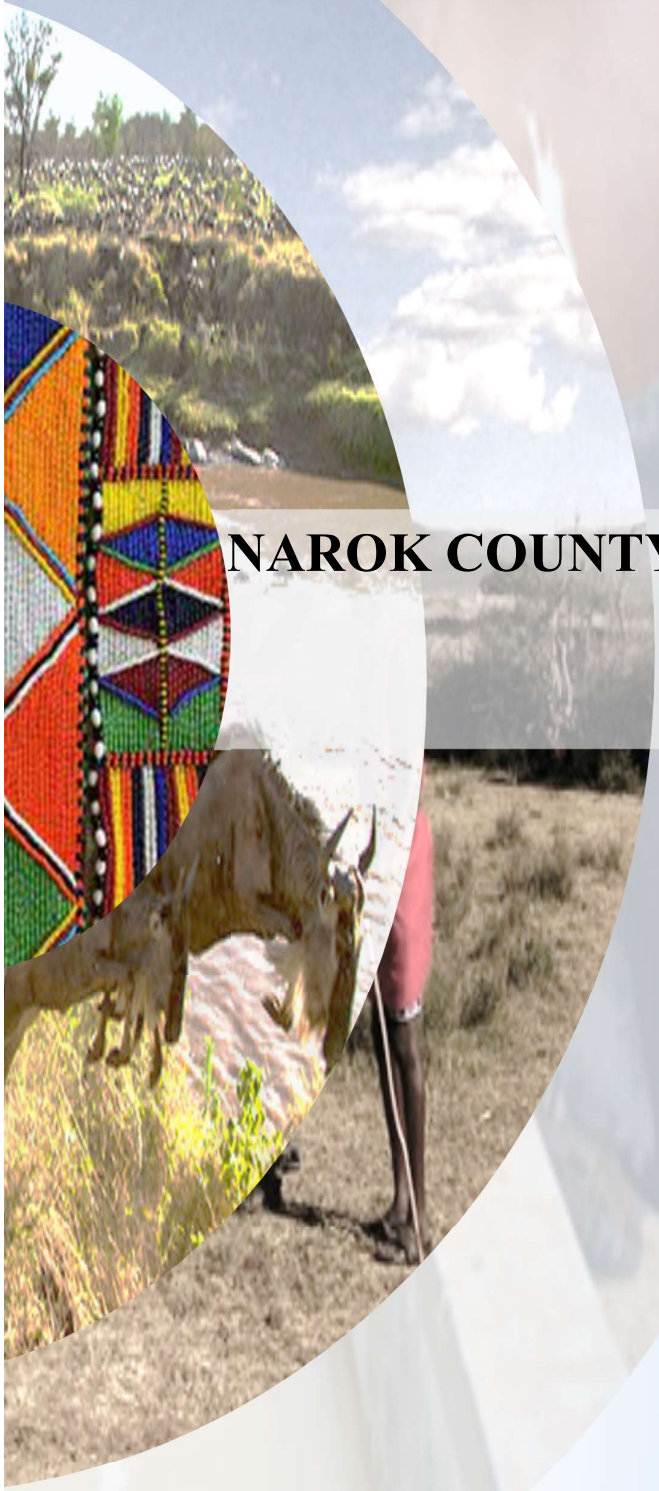
THE COUNTY GOVERNMENT OF NAROK

Department of Environment, Water, Energy, Natural Resources and Climate Change



NAROK COUNTY PARTICIPATORY CLIMATE RISK ASSESSMENT REPORT

2023

WORLD BANK

Kingdom of the Netherlands

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DEUTSCHE ZUSAMMENARBEIT

KFW

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VISION

The premier county of choice in diversity and opportunities for prosperity

MISSION

Transforming lives through harnessing the diverse natural resources, rich culture and emerging opportunities in the county

CORE VALUES

Equity, Inclusiveness, Efficiency, Accountability and Integrity

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DEFINITION OF TERMS

Adaptation	Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects which moderates harm or exploits beneficial opportunities.
Adaptive Capacity	The ability or potential of a system to respond successfully to climate variability and change and includes adjustments in both behaviour and in resources and technologies**.**
Capacity building	In the context of climate change, the process of developing the technical skills and institutional capability, particularly among vulnerable communities and emerging economies and sectors to enable them to effectively address the causes and impacts of climate change**.**
Carbon market	A market-based instruments such as cap-and-trade emission trading schemes which help in pricing carbon emissions and keep the costs of climate action low. A cap-and -trade scheme enables emitters to trade allowances for the right to emit up to their allowed limit. The term comes from the fact that carbon dioxide is the predominant greenhouse gas, and other gases are measured in units called "carbon dioxide equivalents."
Carbon Sequestration	The process of removing carbon from the atmosphere and depositing it in a reservoir or “sink”, such as soil or trees.
Climate	The average pattern for weather conditions occurs over a long-time period (over 30 yrs.). Weather refers to the atmospheric conditions at a specific place at a specific point in time. Climate has always varied because of natural causes. Increasingly, however, human increases in GHG emissions causing changes in climate as well.
Climate Change	A change in the climate system which is caused by significant changes in the concentration of greenhouse gases as a consequence of human activities and which is in addition to natural climate change that has been observed during a considerable period.
Climate Finance	Monies available for or mobilized by government or non-government entities to finance climate change mitigation and adaptation actions and interventions.
Climate Resilience	Adaptive capacity for a socio-ecological system to absorb stresses and maintain functions in the face of external stresses imposed upon it by climate change.
Conference of the Parties	The supreme governing body of an international convention. It comprises representatives of all State Parties and accredited observers. Scope of the COP is to review the implementation of Convention and any other legal instruments that the COP adopts and

	take decisions necessary to promote the effective implementation of the Convention. In this context refers to United Nation Framework Convention on Climate Change (UNFCCC).
Deforestation	The decrease in forest areas across the world that are lost for other uses such as agricultural croplands, urbanization, or mining activities
Disaster	A disaster is the tragedy of a natural or human made hazard (a hazard is a situation which poses a level of threat to life, health, property, or environment). It is a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.
Ecosystem	The interactive system formed from all living organisms and their abiotic (physical) and can comprise the entire globe.
Emission	In relation to a greenhouse gas, means emissions of that gas into the atmosphere where the emissions are attributable to human activity.
Erosion	The process of removal and transport of soil and rock by weathering, mass wasting, and the action of streams, glaciers, winds, and underground water
Greenhouse Gases (GHGs)	The atmospheric gases responsible for causing global warming and climate change. The major GHGs are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). Less prevalent -- but powerful - greenhouse gases are hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and Sulphur hexafluoride (SF_6).
Hazard	This is any phenomenon that poses the potential to cause harm
Intergovernmental Panel on Climate Change (IPCC)	Established in 1988 by the World Meteorological Organization and the UN Environment Programme, the IPCC surveys worldwide scientific and technical literature and publishes assessment reports that are widely recognized as the most credible existing sources of information on climate change. The IPCC also works on methodologies and responds to specific requests from the UNFCCC's subsidiary bodies. The IPCC is independent of the UNFCCC.
Low Carbon Development Pathway	A development plan or strategy that encompasses low-emission economic growth. Transitioning to this pathway means taking actions, where possible, to encourage GHG emissions that are lower than business-as-usual practice; and reducing the human causes of emissions by moving toward a resource efficient economy that is as low-carbon as possible and enhancing carbon sinks.

Maladaptation	Defined by the UNFCCC as any changes in natural or human systems that inadvertently increase vulnerability to climatic stimuli
Mitigation	Efforts that seek to prevent or slow down the increase of atmospheric greenhouse gas concentrations by limiting current or future emissions and enhancing potential sinks for greenhouse gases;.
National Adaptation Plan	A document prepared by developing countries that identifies urgent and immediate needs for adapting to climate change.
National Climate Change Action Plans	National plans of action, prepared at five-year intervals, that set out in detail the requirements and costs for the design and implementation of the various climate change interventions required for Kenya to attain low carbon climate resilient development.
Public Private Partnerships (PPPs)	Public-Private Partnerships are an association between government and private sector through which private financing is utilized to perform a public function, at a profit to the private sector.
Participating Institutions	National or international institutions that have made contributions to the Fund
Sustainable development	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
Technology Transfer	A broad set of processes covering the flows of expertise, experience and equipment for mitigating and adapting to climate change among different stakeholders.
United Framework Convention on Climate Change (UNFCCC)	An international treaty signed by 195 countries that entered into force in 1994. The objective of the Convention is "…stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system
Vulnerability	The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude and rate of climate variation to which a system is exposed, its sensitivity and its adaptive capacity.
Ward	has the meaning assigned to it under Article 89 of the Constitution;
Ward Climate Change Fund Planning Committee	the ward climate change fund Committee established under section 16 of this Act;

Acronyms

ASAL	Arid and Semi-Arid Lands
CBNRM	Community Based Natural Resource Management
CCD	Climate Change Directorate
CCCF	County Climate Change Fund
CCU	Climate Change Unit
CECM	County Executive Committee Member
CFA	Community Forest Association
CIS	Climate Information Services
CSA	Climate Smart Agriculture
CSO	Civil Society Organisation
DRM	Disaster Risk Management
EWS	Early Warning System
FLLoCA	Financing Locally Led Climate Action
GCF	Green Climate Fund
GHG	Greenhouse Gas
GoK	Government of Kenya
HA	Hectares
KCCWG	Kenya Climate Change Working Group
KEFRI	Kenya Forestry Research Institute
KFS	Kenya Forest Service
KMD	Kenya Meteorological Department
KWS	Kenya Wildlife Service
NaCCCAP	Narok County Climate Change Action Plan
NAP	National Adaptation Plan
NCCAP	National Climate Change Action Plan
NCCRS	National Climate Change Response Strategy
NDA	National Designated Authority
NDC	Nationally Determined Contribution
NDMA	National Drought Management Authority
NEMA	National Environment Management Authority

REDD+	Reducing Emissions from Deforestation and Degradation plus
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WIO	Western Indian Ocean

FOREWORD

Kenya's economy is highly dependent on the natural resource base, and thus is highly vulnerable to climate variability and change. Rising temperatures and changing rainfall patterns, resulting in increased frequency and intensity of extreme weather events such as droughts and flooding, threatening the sustainability of the country's development. In order to safeguard sustainable development, the Government of Kenya has made several efforts to tame the ranging effects of climate change.

There is increasing consensus that if temperatures rise by no more than 2°C above pre-industrial levels the earth's integrity can be preserved and many of the potentially grave consequences of climate change could be avoided. Subsequently, if Green House Gas (GHG) emissions continue to rise (the worst-case scenario), an increase of the global mean temperature of up to 6°C is a real possibility. This would have disastrous consequences with several regional negative impacts. Kenya is among the most vulnerable countries to climate change and a change in climatic conditions will have a profound effect on the livelihoods as well as on the country's economic sector.

Climate change has significantly affected the environment and people's livelihood in Narok County. Effects brought about by climate change include unreliable, erratic and inadequate rainfall, recurring and more prolonged droughts; high and increasing temperatures; and declining of water levels in boreholes, wells and springs. These effects have contributed to outbreak of livestock diseases and death thus leading to increased poverty levels in the County. Climatic variability further reduces the capacity of land to support human livelihoods thus accelerating environmental degradation as evidenced by increased reduction in vegetation cover and pasture, soil erosion, and increased resource-based conflicts.

One of the outstanding achievements within the National Climate Change Action Plan 2013-2017 period was the enactment of the Climate Change Act in May 2016. This law provides a regulatory framework for an enhanced response to climate change and promotes a mainstreaming approach to enhance action toward a low carbon climate-resilient development pathway.

The Participatory Climate Risk Assessment (PCRA) was carried out across all the 30 wards in Narok County through a consultative and participatory process and a stakeholder workshop was also done. All major actors and stakeholders were involved with the sole objective of consolidating data on Climate change related actions and investments leading to the development of this PCRA Report. The PCRA Report was validated by Technical Leads of various County Departments and National Government Agencies and selected representative of the community. This PCRA process has enhance stakeholder awareness and involvement in Climate Change activities for improved action

H.E Patrick K Ntutu
The Governor - County Government of Narok

ACKNOWLEDGEMENT

This PCRA is produced by the County Government of Narok, it's the first ever document of its own kind. The document has been developed through a participatory and collaborative processes involving different stakeholders in the national government, county government, faith-based organization, chamber of commerce, community-based organizations and members of the community.

The leadership and guidance of H.E. The Governor of Narok County Hon Patrick K ole Ntutu provided useful insights and guidance in the development of this report, for which as the department, we are very grateful. We are deeply convinced that this report will inform the implementation of climate priorities and actions. it will also guide the development of the climate action plan and mainstreaming climate change into the county integrated development plan (CIDP). We recognize the cabinet for their partnership and collaborative efforts through provision of the necessary data and their human and technical support in development of this document.

We are also indebted by the support and guidance offered to us by our county assembly through committee of environment and that of county delegated legislation for their expedience in climate agenda. They have offered immense support in terms of political goodwill, approving budgets and giving ample working environment for executing our mandate.

We also recognize the efforts and support awarded to us by the county secretary Mr. Mayiani Tuya and the legal office for their tireless efforts of providing legal guidance and all other support we needed from them.

To the team from The Department of Environment Water Energy, Natural Resource and Climate Change under my leadership: Mr. Willy Loigero – Chief Officer, the Technical team led by Mr. Liaram Molai – Director Environment and Natural resource, Mr Peter Runanu, Ms. Daisy Chebet and their secretariat led by by Mr. Joshua Maloi, Ms. Anne Mootian and Ms. Meikan Naanyu please receive my sincere gratitude for not letting me down in executing our mandate and in the development of this important documents.

Special thanks go to our partners from world bank, National Treasury, MMWCA and many others. We recognize your efforts especially your financial support during this process.

To the community, stakeholders and partners; thank you for being our most valued, esteemed and dear stakeholders. You have walked with us by honouring our humble invitation and giving your contributions and through the whole process

Hon. Rotich Kiplagat – CEC Member
Department of Environment, Water, Energy, Natural Resources and Climate Change

EXECUTIVE SUMMARY

The Narok County Participatory Climate Change Risk Assessment(PCRA) was carried out in May 2023. The objective of PCRA report is to guide the county to identify climate risks and hazards with their associated impacts within Narok County in order to inform the climate change action planning; integration of climate issues into the CIDP and the National Climate Change Action Plan. PCRA is also one of the conditions for accessing the Climate Resilience Investment Grant from the National Treasury's Financing Locally Led Climate Action, (FLLoCA). The PCRA report documents prevalent climate risks, sources of vulnerability and the prioritized adaptation response actions.

The process of implementing the PCRA process involved: Formation and training of the Technical Working Group, stakeholder's analysis and mapping, community engagements at ward level, collection of historical, current and projected data of local climatic patterns, socio-economic conditions and vulnerability analysis, conducting county level workshop on climate change risk assessment as well as final report writing.

The assessment revealed that about 70% of the residents of Narok primarily depend on agriculture and its products, and with the frequent changes in rainfall patterns, most households depending on agriculture are exposed to impacts of climate change. Furthermore, women are the highest portion of labourers in the agricultural sector (60% household and 40% hired) (ASDSP,2014) which further makes them more vulnerable to the effects of climate change. Impacts of climate change are compounded by human activities such as: cultivation of sloppy areas, overstocking, poor waste management, overgrazing unsustainable exploitation of natural resources such as sand marram and quarry stones.

The main climate hazards identified in the county are prolonged dry spells, sporadic rainfall patterns, flash floods, emerging pests, diseases and noxious weeds, Environmental degradation (soil erosion, galleys, water catchment destruction, landslides), and strong winds. Lightning was also experienced in some areas. For each season, heavy precipitation events of extreme rainfall for at least 5 consecutive days were recorded which is indicative of risk of floods and flash floods as well as destruction of crops.

The total annual rainfall trends indicated insignificant increase of the precipitation in annual rainfall projection in future (2023-2060) from analysis of accumulated rainfall data (1953 – 2023). The annual mean temperature trends show an increase of annual minimum temperature from analysis of temperature data (1953 – 2023).

Impacts of climate hazards such as soil erosion, landslides, rocks fall and galleys are more common in sloppy areas. The Suswa area, Olopito hills are exposed to soil erosion due to human activities in the upper catchments. Homes and Farmlands near water sources were also vulnerable to floods and flash floods resulting from instances of excess rainfall.

Impacts of climate change in the various sectors were identified and response actions prioritized. Adaptation strategies for water sector include conservation and restoration of water catchment areas and wetlands, promotion of rain water harvesting, afforestation, improved drainage and Integrated water management sources and their catchment areas as well as investment in climate resilient water storage and reticulation infrastructure.

In agriculture sector, identified strategies include promotion of climate smart agriculture, diversification of livelihoods, strengthening extension services, soil and water conservation and regulation of human activities in riparian areas. Other strategies include integrated pest and disease management to be achieved through establishing crop pest and disease surveillance and capacity building and promotion of insurances in agricultural sector.

Prioritized response strategies for environmental conservation include: afforestation and reforestation, protection of fragile ecosystems, awareness raising and capacity building and storm water storage. County physical planning was proposed to be undertaken to guide settlements and land use for optimize returns on land resources. Storm water control and conservation infrastructure was proposed as promotion of clean and renewable energy at both institutional and household level.

Strategies proposed for addressing climate related disaster risks include: development of Early Warning Systems and enhancing dissemination of weather/climate information, strengthening disaster risk management planning and institutional framework, contingency planning and capacity building, strengthen response capacity, pest surveillance, strengthening extension services and resource mobilization as well as installation of lightening arrestors in strategic public institutions.

CHAPTER 1: CONTEXT OF THE PARTICIPATORY CLIMATE RISK ASSESSMENT (PCRA)

1.0 Background

This section provides county's background information including inhabitants (dominant, marginalized, minority communities), location of the headquarters, major economic activities, whether the county is a member of a regional economic bloc (s) and other inter/intra county relations.

1.1 County Overview

Narok County is one of the 47 counties created by the Constitution of Kenya 2010. The county headquarter is in Narok town, off Narok Nakuru road. The County is situated in the Great Rift Valley in the Southern part of the Country where it boarders the republic of Tanzania.

The County is a member of Narok- Kajiado Eonomic Block (NAKAEB) consisting of Narok and Kajiado counties. The aim of the economic block includes improvement of the agriculture sector to increase exports to African countries and abroad, livestock production, wildlife and cultural tourism, minerals, the environment and conferencing.

Narok is cosmopolitan County with a projected population of 1,312,287 persons in 2023. This is an increase by 154,414 from 1,157,873 recorded during the Kenya Population and Housing Census in 2019. The ratio of male and female is one to one. There were a total of 26 individual identified as falling in the category if intersex at the time of the census. The dominant tribes are Maasai and Kalenjins. Other tribes include Kisii's, Luo, Luhya, Kamaba, Kikuyu, Somali among others. The county is also home to the Ogiek community described as a minority group.

The main economic activities in the county include pastoralism, crop farming, tourism and trade among other activities undertaken in small scale. The famous Masaai Mara Game Reserve, featuring the Great Wildebeest Migration which is one of the "seven Wonder of the World is located in the County. A portion of Mau Forest Complex, Kenya largest closed-canopy forest area, lies in Narok County. The county has a robust ecological system that residents depend on for agriculture, tourism, water and many other benefits.

The main crops grown in the county are wheat, barley, maize, beans, Irish potatoes and horticultural crops. Mining activities include Kilimapesa gold mines in Lolgorian, quarry and sand harvesting in Narok South and Narok East Sub-counties. The major challenges adversely affecting economic prosperity in the county include effects of climate change, land conflict, unemployment and years of underdevelopment to the extent that the county was listed amongst the most marginalized counties at the onset of devolution. This plan has concrete proposals to reverse the situation in a significant way in the next five years.

1.2 Position and Size

Narok County lies between latitudes 0° 50′ and 1° 50′ South and longitude 35° 28′ and 36° 25′ East as shown in the figure 1 below. It borders the Republic of Tanzania to the South, Kisii, Migori, Nyamira and Bomet counties to the West, Nakuru County to the North and Kajiado County to the East. The county headquarters is at Narok Town. The county covers an area of

17,950.3 Km^2 representing 3.1 per cent of the total area in Kenya and hence the eleventh largest county in the country. Figure1 shows the location of the county in Kenya.
The County is strategically located as a transit to Western Kenya and South Rift regions and a gateway to Mara-Serengeti ecosystem a world-renowned tourist attraction and the United Republic of Tanzania. It is also take the pride of hosting 75% of the Mara River basin hosting the catchment of this river and its many tributaries.

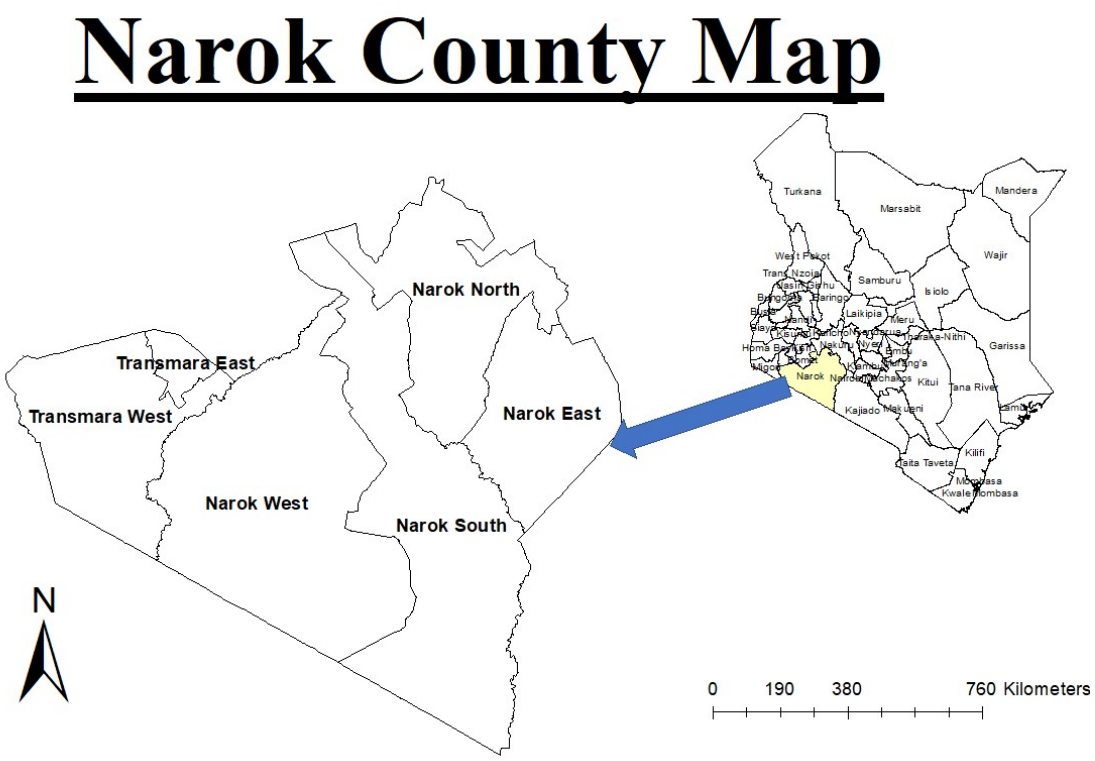

Figure 1. Map of Narok County

1.3 Physiographic and Natural Conditions

1.3.1 Physical and Topographic features

The county lies within the Great Rift Valley, and is serviced by several rivers, flowing from highlands through arid and undulating landscapes. It is home to numerous volcanic landforms with areas of prominent geothermal activities. The highland areas of Mau escarpments, rising to an attitude of 3,100m above sea level provides fertile ground for farming and source to major rivers like Mara and Ewaso Nyiro with Mara River being the single major river that passes through Maasai Mara Game Reserve and ultimately draining into Lake Victoria which is the source of Nile River systems. Thus, the catchment is not only useful to the immediate ecosystem comprising of the Mara and Serengeti Game Reserve, but supports livelihood along its course and contribute to power generation and, international economies and relations. In spite of the above, this natural asset has been under threat for years compromising its existence. This calls for concerted effort towards its protection.

Narok County is home to the world renowned Maasai Mara Game Reserve which is considered Kenya's jewel when it comes to wildlife. The reserve sitting on 1,510 km^2 hosts 25% of Kenya's big cats and has one of the highest wildlife densities in Africa. It is characteristic by Savannah plains and woody shrubs which provide and ideal home for the 95 species of mammals, amphibians and reptiles and over 400 bird species found in the park and its environs. Over 158,000 tourists visit the park each year with the peak season for the park coinciding with the Great wildebeest Migration that occurs between July and September of every year. Unfortunately, the numbers and the associated revenue came down in 2020-2021 due to the effects of COVID 19 pandemic that devasted economies around the world. These figures are now improving following the measures to contain the pandemic coupled by branding and marketing initiatives by the county government in collaboration with the national government and tourism operators. Towards this end Tourism operators, The county Government of Narok and other stakeholders of good will have formed the Mara Corporate Social Responsibility Committee to consolidate efforts for greater gains in conservation of the ecosystem. Additionally, the County government in collaboration with Maasai Mara Wildlife Conservation Associations (MMWCA) supported the development of two plans focused on improvement of the ecosystem. These are the Maasai Mara Game Reserve Management Plan (MMGRMP) and the Greater Mara Ecosystem Management Plan (GMEMP). The plans were launched in 2023 together with the County Spatial Plan CSP). The proposals in the plan are part of the content of this document.

Aside from the high agricultural potential in highlands and tourism economic activities in the lowlands, the county is endowed with numerous natural resources. Exploration of geothermal power in Suswa area has shown positive prospects, in Talek harnessing of solar power is on-going. Wind power is used in pumping water from boreholes in Mara area and adjacent areas. Other resources found in the county include vast deposits of sand in Suswa, Mara, Siana and Naikarra wards. Narok is one of the few counties with gold deposits. This is found in Transmara South Sub- County at Kilimapesa.

1.3.2. Climatic conditions

The climatic condition of Narok County is strongly influenced by the altitude and physical features. The county has four agro-climatic zones namely: humid, sub-humid, semi-humid to arid and semi-arid. Two-thirds of the county is classified as semi-arid (Narok DEAP 2009-2013). Temperatures range from 30^0C (January- March) to 14^0C (June- September) with an average of 22^0C. Rainfalls amounts are influenced by the passage of inter tropical convergence zones (ITCZ) giving rise to bi-modal rainfall pattern. Long rains are experienced between the months of March to May (MAM) while the short rains are experienced between October to December. Rainfall ranges from 2,500 mm in wet season to 500 mm during the dry season.

The March to May season receives high intensity rainfalls that support growth of vegetation providing both feeds and pasture for animals. This climatic characteristic has been influencing the migration of wildebeest into Kenya from Serengeti in June in search of vegetative food and return migration to Serengeti in November after the vegetation diminishes. The seasons are also important to farmers in planning for planting and harvesting.

1.3.3. Ecological conditions

The county has a robust ecological system that residents depend on for agriculture, tourism, water and many other benefits. The county's ecological conditions are influenced by the soil type, altitude, vegetation, rainfall pattern and human activities. The dominant vegetation types in the county include forest vegetation in the highland areas such as Mau region to Enoosupukia; grasslands and shrubs in the Arid and Semi – Arid Lands (ASALs) such as parts of Narok East, Narok North, Narok South as well as the Most of Narok West and parts of Transmara South. Grasslands are suitable for livestock rearing and wildlife survival.

One of the major threat to the vegetation cover is the destruction caused by human activities including grazing, charcoal burning, extraction of wood fuel and cutting down of trees without replacement resulting in adverse ecological effects.

The main drainage systems are Lake Victoria South catchment basin and Ewaso Nyiro South drainage area. Mara River traverse the county from Mau region through Mara National Reserve in Kenya through Serengeti National ParK in Tanzania draining into Lake Victoria. River Ewaso Ng'iro rising from the Mau Escarpment, draining into Lake Natron. However, due to continuous deforestation over a couple of years, the volume of water in the rivers has been decreasing. To address this challenge, the county government of Narok together with partners have embarked in vigorous tree growing exercise in this catchment area.

Maasai Mara Game reserve is a home to the country's highest wildlife density and as such is Africa premium wildlife destination. The reserve is home to a variety of wildlife including Wildebeests, Gazelles, Zebras, Warthogs, Hyenas, Giraffes, Elephants, Lions, Leopards and Elands. With increasing human encroachment activities to the reserve, cases of human wildlife conflict have been on the rise and thus threatening sustainability of the reserve and the tourism sector at large.

1.4. Administrative and Political Units

1.4.1. Administrative Subdivision

Administratively, Narok County has had six sub-counties during the devolution era until after 2019 when two new sub-counties, Transmara South and Narok Central were created. The initial sub-counties comprised of Transmara West, Transmara East, Narok North, Narok South, Narok West and Narok East.

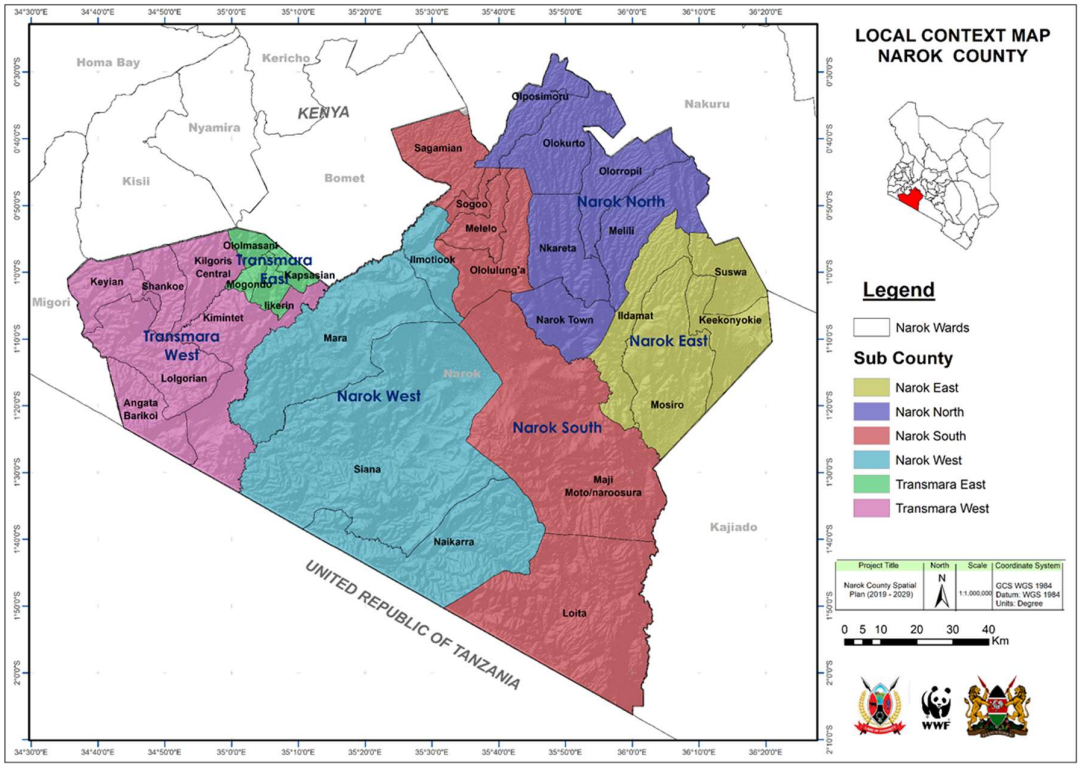

Figure 2. Administrative Subdivision

The sub-counties are further sub- divided into 25 divisions. Table 1 shows eight administrative sub-counties with areas in Kilometres square.

Table 1: Sub-counties and Area (Km²)

Number

Sub-County	Divisions	Locations	Sub-Locations	Villages	Area (Km2)
Narok East	4	12	29	172	2123.45
Narok North	2	11	27	220	920.3
Narok Central	2	7	14	228	1239.1
Narok South	4	20	39	510	5452.79
Narok West	3	17	35	310	5452.79
Transmara East	2	6	13	430	311
Transmara West	3	18	40	305	2301
Transmara South	5	17	32	400	224
Total	**25**	**108**	**229**	**2,575**	**18,024.43**

Source: Ministry of Interior and Coordination of National Government, Narok County

The largest sub-county is Narok West with a total of 5,452.7 km². Out of this, 1000km² is area under the Maasai Mara Game Reserve.

1.4.2 County Government Administrative wards by constituency

Table 2. County Government Administrative Wards

Sub-County	Divisions	Locations	Sub-Locations	Villages	Area (Km2)
Narok East	4	12	29	172	2123.45
Narok North	2	11	27	220	920.3
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Total	**25**	**108**	**229**	**2,575**	**18,024.43**

Source: Ministry of Interior and Coordination of National Government, Narok County

1.4. Political units (Constituencies and Wards)

Politically, the county has six political constituencies and 30 electoral wards. The constituencies are Narok North, Narok South, Narok East, Narok West, Kilgoris and Emurua Dikirr as shown in Table 3

Table 3. Administrative Units in Narok County

Constituency	Number of wards	County Assembly Wards
Kilgoris	6	Kiligoris Central, Keyian, Angata Barikoi, Shankoe, Kimintet, Lolgrian
Emurua Dikirr	4	Ilkerian, Ololmasani, Mogondo, Kapsasian
Narok North	6	Olposimoru, Olokurto, Narok Town, Nkareta, Olorropil, Melili Ward
Narok East	4	Mosiro, Ildamat, Keekonyokie, Suswa
Narok South	6	Maji Moto, Ololulung'a, Melelo, Loita, Sogoo, Sagamian
Narok West	4	Ilmotiook, Mara, Siana, Naikarra
Total	**30**	

1.5 Demographic Features

1.5.1 Population size, Composition and Distribution

The 2023 projected population in the county stands at 1,284,204 consisting of 634,154 males and 650,050 females. This is an increase from 126,331 persons as per the 2019 by Kenya National Population and Housing Census, of whom 579,042 were male while 578,805 were female. Table 4 shows population by age cohorts in 2019 and projections for the years 2022, 2025 and 2027.

The county population accounts for approximately 2.4 percent of the National population. The population is distributed under 241,125 households with an average household size of 4.8.

These are spread across the 17,931 km^2 land surface except in forests, game reserve, and water bodies. This results in population density of 65. These forms the basic tenet of development planning for the next five years considering that county development is about service delivery to the people.

County Population Age Structure

The population distribution across different age groups is pyramid structured with the population decreasing with increase in age groups. This age structure is of great importance because of their potential contribution and impact on socio-economic development of the county.

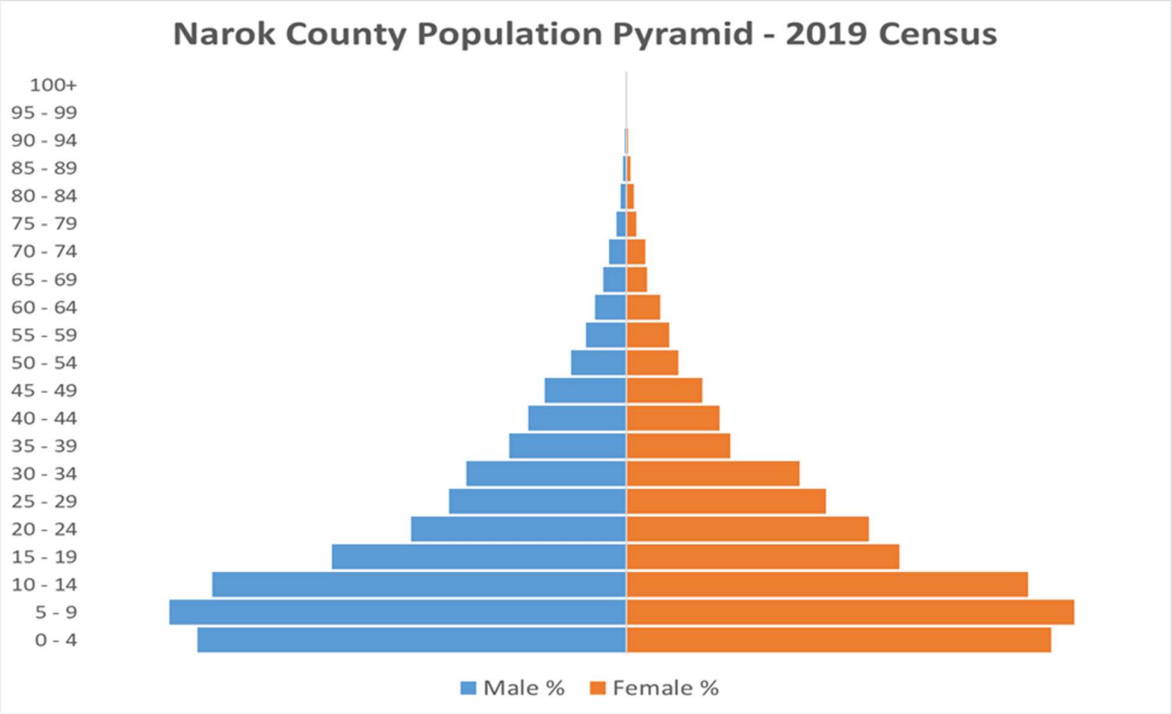


Figure 3. Population Projections (by Sub-County and Sex)

Table 4. Population Projections (by Sub-County and Sex)

	2019			2022			2025			2027		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Narok	**579,042**	**578,805**	**1,157,873**	**616,984**	**631,724**	**1,248,708**	**668,493**	**686,701**	**1,355,194**	**705,471**	**726,074**	**1,431,545**
Narok East	58,699	56,617	115,323	62,545	61,793	124,370	67,767	67,171	134,976	71,515	71,022	142,580
Narok North	128,024	123,829	251,862	136,413	135,150	271,621	147,801	146,912	294,783	155,977	155,336	311,391
Narok South	118,441	120,029	238,472	126,202	131,003	257,180	136,738	142,404	279,112	144,302	150,569	294,837
Narok West	97,085	98,198	195,287	103,447	107,176	210,607	112,083	116,503	228,567	118,283	123,183	241,445
Transmara East	54,545	56,637	111,183	58,119	61,815	119,905	62,971	67,195	130,130	66,454	71,048	137,462
Transmara West	122,220	123,491	245,714	130,229	134,782	264,990	141,101	146,511	287,588	148,906	154,912	303,790
Mau Forest	28	4	32	30	4	35	32	5	37	34	5	40

Source: Kenya National Bureau of Statistics, Narok

The County annual population growth rate stands at 3.13 per cent as compared to 2.7 (NCPD, 2017) per cent at the national level. The population is expected to increase from 1,157,873 in the year 2019 to a population of 1,431,545 in 2027. This indicates an increase of 273,672 persons. At the sub-county the population is expected to continue growing at varying rate and that none of the sub counties is expected to experience a population decline at any point within the projection period. The highest populated sub-county is Narok North and least populated is Narok East. Growing population requires proper planning at different levels for population needs and requirements.

1.5.3 Population Projections by Age Cohort

The projected population by age cohorts shows that most of the population is below 34 years constituting about 82 percent higher than national proportion of 75 percent. This indicates that the population is youthful and of high dependency. Efforts to slow down the fast-growing population is key. This calls for investment in health care with a focus on family planning, employment opportunities for the youth, education among others. The demographic by age cohort is shown in table 5 below.

Table 5. Population Projections by Age Cohort

15-19	64,783	60,040	124,823	83,158	84,353	167,511	88,186	90,051	178,237	88,492	90,465	178,956
20-24	47,288	53,325	100,613	69,842	71,500	141,342	79,052	79,614	158,665	82,375	83,391	165,765
25-29	38,968	43,987	82,955	50,242	52,921	103,163	62,804	65,313	128,117	68,868	70,700	139,568
30-34	35,217	38,085	73,302	34,856	36,033	70,888	41,530	44,234	85,764	49,848	52,444	102,292
35-39	25,713	22,974	48,687	25,394	25,816	51,209	30,167	30,205	60,372	34,590	35,631	70,221
40-44	21,649	20,566	42,215	18,896	20,163	39,059	21,866	22,526	44,392	25,014	25,431	50,445
45-49	17,961	16,646	34,607	14,787	16,092	30,879	16,398	18,062	34,460	18,323	19,609	37,931
50-54	12,052	11,450	23,502	10,876	11,637	22,513	13,041	14,207	27,248	14,059	15,481	29,539
55-59	8,889	9,464	18,353	8,112	8,475	16,587	8,613	9,384	17,997	9,944	11,022	20,967
60-64	6,958	7,415	14,373	6,383	6,664	13,046	6,795	7,343	14,137	7,086	7,917	15,003
65-69	4,993	4,650	9,643	4,413	4,755	9,168	5,045	5,720	10,765	5,279	6,138	11,417
70-74	3,858	4,195	8,053	3,541	3,836	7,376	3,047	3,696	6,742	3,382	4,278	7,660
75-79	2,065	2,150	4,215	2,295	2,657	4,953	2,726	3,394	6,121	2,504	3,316	5,820
80+	2663	3493	6156	2,959	3,487	6,446	2,850	3,636	6,487	3,050	4,161	7,211
All Ages	579,042	578,805	1,157,847	616,984	631,724	1,248,708	668,493	686,701	1,355,194	705,471	726,074	1,431,545

Source: Kenya National Bureau of Statistics, Narok

Population Projections by Urban Centers

There are 7 urban centers in the county namely; Kilgoris town, Lolgorian town, Ololulung'a town, Nairagie Enkare town, Ntulele town, Nyangusu town and Narok town. Nyangusu town is shared among two counties with part of it being in Narok county and another part in Kisii County. Table 6 below shows population projections by urban areas in Narok county.

Table 6. Population Projections by Urban Centers

Urban Area	County	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Narok	Narok	32,706	32,720	65,430	35,926	35,941	71,866	39,462	39,479	78,941	42,011	42,029	84,040
Kilgoris	Narok	5,281	5,563	10,845	5,801	6,111	11,911	6,372	6,712	13,084	6,783	7,146	13,929
Lolgorian	Narok	3,017	3,036	6,053	3,314	3,335	6,649	3,640	3,663	7,303	3,875	3,900	7,775
Ololulung'a	Narok	2,756	2,853	5,609	3,027	3,134	6,161	3,325	3,442	6,768	3,540	3,665	7,205
Nairegie Enkare	Narok	2,444	2,510	4,954	2,685	2,757	5,442	2,949	3,028	5,977	3,139	3,224	6,363
Nyangusu	Narok/Kisii	1,657	1,933	3,590	1,820	2,123	3,943	1,999	2,332	4,332	2,128	2,483	4,611
Ntulele	Narok	1,606	1,784	3,390	1,764	1,960	3,724	1,938	2,153	4,090	2,063	2,292	4,354

Source: Kenya National Bureau of Statistics, Narok

The 7 urban areas are highly cosmopolitan and are fairly developed in terms of socio-economic infrastructure. Population in the urban centers is higher and is growing at a relatively faster rate as compared to the other areas in the county possibly due to migration. The county needs to plan for infrastructure and social amenities to be able to accommodate the urban growing population.

1.5.2 Population density and distribution

Population density in the county is varies across the six sub-counties. The density for the county as at 2023 stands at 63 persons per square kilometre, an increase from 47 persons per square kilometre recorded during the 2019 housing and population census. Densities are

influenced by among other things climatic condition, availability of social amenities and altitude. Comparing sub-counties densities, Emurua Dikirr has the highest of 390 while Narok West has the lowest of 34 persons per square kilometers.

Population density is the ratio of people to physical area. Population distribution denotes the spatial pattern due to dispersal of population. Population Density and Distribution shows the relationship between a population and the size of the area in which it lives. Individuals may be distributed in a uniform, random, or clumped pattern. The main factors determining population distribution are: climate, landforms, topography, soil, energy and mineral resources, accessibility

Table 7. Population Distribution and density by sub-County

	2019			2022			2025			2027		
	Area(Km2)	Population	Density	Area(Km2)	Population	Density	Area(Km2)	Population	Density	Area(Km2)	Population	Density
Narok	**17,932**	**1,157,873**	65	**17,932**	**1,248,708**	70	**17,932**	**1,355,194**	76	**17,932**	**1,431,545**	80
Narok East	2,042	115,323	56	2,042	124,370	61	2,042	134,976	66	2,042	142,580	70
Narok North	2,159	251,862	117	2,159	271,621	126	2,159	294,783	137	2,159	311,391	144
Narok South	4,577	238,472	52	4,577	257,180	56	4,577	279,112	61	4,577	294,837	64
Narok West	5,563	195,287	35	5,563	210,607	38	5,563	228,567	41	5,563	241,445	43
Transmara East	310	111,183	359	310	119,905	387	310	130,130	420	310	137,462	443
Transmara West	2,546	245,714	97	2,546	264,990	104	2,546	287,588	113	2,546	303,790	119
Mau Forest	734	32	0	734	35	0	734	37	0	734	40	0

Source: Kenya National Bureau of Statistics, Narok

1.5.3. Population projection for Broad age groups.

The population distribution across different age groups is pyramid structured with the population decreasing with increase in age groups. Table 8 shows the population projections by selected age-groups. However, difference from the period preceding 2017 is that the competence-based curriculum (CBC) introduces new age-group consistent with the new system of education, the 2-6-3-3. The county government of Narok, National Government and other partners are gearing up to invest in infrastructure and human resource in the implementation of the competent based curriculum systems of education in a wholistic approach that includes provisions, mentorship and guidance necessary for learners to improve their learning outcomes. Table 8A provides the CBC population trends for Narok County over the period 2019 to 2027.

Table 8: population by broad categories of population age-group in the competence-based curriculum.

Year	2019			2022			2025			2027		
Age-Group	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Prep-Primary (3-5)	63,188	62,057	**125,245**	69,408	68,166	**137,574**	76,241	74,876	**151,117**	81,165	79,713	**160,878**
Lower Primary (6-8)	60,606	59,715	**120,321**	66,572	65,593	**132,165**	73,125	72,050	**145,176**	77,849	76,704	**154,553**
Upper Primary (9-11)				60,606	59,715	**120,321**	62,533	61,613	**124,146**	64,521	63,572	**128,093**
Junior Secondary (12-14)							60,606	59,715	**120,321**	62,533	63,572	**126,105**
Senior Secondary (15-17)										64,521	63,572	**128,093**
Total	**123,794**	**121,772**	**245,566**	**196,586**	**193,474**	**390,060**	**272,505**	**268,255**	**540,759**	**350,588**	**347,134**	**697,722**

The prep-primary school age group were about 137,574 in 2022. The number is projected to rise to 160,878 pupils at the end of the plan period. Similarly, the population of the lower primary is projected to increase for 132,165 and 122,724 in 2022 to 154,553 pupils in 2027. The first batch of Senior Secondary School learners will join in 2026. For that reason, the population by broad age groups will be restructured in the 4th generation CIDP to reflect the reality and features of the new system of education. In the meantime, this plan caters for transition and therefore has the age categorization reflecting the 844 system of education as well as category for youth (15 – 29), reproductive age for female (15-49), and active Labor Force (15-49) and 65 and above as shown in Table 9. These age groups are of great importance because of their potential contribution and impact on socio economic development of the county. They also inform planning at different levels due to different needs for different age categories.

Table 9. Population Projections for Broad Age Group

	2019			2022			2025			2027		
Age Groups	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
Infant Population <1	16,272	16,257	32,529	17,874	17,857	35,731	19,633	19,615	39,248	20,901	20,882	41,784
Under 5 Population	115,735	114,048	229,783	98,368	98,202	196,570	101,011	100,735	201,746	104,201	103,915	208,115
Pre school (3-5) Years	63,188	62,057	125,245	57,696	57,905	115,601	59,140	59,499	118,639	60,704	61,050	121,754
Primary Schools (6-13) Years	154,318	150,600	304,918	146,238	148,004	294,242	148,445	150,952	299,397	150,936	153,829	304,765
Secondary School age (14-17)	58,364	54,459	112,823	55,308	53,520	108,828						
Youth (15-29) Years	151,039	157,352	308,391	203,242	208,774	412,016	230,041	234,978	465,019	239,734	244,556	484,289
Women Reproductive age (15-49) Years	251,579	255,623	507,202	297,175	306,877	604,052	340,002	350,005	690,007	367,509	377,670	745,178
Economically Active population (15-64) Years	279,478	283,952	563,430	322,545	333,653	656,198	368,450	380,940	749,390	398,598	412,090	810,687
Aged 65+	13,572	14,484	28,067	13,208	14,735	27,943	13,668	16,447	30,114	14,214	17,894	32,108

Under 1: The population in this age-group was 32,529 as at 2019 Census. This age group faces the risk of infant mortality rates. Narok County infant mortality rate stands 37/1000 live births slightly higher compared to national that stands at 36 per 1000 2019 census. This calls for programme intervention to reduce infant mortality rates that affects fertility rates in a population and well-being of women and children in terms of health outcomes.

Pre-Primary School Going Age Group (3-5) years: This includes the pre-school going children, the age group population was 125,245 in 2019 and is expected to slightly reduce to

121,754 in the year 2027. This being the foundation of education there is need to have quality Early Childhood Education (ECD) and therefore the county government needs play a key role in ensuring that the education at this level is improved including enrolment levels. This would mean investment in recruitment of more ECD teachers, building more ECD centers and providing enough learning and teaching materials.

The Under Five Years: The population for the pre-primary age group in 2018 stands at 195,292, comprising of 99,004 males and 96,288 females. To note is affected by under-five mortality rates that stands at 57per 1000 live births compared to a lower national level of 52 per 1000 live births as per KPHC 2019. The situation has worsened as compared to previous that was at par with national level at 52/100 live births. Programme to improve child survival such as improved healthcare system.

Primary School Going Age Group (6-13 years): This group consists of the primary school going children whose population as of 2019 census stands at 304,908 in 2019 of which 154,319 are male and 150,600. The size of the age group is projected to slightly drop to 304,765 in 2027. This is attributed to a drop in the fertility rate of 4.6 in the 2019 census to a projected fertility rate decline of 4.1 in the year 2027. Most of these children live in rural areas where the provision of basic education is really a big challenge, due to long distances to the nearest schools and the existing facilities have improper infrastructure. To address this, challenge the government should focus on providing high quality primary school education through building of more schools in the rural areas, advocating and facilitating recruitment of more teachers and improving the learning facilities to ensure rural schools also enjoy free primary education like other schools across the country.

Age Group 14-17 (Secondary School age group). The age bracket had a population of 112,823 persons in year 2019, with a projection of 108,828 in 2022. This category is expected to phase out in view of the new competence-based curriculum education system that recognizes senior secondary age group comprising of years 15-17. A new categorization that caters for CBC structure will be adopted and incorporated fully in the 4th generation CIDP commencing in 2018.

Age Group 15 – 29: This is the youth group, a very productive group which is important to the county's economic growth. The population was 308,391 in 2019 constituting 26.6% of the population in the county. The age group population is projected to increase 465,019 in 2025 and 484,289 in 2027. Despite being a critical constituent of the labour force, the age group

encounter a number of challenges including unemployment, lack of necessary skills, unwanted pregnancies, and high risks associated to HIV/AIDS and SGBV (triple threat). To cushion the age group from the afore-mentioned realities, there is need to create a conducive environment for the youth potential to be harnessed through creation of more polytechnics for skills enhancement, job opportunities for the groups as well provision of youth friendly health services including reproductive health.

Female Reproductive Age Group (15-49 years): The population of female within this child-bearing age group was at 255623 in 2019. The population of the female is further projected to increase and reach 350,005 in 2025 and 377669 in 2027 with a projected Total Fertility Rate (TFR) of 4.1. The age group will be critical in determining the county population growth. The other challenge facing this category of age group is maternal mortality rates that currently stand at 522/100,000 quiet high as compared to national figure of 355/100,000 as per census 2019. This calls for enhancing family planning uptake, improved maternal care including proper referrals more equipped health facilities with enough equipment to ensure safe delivery and prevention of teenage pregnancies.

Labour Force Age Group (15-64 years): This is the labour force and the most productive age group. The population was at 563,430 in 2019 and is expected to rise to 749,390 in 2025 and 745,178 in 2027. The county and national government should ensure the active population has relevant skills, right investment in economy to create employment opportunities to ensure this group is productive, good health care system amidst good governance in order to harness demographic dividend.

Age Population (65+): Population above 65 years was at 28,067 as at the year 2019 constituting 2% of the total population. This is projected to grow to 30,114 in 2025 and 32,108 in 2027. With the population being less active, the higher the population of persons in this age-group depicts the level of economic burden for the county in terms of social protection programmes especially if it grows beyond 15 percent as a proportion of entire population. Moving forward, there is need to introduce more social protection programmes for the aged, improve the accessibility to health care, integrate the aged in development activities and build their capacity in peace making process.

1.5.4. Population of persons with disabilities

Table 9 below shows the population of persons in the county living with disability. The types of disability affecting most of the county residents are mobility, visuals and hearing impairment. Efforts to improve their welfare including health care is key. The most affected

gender with disability are women. Mainstreaming of disability at all levels is key to increase their productivity in the society.

Table 10: People living with disabilities by type, sex and age

	Visuals			Hearing			Mobility			Cognition			Selfcare			Communication		
	Totals	Male	Female	Totals	Male	Female	Totals	Male	Female	Totals	Male	Female	Totals	Male	Female	Totals	Male	Female
Narok	**2,744**	**1,254**	**1,490**	**1,822**	**878**	**944**	**3,554**	**1,585**	**1,969**	**1,543**	**729**	**814**	**1,543**	**743**	**800**	**1,338**	**756**	**582**
Narok East	418	185	233	174	85	89	490	192	298	160	72	88	140	63	77	131	78	53
Narok North	637	269	368	317	159	158	675	323	352	305	140	165	297	147	150	255	143	112
Narok South	491	224	267	416	192	224	683	304	379	336	174	162	348	178	170	294	163	131
Narok West	421	194	227	284	139	145	554	247	307	213	108	105	231	113	118	198	129	69
Transmara East	213	108	105	214	91	123	401	161	240	202	94	108	198	95	103	175	98	77
Transmara West	564	274	290	417	212	205	751	358	393	327	141	186	329	147	182	285	145	140
Mau Forest																		

Source: Kenya National Bureau of Statistics, Narok

The types of disability affecting most of the county residents are physical disability, Visual and hearing. The most affected age-group with disability are children between 0- 14 years and the elderly aged 55 years and above.

1.5.5 Narok Demographic Dividend Potential

Investments in the wellbeing of young persons is one of the critical areas that contributes to the county's achievements in its development efforts. This plan recognizes the potential for accelerated economic development achievable in Narok County through population management and strategic investments. The plan therefore has proposed interventions to deliberately enhance the County's efforts to harnesses the youth potential to make Narok the county of choice in diversity and opportunities for prosperity with a high quality of life for all citizens through the attainment of a demographic dividend.

Table 10 below shows the key demographic indicators for Narok County. According to 2019 census Narok County total population stood at 1,157,847. In the year 2024, the population was projected to reach 1,319,699 people up from 1,284,204 people in 2023.This figure is projected to reach 1,355,194, 1,393,194 and 1,431,545 people in the years 2025, 2026 and 2027 respectively assuming that the county fertility rate continues declining over the years to reach 2.1 children per woman by the year 2050.

Table 10; Demographic Dividend Potential

Number

Category	2019	2023	2024	2025	2026	2027
Population Size	1,157,873	1,284,204	1,319,699	1,355,194	1,393,369	1,431,545
Population (0-14) Years	566,350	568,275	571,982	575,690	582,219	588,749
Population (15-64) Years	563,430	687,262	718,326	749,390	780,039	810,687
Population above 65 Years	28,067	28,667	29,391	30,114	31,111	32,108
Dependancy Ratio	105.50	86.86	83.72	80.84	78.63	76.58
Fertility Rate	4.6	4.4	4.3	4.2	4.2	4.1

Source: Kenya National Bureau of Statistics, NCPD

From the table above and based on census results analysis and projections, the fertility is expected to decline to 4.1 by the end of the CIDP III period in 2027, from the average of 4.6 in 2019. Given the decline in fertility, the proportion of children below the age 15 is expected to decline from almost 49 percent as per 2019 census to 41 percent in 2027. This will result in a corresponding increase in proportion of the population in working ages (15-64years) from about 49 percent to about 57 percent over the same period, the proportion of the older persons above 65 years will remain almost unchanged at an average of 2.2 over the same period of time.

The goal is to reduce dependents and achieve an increase in the proportion of the population in the working ages (15-64 years). With fewer dependents to support, those in the working ages will have more savings that can be invested for the economic growth of the county thereby improving the wellbeing of the county's residents. Towards this end, the county will simultaneously undertake strategic investments in the health, education, economic and governance sectors. The aim of these investments is to ensure that as the county's children and youth get older, they remain healthy, are able to access education and training opportunities, as they enter the labour force, they get income and employment opportunities, they invest for their life in old age, and they participate fully in governance matters.

Narok County Demographic dividend strategy in CIDP 2023-2027 aligns with Kenya's Demographic Dividend Roadmap (2020-2030) as adopted from the African Union Roadmap on "Harnessing the Demographic Dividend Through Investments in Youth". The AU roadmap was recommended for domestication by all the countries in Africa as it was considered to be a potential solution to the myriad of problems that young people on the continent face. Additionally, the roadmap is seen as a major contributor to the goal of Agenda 2063 on "The Africa We Want". Picking from this and incorporating the unique challenges of Narok County, the Kenya demographic dividend roadmap https://ncpd.go.ke/wp-

content/uploads/2021/10/Kenya-Demographic-Dividend-Roadmap-2020-2030.pdf has been adopted in the 3rd generation CIDP with variations where necessary.

1.6. Human Development Approach

Human development in the county can be assessed using different indicators among them Human Development Indicator (HDI), County Development Index (CDI) and Poverty Index (PI).

1.6.1 Human Development Index (HDI)

The HDI in case for Narok stands at 0.51 compared to the national average at 0.52.

1.6.2 County Development Index (CDI)

As regards County Development Index (CDI, Narok County was classified position 8 among the most marginalized counties; with CDI of 0.4377 which is below the national average of 0.5204. Unlike in the 2nd generation CIDP, the CIDP 2023-2027 features an estimation of county economic performance following the release of Gross County Products report for 2021 https://www.knbs.or.ke/download/gross-county-product-gcp-2021/. The GCP estimates unlock a critical knowledge hurdle in the estimation of own source revenue potential. The etimates also are critical in attracting investors to sectors with greater potential as well as serving in assessing economic progress over time.

According to the report Narok Gross County Product (GCP) stood at KSh 166.7 billion in 2020 at Current Price. Agriculture, Forestry and Fishing had the highest gross value added (GVA) as shown in figure 3. This is the case considering that rural agricultural activities are common in pretty much all parts of the County.

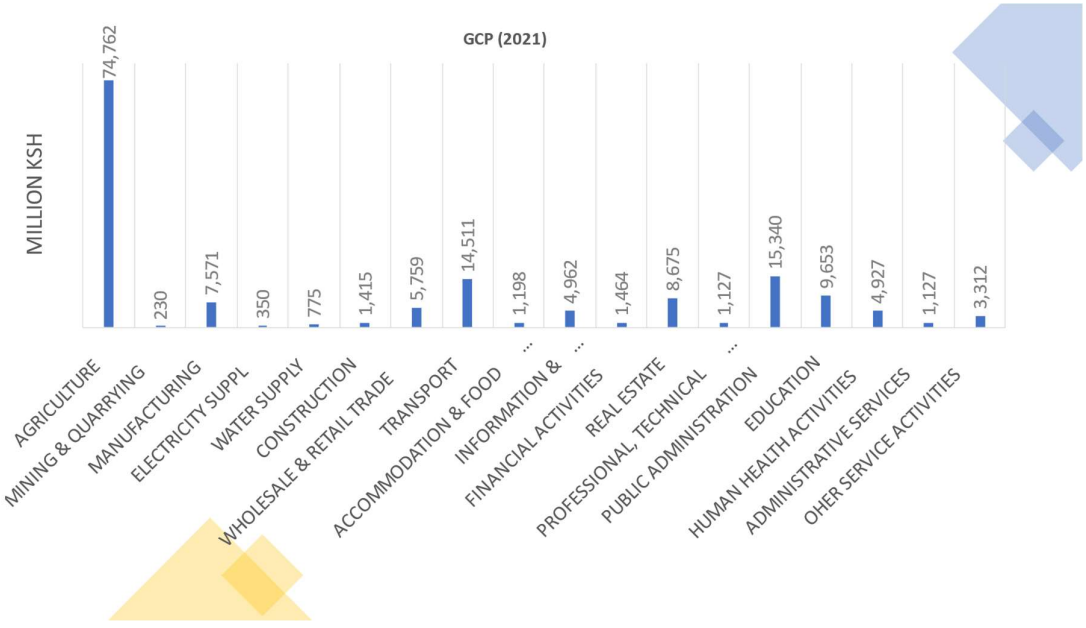


Figure 4. Narok Gross County Product (GCP)

According to the report, Narok Gross County Product (GCP) accounted for 1.6 percent of National Gross Domestic Product (GDP) in 2020 as shown in figure XXX

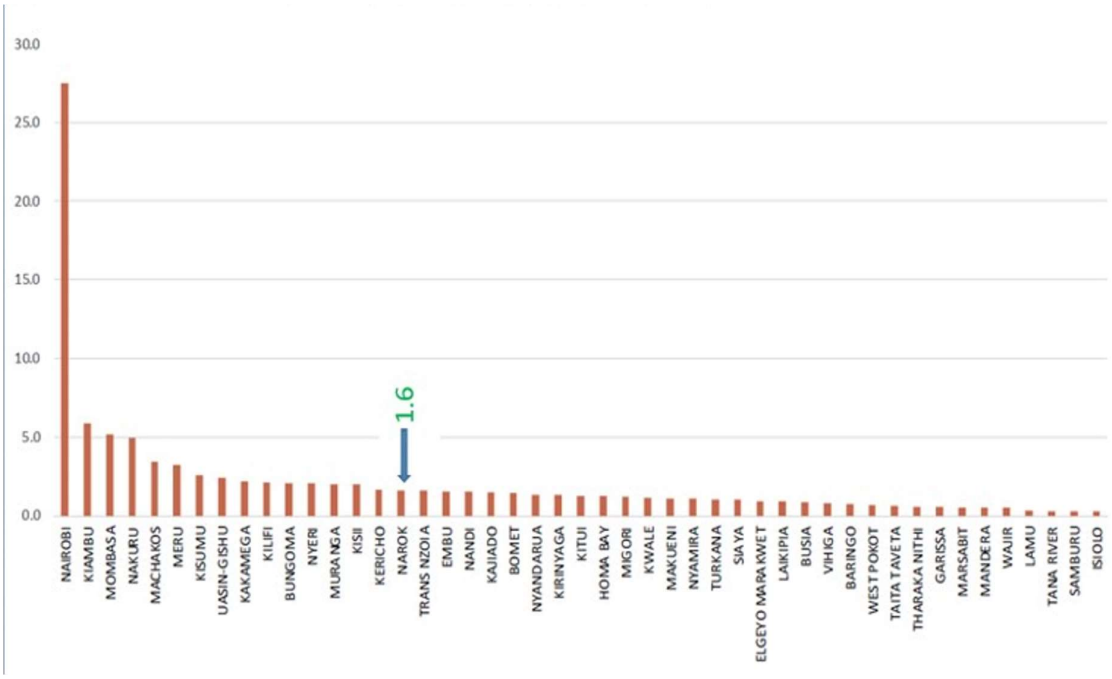


Figure 5. County's Contribution to National Gross Product 2013 - 2020

1.6.3 County Poverty Index (CPI)

Using poverty as an indicator of development, the 2015/2016 Kenya Integrated Budget Household Survey indicated the overall poverty incidence for Narok County is 22.5 per cent. The figure is lower than the national level of 36 per cent. According to this indicator, Narok ranks 5th among the counties with least overall poverty. Using the same indicator, the county accounts for 1.5 per cent of all the poor individuals in the country.

1.6.4 County gender inequality index (GII)

Narok county Gender Inequality index stands at .65 compared to the National at 0.55

1.6.5 What's a Stake in eyes of climate change?

From the introduction part, the county has a huge exposure bearing the lots of investments and the prevailing rates of change in the climate system. Assessment of the risks associated with the climate is very key to inform leaders and policy makers in resource allocation to interventions that will lead in creating resilience among the community and citizens of our county.

PCRA (Participatory climate risk assessment) is a process of evaluating hazards level of risk given the degree of exposure and vulnerability in a specific area. It identifies the likelihood of future climate hazards and their potential impacts for cities and their communities. This is fundamental for informing the prioritisation of climate action and investment in adaptation in our county.

For a climate risk assessment to be participatory, the community has to be at the heart of the assessment process. For this to be done, the community has to be engaged in a level where their sensitivity, exposure to hazards and their adaptive capacity can be assessed.

The CMDRR (Community Managed Disaster Risk Reduction) process is majorly done while carrying out participatory climate risk assessment (PCRA) to generate the following outcomes

i. Thorough understanding and awareness of hazards, vulnerabilities and capacities and degree of risk.
ii. A reflective thought process among community members leading towards formation of community organizations that will plan, implement and evaluate disaster risk reduction measures in the community.
iii. Clear identification of measures for disaster risk reduction.

In order to achieve above outcomes, hazard assessment, vulnerability assessment, capacity assessment and disaster risk analysis were assessed using the following tools

i. Hazard Mapping
ii. Seasonal Calendar
iii. Disaster Trend Analysis (Historical Timeline analysis)
iv. Gender Role / Responsibility Analysis
v. Wealth Ranking
vi. Daily clock
vii. Venn Diagram
viii. Access and Control
ix. Leaky Bucket

1.2 Policy Context

2.1 National Policy Context

2.1.1 The National Perspective

Climate change has increased the frequency and magnitude of extreme weather events in Kenya that have led to loss of lives, diminished livelihoods, reduced crop and livestock production, and damaged infrastructure, among other adverse impacts. An example is the severe drought experienced from 2018 to 2022 that devastated communities that were already struggling to recover electioneering period. Climate change is likely to negatively impact Kenya's future development and achievement of the goals of *Kenya Vision 2030* – the long-term development blueprint – and the Government's Big Four agenda for 2018-2022 which focuses on ensuring food and nutrition security, affordable and decent housing, increased manufacturing and affordable healthcare.

Kenya takes climate change seriously, as demonstrated by the enactment of the Climate Change Act (Number 11 of 2016). This is the first climate change-dedicated legislation in Africa, and provides a regulatory framework for an enhanced response to climate change. It provides mechanisms and measures to transition to a low carbon climate resilient development. This pathway emphasizes sustainable development and prioritizes adaptation, recognizing the importance of increasing the climate resilience of vulnerable groups including women, youth, people with disabilities, and marginalized and minority communities.

Section 13 of the Climate Change Act, 2016 provides for the development of National Climate Change Action Plans (NCCAP) to prescribe measures and mechanisms to mainstream adaptation and mitigation actions into sector functions of National and County Governments. The Act requires that the Cabinet Secretary responsible for climate change affairs review and update the NCCAP in every five-year period.

NCCAP 2018-2022 is Kenya's second action plan on climate change. This plan builds on the first Action Plan (2013-2017) where considerable progress was made, including establishing climate change funds in five Counties, expanding geothermal power, establishing the National Climate Change Resource Centre, and improving the legal and policy framework (see Section 1.4 for more details). NCCAP 2018-2022 is a framework for Kenya to deliver on its Nationally Determined Contribution (NDC) under the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC).

Climate change is a shared responsibility between the National Government and the County Governments. The National Government led and guided the process to develop NCCAP 2018 - 2022 working with County Governments.

The implementation of the plan is coordinated by the two levels of government in line with the Constitution of Kenya (2010). NCCAP 2018-2022 coincides with the second generation of County Governments, who are responsible for several devolved functions where action will contribute to the achievement of this climate change action plan and the Big Four agenda.

NCCAP 2018-2022 guides the climate actions of the National Government, the County Governments, the private sector, civil society and other actors as Kenya transitions to a low carbon climate resilient development pathway.

2.1.2 National Legal and Policy Framework

The Government of Kenya (GOK) has demonstrated a renewed commitment to the ASAL regions, through launching the Economic Recovery Strategy in 2003, which, for the first time, recognized 'the important contribution the ASALs can make to national development'. The Government of Kenya is committed to putting in place a holistic policy framework that facilitates and fast-track sustainable development of the region. This is in a bid to reducing levels of inequality concerning the rest of Kenya and realizing its potential for the benefit of affected counties and the country.

Kenya has assented to several international and regional instruments governing diverse aspects of climate change, which are currently being implemented. The United Nations Convention to Combat Desertification (UNCCD) is one of the key international instruments that promotes sustainable management and utilization of drylands while the United Nations Framework Convention on Climate Change (UNFCCC) of 1997 (Kyoto Protocol, 1997), seeks to address climate change through periodic and successive binding global agreements (such as the Kyoto protocol and presently the Paris Agreement) that detail, among others, adaption measures to respond to both current and future impacts of climate change.

Further, the Sustainable Development Goals (SDGs) are a set of development goals that aim at fostering sustainable development across diverse sectors of world economy. Those SDGs of particular interest to Narok County include SDGs 1 (No poverty), 2 (zero hunger), 3 (good health and well-being), 6 (Water and sanitation), 7 (Affordable and clean energy), 8 (Decent work and economic growth), 13 (Climate Action), 15 (Life on Land), 17 (partnership for the goals).

The Sendai Framework for Disaster Risk Reduction (2015-2030)

The Sendai Framework for Disaster Risk Reduction (Pearson & Pelling, 2015) seeks for a reduction in disaster risk and losses in lives and livelihoods while the African Union (AU) Policy Framework for Pastoralism in Africa aims to secure, protect and improve the lives, livelihoods, and rights of African pastoralists (Africa Union, 2013). In the East Africa Community (EAC) region, EAC Climate Change Policy has been developed to guide Partner States on the preparation and implementation of collective measures to address climate change in the region.

The Constitution of Kenya, 2010

The Constitution of Kenya, 2010 asserts the aspiration of all Kenyans for a governance based on the essential values of, among others, human rights, equality, and social justice. These aspirations particularly resonate well with pastoralists, agro-pastoralists and agriculturalists in Narok County. The constitution creates an Equalization Fund whose provisions are buttressed by objects of which include, among others, to protect the marginalized, including pastoralists and to ensure equitable sharing of national resources throughout Kenya. Most importantly, the Constitution devolved units, the counties, which are tasked with the implementation of crop

and livestock production, water and sanitation services, disaster management (concurrent function), soil and water conservation, and many other functions; all of which contribute to climate Change Mitigation and Adaptation in Narok County.

The National Climate Change Response Strategy (NCCRS, 2010)

The National Climate Change Response Strategy (NCCRS, 2010) was key in Kenya's history, which laid the foundation for strengthening nationwide actions towards climate change adaptation and mitigation of greenhouse gas (GHG) emissions. The National Climate Change Action Plan (2013-2017) sets plans for the implementation of the NCCRS, including prioritized actions needed to achieve climate-resilient and a low carbon pathway development (Government of Kenya, 2010).

The Climate Change Act (2016)

The Climate Change Act (2016) provides the regulatory mechanisms to implement climate change resilience and low carbon actions in both public and private sector development activities and has enshrined the National Climate Change Action Plan (Council, 2010) – to be developed in 5-year cycles and aligned with the MTPs – as its principal implementation instrument. The latest NCCAP, covering the period 2018–2022, identifies a series of actions for government and other stakeholders, with a particular focus on adaptation. The National Policy on Climate Finance (2018) provided a clear direction on mechanism for enhanced mobilization of climate finance from all sources: private, public, multi-lateral Agencies, bilateral, philanthropic, among others to finance Kenya's updated National Determined Contribution (NDC) and NCCAPs. The policy recommended the development of green fiscal incentive policy to catalyze the private sector to finance transition to a low carbon- climate resilient-green development path. It requires the County governments to integrate the provisions of the Act.

The National Adaptation Plan (2015-2030)

The National Adaptation Plan aims to integrate climate change into national and the County level development planning and budgeting, as well as enhance the resilience of vulnerable populations to climate shocks through adaptation and DRR.

The County Government Act (2012)

The County Government Act 2012 (Government of Kenya, 2012) mandates counties to develop a County Integrated Development Plan (CIDP), the County Spatial Plan (CSP) as well as Cities and Urban Areas Plan which shall be the basis for the County budgeting and expenditures.

The National Land Policy (2009)

The National Land Policy 2009 provides for guiding principles that resonate with sustainable rangeland management including, among others, equitable access to land; conservation of ecologically sensitive areas, elimination of gender discrimination in land relations; and encouragement of traditional dispute resolution mechanisms. To secure community rights to land, the policy mandates the Government to enact legislation which shall *inter alia*, provide a framework for the recognition and registration of community rights to land and resources found

thereon. Pending which, any unregistered community land shall be held in trust by the County Government for the community in question.

The Community Land Act (2016)

The Community Land Act (Kenya Law) 2016 sets a framework for ownership, protection, management, utilization, rights, benefits sharing, disputes resolutions, and penalties regarding community land. Furthermore, communities have powers to set rules for administration and management of communal land, establish measures to protect critical ecosystems and habitats, and facilitate access, public participation and co-management of resources by communities. The Environment and Land Court Act 2011 mandates the court to mainstream Alternative Dispute Resolution (ADR) in its proceedings.

The Environmental Management and Coordination Act (EMCA) of 1999

The Environmental Management and Coordination Act (EMCA) of 1999 (amended in 2015 to align with the Kenya constitution, 2010) creates the County Environment Committee comprising, inter alia, representatives of pastoralists within the County in question (EMCA 2015," 2017). The national environment provides for ASALs and rangelands are found in several sections such as provisions for forest ecosystems, provision for ASALs, provision for land resource, provision for biodiversity and wildlife resources, and provision for livestock resources.

The Water Act, 2016

The Water Act, 2016 provides for, inter alia, the regulation, management, and development of water resources and services throughout the country. The Water Services Trust Fund shall provide grants to counties (in addition to the Equalization Fund) to extend water services in marginalized areas or those considered to be underserved or not to be commercially viable. Representation of pastoralists on the Basin Water Resources Committee is also a requirement.

The Wildlife Conservation and Management Act, 2013

The Wildlife Conservation and Management Act, 2013 calls for devolution of wildlife conservation and management, wherever possible, to landowners where wildlife occurs while recognizing the rights of communities living adjacent to protected areas.

2.1.3 County Enabling Legal & Policy Framework

This Section analyses county's existing policy, legal and regulatory framework for climate change. This include county climate change acts, CCCF Act and Regulations, CIDPs, sectoral policies, spatial plans, etc.

i. Narok County Climate Change Fund Act, 2021

The object and purpose of this Act is to establish a Climate Change Fund to facilitate and coordinate financing of Climate Change Adaptation and Mitigation activities and to establish a county climate change framework and structures to: Mainstream climate change programs into development planning, decision making and advisory on climate change in the county; Co-ordinate, collate and disseminate information on climate

change to the public to create awareness and preparedness; Establish a climate change fund, financial mechanism and governance framework for climate change response and risk mitigation; Co-ordinate support from National Government climate change policy and legislative framework and co-ordinate the collection and dissemination of climate change information to the public to create awareness and preparedness.

ii. Narok County Climate Change Policy, 2022

The main goal of the Policy is to ensure that climate change is mainstreamed in the economically and socially vulnerable sectors and to steer Narok County towards climate resilience and green development pathway. This will be achieved through: Pursuing sustained economic growth by appropriately addressing the challenges of climate change; Integrating the climate change policy into other related county policies and the CIDP; Facilitating and strengthening Kenya's role as a responsible member of the international community in addressing climate change challenges; Focusing on pro-poor and gender sensitive adaptation while promoting mitigation to the highest extent possible in a cost-effective manner; Ensuring water, food and energy security of the county in the face of challenges posed by climate change; Minimizing the risks arising from expected increase in frequency and intensity of extreme events: flash floods, droughts etc.; Strengthening inter-departmental, inter-agency decision making and coordination mechanisms on climate change; Facilitating effective mobilization and utilization of natural, human, technical and financial resources available both nationally and internationally; Development of appropriate economic incentives to encourage public and private sector investment in both adaptation and mitigation measures; Enhancing the awareness, skills and institutional capacity of relevant stakeholders in implementing climate change adaptation and mitigation measures and promoting conservation of natural resources and long-term sustainability.

1.3 Purpose of the PCRA Report

The main purpose of this report is to establish the current status of the community climate vulnerability and to set a baseline where the Financing Locally Led Climate Action (FLLoCA) Program will be anchored to.

Specific Objective

i. To establish the current status of the community climate vulnerability and to set a baseline where the Financing Locally Led Climate Action (FLLoCA) Program will be anchored to.
ii. To engage the community and its local leaders to have a better understanding of the PCRA relevance and its importance to climate change for sustainable investments.
iii. To establish a common understanding and agreement on the importance of conducting a participatory climate change assessment
iv. To get the support and commitment of the county's decision makers and stakeholders for conducting the climate change assessment.

1.4 Key steps in the county's PCRA process

1.4.1 Formation of cross-sectoral technical working group to lead participatory county climate risk assessment process

The Climate Change Unit (CCU) convened a Technical Working Group (TWG) consisting of representatives from County Meteorological Services (CMS), National Environmental Management Authority (NEMA), Environment, Water, Physical Planning, Agriculture and Livestock, Education, County Disaster Risk Management, National Drought Management Authority (NDMA), Kenya Forest Services (KFS), Finance and Economic Planning. This technical working group was tasked to initiate, manage, run and complete reporting for the PCRA process.

1.4.2 Stakeholder analysis and engagement process

The technical WG identified key stakeholders that were needed to be engaged and develop strategies of engaging them. This group undertook the stakeholder analysis by identifying stakeholders that:

i) were formally responsible for climate action and building resilience;
ii) were involved in climate action and responses to climate impacts;
iii) had knowledge and expertise relevant to climate action and building resilience, including knowledge on the climate system and climate risks;
iv) may be impacted by climate change.

While carrying this step, the team engaged the sub county and ward administrators' offices in mobilizing relevant stakeholders' based on the gender equality, Persons with Disabilities (PWDs), Vulnerable and Marginalised Groups (VMGs) in respective wards.

1.4.3 Stakeholder engagement at all levels

After carrying out stakeholder analysis, this TWG convinced the stakeholders identified in step 2 to participate in sharing their data. In this forum, the stakeholders involved agreed on the type of data to be collected, methods to be employed and timeframe for data collection.

1.4.4 Data Collection and Workshop Preparation

The TWG prepared for the workshop by appointing workshop facilitation team who led the plenary and group work sessions during the workshop. They also identified the 'table groups' for the workshop group sessions and prepared workshop materials, which included the key presentations on the county's socio-economic and climatic contexts during the plenary sessions

1.4.5 Multi-stakeholder climate risk assessment workshop

The team conducted a participatory and cross-sectoral holistic assessment of current and future climate risks with likelihood of occurrence. In doing this, exposure, vulnerability and adaptive capacity were also explored.
The team further mapped out thematic areas that were identified from the ward level community engagements meeting

1.4.6 Development of the PCRA Report

At this stage, the PCRA TWG together with the CCU team collated all the data collected and reports from all the 30 wards to develop a holistic County climate risk report. This step involved developing timelines, reviewing of existing literature including policies, data analysis, and discussion of the analysed data and giving a county wide recommendation.

CHAPTER 2. NAROK COUNTY CLIMATE HAZARD PROFILE

2.1 Current and Historical Climate Hazards and Trends

Historical hazards identified during the exercise were Drought, Flooding, flash flood, Human/Wildlife conflicts, frost, landslide, clashes, lighting, Strong winds, livestock pest and diseases (Foot and Mouth Disease (FMD), Anthrax, East Coast Fever (ECF), CBPP/CCPP, Blue Tongue, PPR, Malignant catarrhal), Crop Pests and diseases (Fall Army Worm (FAW), Maize Lethal Necrosis Disease (MLND), Root Rot, Potato Blight, Locust, Wheat Rust), Human Diseases (Malaria, Typhoid, Pneumonia), Forest Fires, Mudslide, Wild Fires

Table 11: Narok County Historical Timeline

Hazard	Year	Events	Adaptation Measures
Drought	1976, 1984, 1992, 2002, 2004, 2007, 2021	Livestock deaths, migrations, Human / livestock diseases, air population, resource based conflicts	Migration of people and livestock, destocking, Relief food and feed reception, purchase of grass, rotational grazing, peace meetings
Flooding	2005, 2007, 2009,2019,2020	School closures, soil erosion, flooding at schools/ destruction of bridges, collapsing of buildings, emergence of waterborne diseases, blue tongue in sheep	Livestock vaccinations and offtake, dams construction, renovation of buildings and roads, building of gabions and tree planting
Human wild life conflicts	2000, 2005	Wild animals poisoning by locals, many cattle were predated on by lions, people killed by buffalos and Elephants	Creation of awareness by KWS, provision of conservancy rangers, compensation of livestock and human predations, permanent fencing
Animal diseases, - FMD, Blue tongue	2000,2005,2021 and Blue tongue in 2019	Livestock deaths, livestock emaciation, shortage of milk and blood Reduction livestock prices, quarantine imposition	Livestock offtake by Government Relief food reception Livestock vaccination by Government
Human diseases- Malaria, Typhoid, HIV/Aids and Corona	2007, 2013 & 2020 – corona	Human deaths, high malnutrition levels, job losses and markets, institutions closures	Establishment of health facilities, provision of relief food by Government and development partner's heath education and provision of prevention equipment Provision of masks and sanitizers, water treatments, provision of mosquito nets

Fire	2020	Destruction of farms and household shelters, migration in search of pastures	Fire extinguishers from the County and digging/ construction break bunds
Deforestation	From 2014	Charcoal burning, rampant king posts business	Government regulation restrictions

The main climate hazards in Narok County are frequent dry spells, sporadic rainfalls, increase pest incidences, crop pest and diseases, human disease and livestock diseases.

The long rain season (March – May) is wetter than the short rains (October - November). Total Annual precipitation observed and the maximum and minimum temperatures are as shown below;

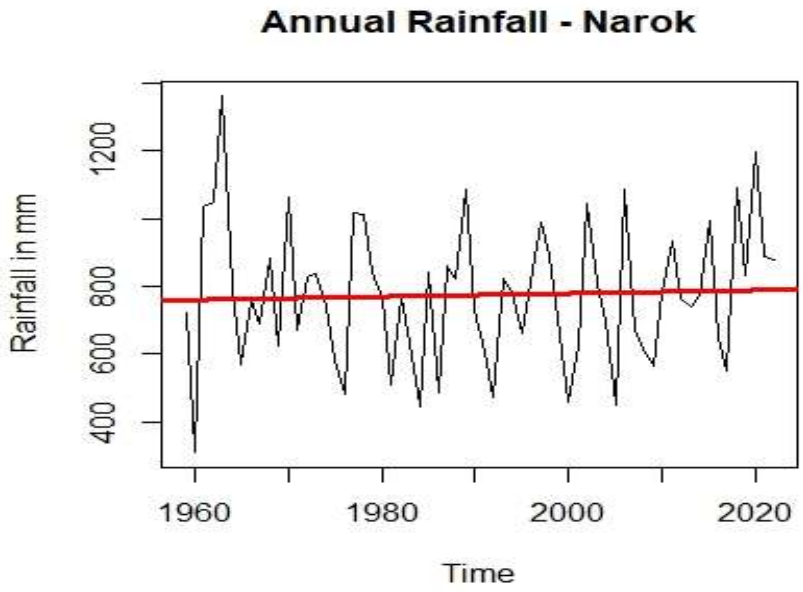


Figure 6 Historical annual mean rainfall trend

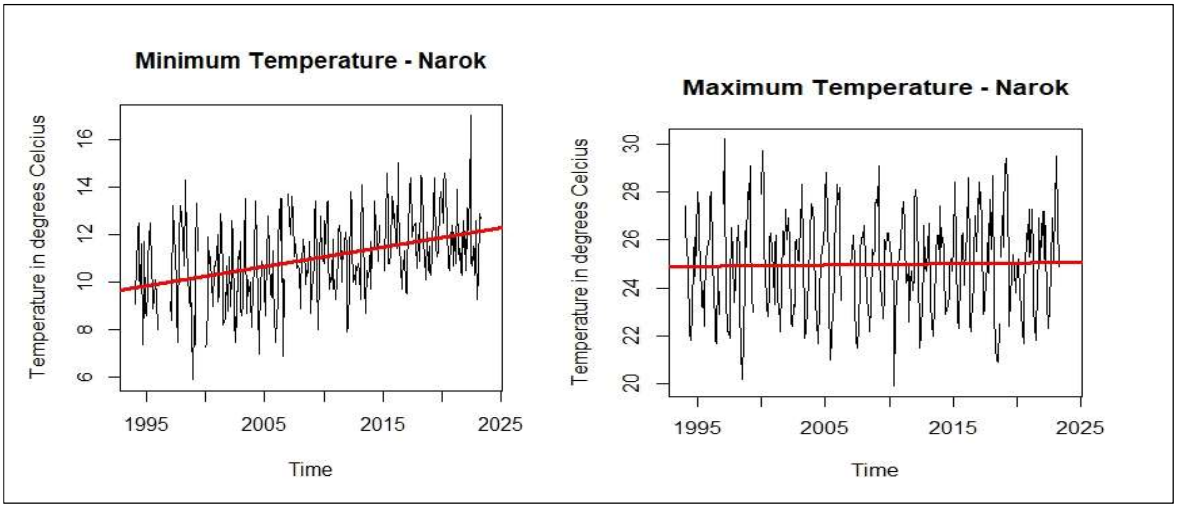


Figure 7 Historical annual mean Min/Max temperature trend

2.2 Exposure and vulnerability profiles of the county

1. DROUGHT

Table 12 Drought Hazard Characterization

Hazard Characteristics'			**Exposure Variables**	
		Analytical description of a hazard	**How it will affect me as a member of h/h**	**How will it affect my community**
Cause /Origin	Deforestation Climate change	Drought is a natural phenomenon caused due to deforestation, climate change, lack of rainfall for two consecutive seasons causing intensive heat, dryness, migration of livestock, inadequate food and drying of water sources. It is a slow onset hazard with a forewarning period of two months from period at the duration of four months from July to October	0-5 years • Malnutrition • Slow growth of children • Poor diet. 6-18 years • School dropout • Poor diet • Poor health 19-36 years • Poor health • Loss of job • Increased crime 37-60 years • Stress • Families separation	**Market** • High price of food commodity • Low price of livestock due to poor body condition • Inadequate commodities in the market. **Schools** • Lack of school fees • Poor attendance • School drop out • Early marriages • Poor performance • Closer of schools **Hospital**
Force	Heat			

Warning signs and signals	Shedding of trees Migration of base Drying of rivers Spiral wind		• Low productivity • Poverty 60yrs and above • Stress • Poor health • Malnutrition • Loss of property	• High cases of patient in hospital • In ability to access medical services **Water Sources** • Long distance to water sources • Poor water quality • Drying of water sources • Presence of water Bourne diseases • Human wild life conflicts **Livestock** • Lack of water and pasture • Poor body condition • Migration of livestock • Increase of livestock diseases
Fore warning	2 months			
Speed of onset	slow			
Frequency	Yearly			
Period of occurrence	July-October4 Months			
Duration				

Table 13 Drought HAZARD CHARACTERIZATION

Drought Vulnerability Assessment

	Elements at Risk		Location of the element at risk vis a vis the hazard			Why the Elements at Risk is in that Location
Hazard Profile	Human Elements		**H**	**M**	**L**	
Drought is a natural phenomenon caused due to deforestation, climate change, and lack of rainfall for two consecutive seasons causing intensive heat, dryness, migration of livestock, inadequate food and drying of water sources. It is a slow onset hazard with a forewarning period of two months from period for duration of four months i.e. Sep, Jan, Oct and Aug	Gender /sex	Male	✓			-Loss of livelihood -Loss of assets -Reduced esteem
		Female	✓			-Loss of livelihood -Loss of assets
	Age	Children below 5 years (At home)	60%	30 %	10%	-Lack of food and clothing -Poor diet
		Children between 6-18 years (At school)	70%	20 %	10%	-Lack of food and clothing -Education is compromised
		Youth between 19-35 years (At work)	50%	30 %	20%	-Can relocate to other places in search of alternative sources of income Poor business environment stress
		Adults between 36-60 Years (At home)	70%	20 %	10%	-Loss of livelihood -Loss of assets -Reduced esteem
		Elderly, above 60 year (At home)	70%	20 %	10%	-Loss of livelihood -lack of food -Loss of assets -Reduced esteem
	Special Conditions	PLWD	70%	20 %	10%	-Mostly depend on livestock and crops for livelihoods
		HIV+	60%	20 %	20%	-Mostly depend on livestock and crops for livelihoods

		Expectant and nursing mothers	50%	15 %	35%	-Mostly depend on livestock and crops for livelihoods and food security will be compromised
	Non-Human Elements					
	Productive Assets	Sheep and goats	60%	20 %	20%	-poor forage conditions Increase in trekking distances to water sources
		Cattle	80%	20 %	0%	-poor forage conditions - increase in trekking distances to water sources -upsurge of diseases and predation
	Critical Facilities	Hospitals	50%	40 %	10%	-Due to poor nutrition, opportunistic diseases crop up, which are usually referred to hospitals
		Livestock marketing groups Community organizations and systems	70%	15 %	15%	-Reduced business and incomes -Can result to social conflicts -Disruption of social events
		Schools	70%	30 %	0%	- Lack of school fees Poor attendance School drop out Early marriages Poor performance Closer of schools
		Water sources	90%	10 %	0%	Long distance to water sources Poor water quality Drying of water sources Presence of water Bourne diseases •Human wild life conflicts

		Markets centres	60%	30 %	10%	High price of food commodity Low price of livestock due to poor body condition Inadequate commodities in the market.

CAPACITIES ASSESSMENT

Table 14 Drought Capacities Assessment

Element at risk	Age	Time	Existing Capacity	Required Capacity	Gaps
Individual	< 5 yrs	During Hazard	-Parental attention 4000	-Balanced diet -Herbal water -Safe water for drinking -Parental attention -Adequate milk 5000	-Lack of resources -Parental attention -Knowledge on nutrition -Inadequate Sanitization -personnel 1000
	5-18 yrs	During Hazard	-Ability to work -Parent attention -Skilled/unskilled labour -Share responsibilities 6000	-Recognition -Security -Resources -Skill -Parental attention -Leadership guidance 10,0000	-Guidance and counselling -Ownership of property -Training
	18-35 yrs	During Hazard	-Ability to produce, protect and migrate -Own resources --Control resources -Decision making 3000	-Energy -Skill and knowledge -Resources ie land, water and labour. 4000	-Inadequate resources -Inadequate water -Healthy facilities -Sanitation facilities -Food inadequate 1000.
	35-60 yrs	During Hazard	-Own resources-land, livestock and business -Coping capacity -Humble --Ability to share resources	- Own resources-land, livestock and business	-Relief food supplies -Poverty among community

				-Social sharing -Change breeds of livestock to drought resistance breeds -Land demarcation.	-Crop pest and chemicals -Tree planting(Reforestation) -Water sources -Livestock feeds.
	Elderly	During Hazard	-Resources ie Livestock and land -Grazing land -Ability to look after livestock -Knowledge and experience -Support from children -Authority on community 1000	-Food security -Resources -Support from families and children -Decision making -Social safety nets 3000	-Social safety nets eg cash transfers -Food-balanced diet -Consultation from other community members -To receive positive information only -Communal/social closeness -Support fro children and family members-2000
	Special Groups PLWD	During hazard	-Support from family and community. Go to school Some employed Sympathy support from community. Resources 70	-Family/children /community support -Government support -Social support from charity organization. 200	-Food security -Sanitation -Peace environment -To be educated 130
	PLWHA	During Hazard	-Capacity as other community members -Access to medication(ARV's) 100	-Required as for any other community member. -Full access to medication (ARV's)	-Gaps as for any other community member. -Access to ARV's -Sanitization to seek medication. 200

				300	
	>5 yrs	Before Hazard	- Parental attention 4000	Balanced diet -Herbal water -Safe water for drinking -Parental attention -Adequate milk 5000	Parental attention -Knowledge on nutrition -Inadequate Sanitization -personnel 1000
	9-18 yrs	Before Hazard	-Knowledge about drought -Assist in provision of security of existing resources (Conservation) 6000	-Ability to help parents on drought preparedness -Skills on resources conservation 10,000	Recognition of efforts and conservation 4000
	18-35 yrs Youth and Adults	Before Hazard	-Indigenous knowledge and prediction 4000	-Techniques of survival -More knowledge on drought ie drought resistance animals /crops and alternative lively hoods eg bee keeping 9,400	Drought resistance techniques 5400
	PLWD	Before Hazard	-Support from family and community. Go to school Some employed Sympathy support from community. Resources 70	-Family/children /community support -Government support -Social support from charity organization.	Food security -Sanitation -Peace environment -To be educated 130

				200	
	Community readiness	During Hazard	GOK,CG,NDMA,RPLRP,MOLALF ENSDA,MOH,Action Aid,CHP,Africa Hope,Catholic,UNICIEF,Existing ideigenous knowledge and food rationaing	-Land demarcation to enable reseeding. -Pan excavation (desilting existing ones) -Range Mgt, -Livestock disease control	Technical Knowledge on all interventions Addressing dehydration
		Before Hazard	-Livestock off-take -Breeding controls -Livestock migration -Leasing of grazing land -Stocking of food to be used during drought -Formation of self-help groups	-Strengthen existing groups(SHG) -Sensitization /skills on offtake issues.	

2. FLOODS

HAZARD CHARACTERISTICS

Table 15 FLOODS HAZARD CHARACTERISTICS

Hazard Characteristics'			**Exposure Variables**	
		Analytical description of a hazard	**How it will affect me as a member of h/h**	**How will it affect my community**
Cause /Origin	High rainfall	Floods is caused by high rainfall occasioned by raging water and its signs and warning signals are increase in volume and speed of flowing water . It pre signals 2 to 3 days prior to its occurrence and its onset is rapid and it is normally April and November	0-5 years • Malnutrition • poor diet • diseases 6-18 years • School dropout • absenteeism • high water borne diseases incidences • Poor health 19-36 years • Poor health	**Market** • High price of food commodity due to destroyed roads • Inadequate commodities in the market. **Schools** • closure of school fees • loss of property **Hospital**
Force	Raging water			
Warning signs and signals	Increase in volumes of flowing water Increase in flowing speed of water			
Fore warning	2- 3 days			

Speed of onset	rapid		• Loss of property • Increased crime • stress 37-60 years • Lack of income • Stress • loss of property • Families separation • Low productivity • Poverty 60yrs and above • Stress • Poor health • Malnutrition • Loss of property	• High cases of patient in hospital • In ability to access medical services • destruction of infrastructure **Water Sources** • Poor water quality • destruction of water structures • upsurge of water Borne diseases **Livestock** • destruction of water structures • livestock deaths • Increase of livestock diseases
Frequency	Twice a Year			
Period of occurrence	April and November			
Duration	2 weeks			

Vulnerability assessment

Table 16 Flood Vulnerability assessment

Hazard Profile	**Elements at Risk**		**Location of the element at risk vis a vis the hazard**			**Why the Elements at Risk is in that Location**
	Human Elements		H	M	L	
Floods is caused by high rainfall occasioned by raging water and its signs and warning signals are increase in volume and speed of flowing water. It pre-signals 2 to 3 days prior to its occurrence and its onset is rapid and it is normally April and November	Age	Children below 5 years (At home)	70 %	20 %	10%	Malnutrition poor diet diseases
		Children between 5-18 years (At school)	60 %	30 %	10%	School dropout absenteeism high water borne diseases incidences Poor health
		Youth between 18-35 years (At work)	75 %	15 %	10%	School dropout absenteeism high water borne diseases incidences Poor health
		Adults between 36-60 Years	80 %	15 %	5%	Poor health Loss of property Increased crime

		(At home)				stress
		Elderly, above 60 year (At home)	90 %	10 %	0%	-Stress Poor health Malnutrition • Loss of property-Reduced esteem
	Special Conditions	PLWD	80 %	10 %	10%	-Mostly depend on livestock for livelihoods
		HIV+	65 %	25 %	10%	-Mostly depend on livestock for livelihoods
		Expectant and nursing mothers	50 %	15 %	35%	-Mostly depend on livestock for livelihoods and food security will be compromised
	Non-Human Elements					
	Critical Facilities	Hospitals	80 %	15 %	5%	upsurge of water borne diseases high concentration of patients shortage of drugs
		Schools	50 %	30 %	20%	property destruction poor attendants
		Water sources	25 %	35 %	40%	-Destruction of water infrastructure Swelling of pans and dams.
		Markets centres	80 %	10 %	10%	- Inadequate commodities in the market. High price of food commodity due to destroyed roads
	Community organizations and systems	Value chain groups	70 %	15 %	15%	-increase in defaulter subscriptions -Can result to social conflicts -Disruption of social events

3. MALARIA

HAZARD CHARACTERIZATION

Table 17 MALARIA HAZARD CHARACTERIZATION

Hazard Characteristic		**Analytical description**	**Exposure Variable**	
		Malaria is a disease	How will it affect me as HH	How will it affect my community

Cause /Origin	Parasite	caused by a parasite called Plasmodium Malariae. The warning signs and symptoms include headaches, loss of appetite, joint pains, fever, nausea and vomiting. The forewarning period occurs within 21 days at a gradual speed of onset. It occurs twice a year within these months; Feb, March, June and July and the duration within a year is 4 months.	<5 years Malnutrition Delayed milestone Hospitalization Low immunity	Market Fall of the economy Increase in product price Low products at the markets
Force	Plasmodium		6-18years School absenteeism Low immunity Malnutrition Low performance	Hospital Increase in admission of patients Insufficient drugs Increase in the drugs prices at private hospitals Prolonged hospital stays Increase in hospital charges
Warning signs and signals	Headache Loss of appetite Pain in joints Nausea and vomiting Fever		19-36 years Low productivity Lack of food Lack of money Increase in stress Family breakage	School Low performance High absenteeism Minimal development at school Minimal learning due to insufficient teachers.
Forewarning	21 days		37-60 years Low productivity Lack of money Increased stress levels	
Speed of onset	Gradual		60 and above Low immunity Hospitalization Depression Stress Family burden (taking care)	
Frequency	Twice a year			
Period of occurrence	Feb, March, June and July			
Duration	4 months			

VULNERABILITY ASSESSMENT

Table 18 Malaria Vulnerability Assessment

Hazard profile	Element at risk	Level of risk to the element			Reasons why element is at risk in the location
Malaria is a		H	M	L	
disease caused by	< 5years	50%	30%	20%	Low immunity

a parasite called Plasmodium falciparum. The warning signs and symptoms include headaches, loss of appetite, joint pains, fever, nausea and vomiting. The forewarning period occurs within 21 days at a gradual speed of onset. It occurs twice a year within these months; Feb, March, June and July and the duration within a year is 4 months.	At home				Under 1 year cannot communicate Malnutrition is high Caregivers not in ability to support them No knowledge
	6-18 years At school	30%	50%	20%	Low immunity Malnourished Caregivers lack capacity
	19-36 years At work	10%	20%	70%	High immunity Cannot afford medication Have money to buy food
	37-60 years At work	20%	30%	50%	Good immunity Cannot afford medication Have money to buy food
	60 and above At home	70%	25%	5%	Low immunity Prone to other diseases Stress
	People with disabilities	60%	25%	15%	Lack of money low immunity Less caregivers Cannot access treatment
	People with special conditions i.e., HIV & AIDS	80%	15%	5%	Low immunity Lack of finance Stigma in the community
	Market	20%	20%	60%	Adults can reach the market Medium production of food
	school	40%	50%	10%	High absenteeism Poor performance High drop outs
	Hospital	70%	15%	15%	High admissions Congestion at the hospital Long que Insufficient drugs Prolonged hospital stays

4. HUMAN/WILDLIFE CONFLICT

Hazard characterization

Table 19 HUMAN/WILDLIFE CONFLICT Hazard characterization

	Elements of characteristics of the hazard	Analytical description of hazard	**Exposure variables**	
			How will it affect me	How will it affect my community
Cause /origin	invasion by Wild animals- hyena, leopards, wild dogs, porcupines, elephants, monkeys	It is an injury / predation or damage to humans, livestock or crops caused by interaction with wild animals through bites, eating of sheep, goats, poultry, cattle, donkeys and crops and even humans by hyenas, leopards, wild dogs, snakes, monkeys and elephants	Livestock losses Render me poor Lack of food Diseases transmission Depression Death Lack of income, food and pride	Loss of community status Resource based conflicts Increased thefts and corruption Social disruptions School drop outs, early marriages Migrations and disruption of markets
Force	Bites, predation and damage			
Warning signs and signals	Animals behavior Dry up of water sources			
Forewarning	Within 1 month			
Speed of onset	gradual			
Frequency	Twice a year			
Period of occurrence	During dry seasons Continuous for crop damage			
Duration	3 -6 months			

Vulnerability Assessment:

Table 20 HUMAN/WILDLIFE CONFLICT Vulnerability Assessment

Hazard Profile	**Elements at risk**	**Location of element at risk**			**Why the elements at risk is in that location**
	Human elements	High	Medium	Low	

	It is an injury / predation or damage to humans, livestock or crops caused by interaction with wild animals through bites, eating of sheep, goats, poultry, cattle, donkeys and crops and even humans by hyenas, leopards, wild dogs, snakes, monkeys and elephants		x			Close to Olepishet forested hills Settlements in wild life breeding areas and movement routes Near to Emeningiu forest Close to salty water sources Close to wild life cave shelters and movement routes
	Gender	Female	√			
		Males		√		Have physical effort to run and experience
	Age	Children < 5 years	√			
		Children 5-18 years	√			
		Youths 18-35 years		√		Have physical effort to run and experience
		Adults 36-60 years		√		Have physical effort to run and experience
		Elderly >60 Years	√			
	Special conditions	PLWD	√			
		Expectant mothers				
	Non-human elements					
	Productive assets	Livestock	cattle, sheep and goats			Direct target by carnivores
		crops	Cabbages, tomatoes,			Direct target by herbivores

			onions, maize			
		Buildings			√	
		Vehicles			√	
	Critical facilities	Schools		√		Low attendance, lateness
		Hospitals	√			Urgency for medication
		Markets		√		Dirty, low hygiene standards
		Churches/mosques		√		Averagely used, dropouts due to survivability priorities.
	Community systems	Women groups	√			Meet rarely no time, objectives not met
		Youth groups	√			Meet rarely no time
		Marketing groups	√			Meet rarely no time

5. CCPP /CBPP
Hazard characteristics

Table 21. CCPP /CBPP Hazard characteristics

	Elements of characteristic of the hazard	**Analytical description of hazard**	**Exposure variables**	
			How will it affect me	**How will it affect my community**
Cause/ Origin	Pathogens- disease causing micro-organism	Contagious Caprine Pleuropneumonia (CCPP) is a disease which affect goats and is caused by disease causing	0-5years Lack of milk Loss of weight Poor diet	Education sector Lack of school fees Absenteeism Drop outs
Force	Bacteria- mycoplasma			

Warning signs and signals	Difficult breathing, coughing, nasal discharge, no appetite	microorganism-(pathogen) - a bacteria of *mycoplasma* species. its warning signs and signals are difficulty in breathing, coughing, nasal discharge and loss of appetite Its speed of onset is moderate with mortalities being experienced within two to three days after observation of initial signs. It is usually prevalent during the month of June and December it is contagious and spreads rapidly to the entire flock and its morbidity is 60 – 100 %	6-18years Lack of school fees Dropping out of school Lack of enough food Decrease in economy 18-36 years Loss of income Stress Poor business environment 36-60 years Loss of income Poor business environment Stress 60 years and above Low esteem Lack of milk Loss of income Loss of weight stress	Market Market closer Decrease in livestock prices Unfavourable terms of trade Destruction of social culture activities. Health sector Increase in malnutrition cases High no of defaulters High patience admissions
Forewarning	1week			
Speed of onset	moderate			
Frequency	Twice a year			
Period of occurrence	June and December			
Duration	1-2 months			

Vulnerability assessment

Table 22. CCPP /CBPP Vulnerability assessment

Hazard Profile	**Elements at Risk**		**Location of the element at risk vis a vis the hazard**			**Why the Elements at Risk is in that Location**
Contagious Caprine Pleuropneumonia (CCPP) is a disease which	Human Elements		H	M	L	
	Age	Children below 5 years (At home)	55%	30%	15%	Lack of milk Loss of weight Poor diet

affect goats and is caused by disease causing microorganism-(pathogen) - a bacteria of mycoplasma species. its warning signs and signals are difficulty in breathing, coughing, nasal discharge and loss of appetite Its speed of onset is moderate with mortalities being experienced within two to three days after observation of initial signs. It is usually prevalent during the month of June and December it is contagious and spreads rapidly to the entire flock and its morbidity is 60 – 100 %		Children between 5-18 years (At school)	60%	30%	10%	Lack of school fees Dropping out of school Lack of enough food Decrease in economy
		Youth between 18-35 years (At work)	45%	35%	20%	-Can relocate to other places in search of alternative sources of income Poor business environment stress
		Adults between 36-60 Years (At home)	50%	35%	15%	-Loss of livelihood -Loss of assets -Reduced esteem
		Elderly, above 60 year (At home)	55%	35%	0%	-Loss of livelihood -lack of food -Loss of assets -Reduced esteem
	Special Conditions	PLWD	70%	20%	10%	-Mostly depend on livestock (goats) for livelihoods
		HIV+	60%	20%	20%	-Mostly depend on livestock (goats) for livelihoods
		Expectant and nursing mothers	50%	15%	35%	-Mostly depend on livestock (goats) for livelihoods and food security will be compromised
	Non-Human Elements					
	Critical Facilities	Hospitals	65%	25%	10%	-Due to poor nutrition, opportunistic diseases crop up, which are usually referred to hospitals
		Schools	50%	30%	20%	-There may school dropout due to hunger and lack of school of fees
		Water sources	25%	35%	40%	-Accessibility will be limited especially individual sources - -Movement restrictions by goats.
		Markets centres	70%	15%	10%	-Livestock markets closed due to quarantine

6. Foot and Mouth (FMD)

Hazard characterization

Table 23 Foot and Mouth (FMD) Hazard Characterization

Hazard Profile: FMD is a disease which affects clove footed animals but manifest itself mostly in cattle. It is caused by *entero* virus infection during dry spells and migrations probably 3 weeks after onset of dry spells It starts gradually on mid Jan to March and July to September dry seasons and usually lasts 2 to 3 months. It can be prevented through vaccination							
Elements at risk	**Hazard**		**Vulnerability**		**Degree of risk**		
	Prevention capacity gaps	**Mitigation capacity gaps**	**Survivability capacity gaps**	**Readiness capacity gaps**	**High**	**Medium**	**Low**
<5yrs	FMD prevention and rangeland management. They also require subsidized FMD vaccines	• When FMD occurs in Ntuka and Naroosura Quarantine enforcement is limited. • Weak market management committee • Uncontrolled grazing points.		The community has no plan to carry out any activity on FMD control			
>5yrs			54 children in Ntuka and 71 in Naroosura require maternal care		41	26	20

Adults M			19 adult males with about 3000 cattle unvaccinated against FMD		7	8	4
F			10 adult females with 2000 unvaccinated cattle against FMD		4	3	3

2.3 Differentiated impacts of climate trends and risks

Spatial variation in precipitation and temperature in the county is wide due to the sparse geographical area of the county. The current climate supports a variety of crop farming such as wheat, barley, potatoes as a cash crop and fodder and pasture for livestock, while maize and beans are grown mainly for subsistence. Other crops grown are horticultural crops such as African leafy vegetables (ALVs) and kales. Livestock rearing in the county include goats, sheep and cattle on small scale.

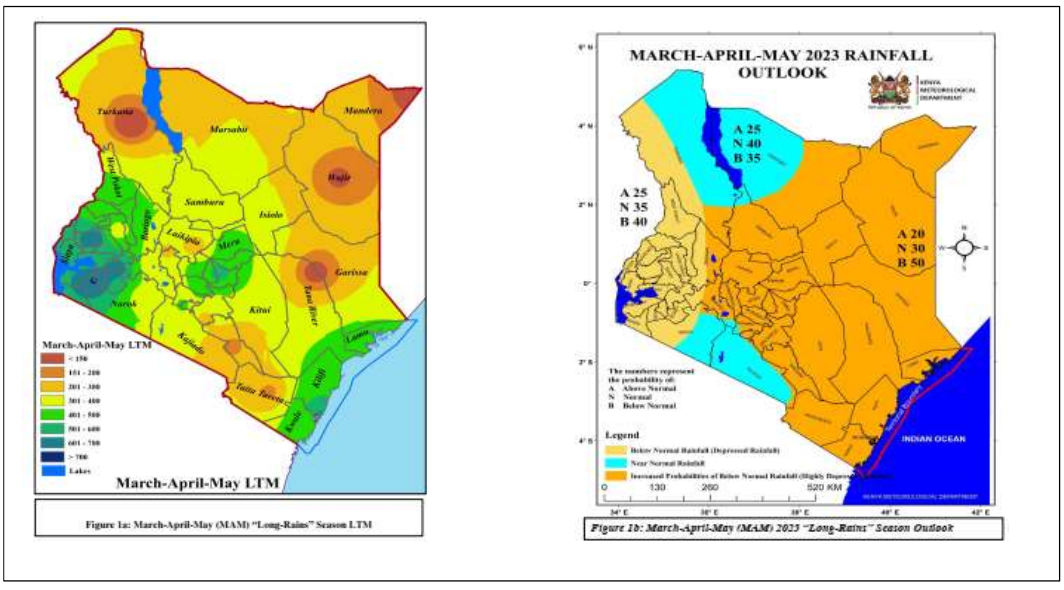


Figure 8 National Rainfall Differences between MAM LTM and MAM 2023 Forecast, KMD 2023

Differentiated climatic trends indicate that Narok County may receive slightly enhanced annual rainfall in some pockets as indicated in the Long Term Mean (Averages). Consecutively dry days within and between rainy seasons are expected to increase by an average of 4 days

suggesting a marginal increase in incidences of prolonged dry periods with likelihood of crop failure and reduced quantities of water from natural sources. The maximum number of running rainy days will average 5 days which indicates risks of floods, flash floods, infrastructure destruction and crops.

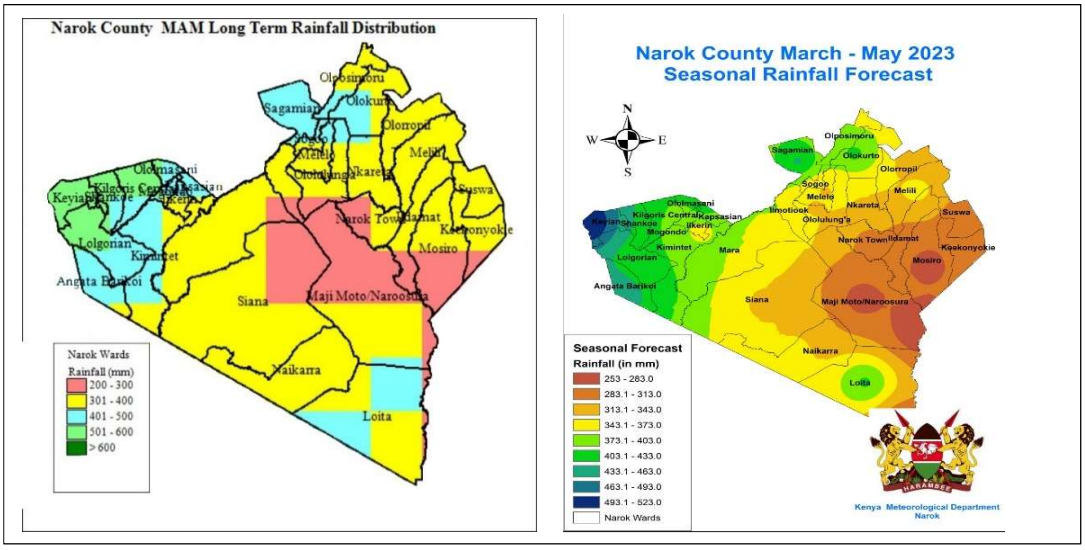


Figure 9 County Rainfall Differences between MAM LTM and MAM 2023 Forecast, Narok CMS 2023

2.4 Spatial Distribution of Risks

Narok County has six sub counties namely Narok East, Narok North, Narok South, Narok West, Transmara East and Transmara West; with total of 30 wards. The spatial distribution of climate hazards across the sub counties is determined by the prevailing landscape formation and the human activities. Due to the vast geographical size, there are diverse climate hazards across the county

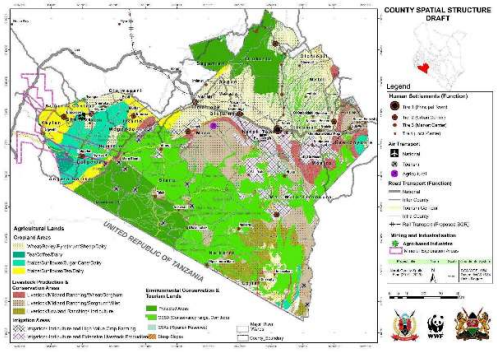


Figure 10 Narok County Spatial Structure; sourced from the Narok County Spatial Plan

The county has four main livelihood zone which include pastoral, agro pastoral, mixed farming and tourism/trade as discussed in the table below

Table 24 Pastoral livelihood

Wealth group	Livestock holdings	Land	Housing	Other
Better off	-own over 200 cattle and over 400 sheep and goats	-own over 100 acres of land	-own semi-permanent or permanent house	-own vehicles and rental houses -lease land to conservancies
Middle	have over 50 cattle and over 100 sheep and goats	have land	have a semi-permanent house	can lease land to conservancies
Poor	-less than 5 cattle -less than 20 sheep and goats	Have land	have a manyatta	No other assets
Very poor	-no cattle but few sheep and goats	No land		

Table 25 Agro-pastoral livelihood

Wealth group	Livestock holdings	Land holding	House
Better off	have over 50 cattle and over 100 sheep and goats	have over 50 acres	have a semi or permanent house
Middle	have about 50 cattle and 50-100 sheep and goats	have 10 to 50 acres	
Poor	have less than 5 cattle	have less than 10 acres	
Very poor	have no cattle but only sheep and goats	have less than 2 acres	

Table 26 Mixed farming livelihood

Wealth group	Livestock holdings	Land holding	House	Others
Better off	Livestock - 20 – 30 cattle, over 100 Goats/Sheep	Land - 100 or more acres	House Structure - Own houses; mostly permanent structure	Income - Livestock and farm produce - 7 sale; formally employed; own businesses Vehicles - Own one or more Education - Well educated (children or even parents)
Middle	Livestock – 10-20 Cattle, 50- 100 Goats/Sheep	Land holding – 50-100 acres	House Structure - Own House and fully settled	Income - sale of livestock and farm produce, own some business
Poor	Livestock - 2 to 3 cattle/sheep/goats	Land - 1 to 3 acres	House Structure - own home	Income - casual jobs; Sale of livestock or farm produce Food grown - Maize, beans, potatoes grown on own farms or leased farms
Very poor	Livestock – 0 Livestock - 1 - 3 chicken	Land - 0	House - Rented	-Food grown include maize, beans, potatoes on leased land -Source of income - Casual employment

Table 27 Business Livelihood zone

Wealth group	Income	House	Other
Better off	Source of income - Big business including wholesale	Houses - Own or Rent	Savings - Over 500k Shops - Big shops; malls; Wholesale
Middle	Source of income - Medium businesses including wholesale outlets	Houses - Rent or own	Savings - Savings ranging 100k - 500k Shops - Own Shops; Wholesale shops
Poor	Source of income - Small businesses; Casual labour	House - Rent house	Savings - Have Small savings (less than 100k) Shop - Own stalls/Kiosks
Very poor	Source of income - Small business; casual labour or begging	House - Rent house	Savings - No savings Shop - Stalls or Kiosks

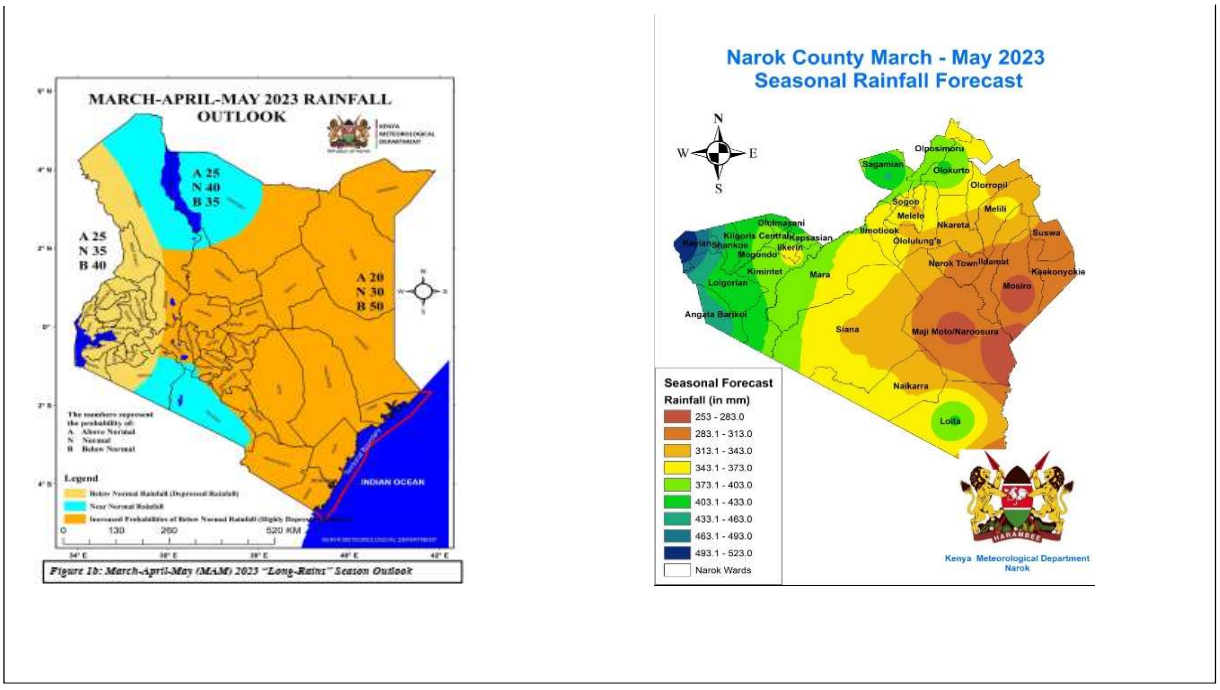
CHAPTER 3. FUTURE CLIMATE SCENARIOS FOR THE COUNTY

3.1 National and downscaled climate change projections

Projection indicates increases in average global temperatures are expected in the next 100 years as it has during the last 100 years. The National climate projections indicate that there will be a 1.7°C increase in average temperatures by 2050 and 3.5°C by the end of the 21st century (CIAT 2021). The number of hot days and hot nights will increase by 2050 and consequently reducing the number of cold days and nights. Rainfall is expected to increase slightly by 2050, especially for the 'short rains' which occur between October and December. Precipitation will remain highly variable and uncertain with extreme rainfall events likely to increase in frequency, duration and intensity. The period between heavy rainfall events is likely to increase as well as the proportion of rainfall that occurs in extreme rainfall events.

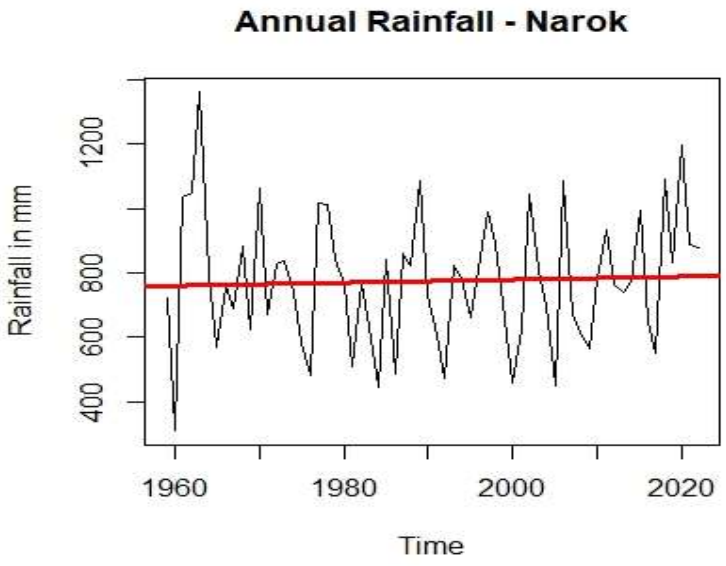
Downscaled weather and climate projection have come handy in improving the forecasting skills. Narok County experiences bi-model climate with historical annual Maximum temperature ranging between 20°C and 30°C while minimum temperature ranges between 6°C and 16°C. The annual precipitation totals in the county is between 350 mm and 1800 mm distributed in two rainy seasons: "long rains" from March to May; and "short rains" from October to December. The driest and hottest months are, January and February in some parts of the county. Due to its large size, the county experience a large spatial variation in precipitation and temperature.

Figure 11 National and downscaled climate change projections, KMD 2023



3.2 County future climate scenarios

Minimum temperature Data from the Narok County Meteorological station indicates that there is the likelihood of warming with average temperatures expected to continue rising. The annual mean temperature trends show an increase of temperature in the past and in the future.



The total annual rainfall trends showed a very slight increase in precipitation for the past 62 years in Narok County which is expected to continue in the next 20 years (Figure 7). The precipitation will remain highly variable with extreme rainfall events likely to increase in frequency, intensity and duration. There is the likelihood of warming with average temperatures expected to continue rising.

The annual mean minimum temperature trends indicate an increase of temperature for the last 30 years whereas minimum rainfall amount have slightly increase Vis a Vis Maximum rainfall seems to have reducing gradually.

Figure 12 Narok County spatial Annual Rainfall projected trend

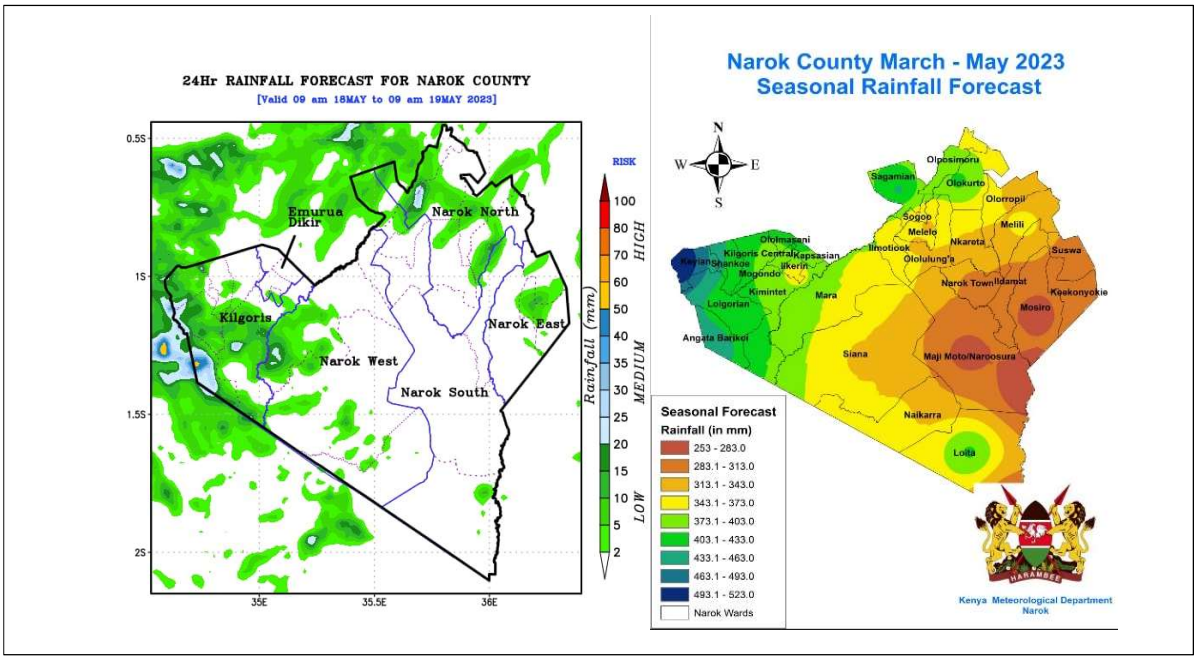


Figure 13 County Daily and Seasonal future climate scenarios

Sparsity in climate data network contribute to untimely and accurate weather and climate risk in forecasting the future of CC in most areas within the County. The 24 hours weather forecast for early warning in Narok County related to heavy rainfall or potential flood risk and possible action have improved community resilience and adaptability.

CHAPTER 4: EXISTING ADAPTATION STRATEGIES

4.0: Introduction

This section presents the strategies that various stakeholders are currently implementing within the county to address the climate related risks and hazards. Various actors including government, Civil Society organizations (CSOs) and communities have been implementing various actions to deal with the impacts of climate change. Examples of such strategies include establishment and strengthening of climate change governance structures at county and community levels, capacity building and awareness raising, putting in place a legislative framework and implementation of climate change resilience investments in various wards. The strategies are aimed at supporting livelihood strategies pursued by majority of the population such as crop farming, livestock keeping, trade and artisanal mining.

4.1. Overview of existing adaptation strategies and their effectiveness

The prevailing climatic hazards mainly includes erratic rainfall patterns leading to shifts in agricultural calendar, increased number of consecutively dry days which leads to drying of crops and shortage of fodder for livestock, increased episodes of intense rainfall resulting into floods, crop failure and landslides, environmental degradation leading to soil erosion and water pollution and their associated impacts.

Prolonged dry spells and erratic rainfall patterns are currently addressed by rainwater harvesting, digging of shallow wells, and fetching water from springs, streams and rivers. Crop rotation, small holder irrigations, cover cropping, diversification of livelihoods and intercropping are strategies used in agricultural sector. Planting of early maturing crop varieties and drought tolerant crops such as cassavas, sweet potatoes are also practiced to evade impacts of dry spells. Indigenous knowledge and traditional weather forecasting are applied to address challenges associated with unreliable erratic rainfall especially among the south parts of Narok County in Narok East, Narok South, and Narok West Sub Counties.

Adaptation strategies for environmental degradation include: reforestation and afforestation of degraded lands, community forest conservation, planting of indigenous trees, livelihood diversification and contour ploughing. Awareness creation, capacity building, afforestation and reforestation campaigns are used to control soil erosion. Water resources are made resilient by protection of catchment areas through establishment of vegetation cover.

Pests are handled by application of ash, powder soaps and handpicking while some farmers apply commercial pesticides. Mosquitoes are addressed by use of mosquito nets and

environmental sanitation. Flooding and flash floods are addressed by digging of trenches and improvement of urban drainage systems.

Table 28 Adaptation path sheet with clustered and merged goals

Adaptation path sheet with clustered and merged goals				
Hazard	**Impact**	**Adaptation strategy**	**Adaptation goal**	
			Short Term	**Long Term**
Drought	Low livestock productivity Reduced pasture availability Poverty Livestock diseases Malnutrition	Improved breeds Pasture production Disease and parasite control Employ extension officers	✓ Increase live weight of goats from 20kgs to 40 kgs ✓ Increase milk production from goats from 200ml to 500ml ✓ Increase cows live weight from 250kg to 400 kgs ✓ Increase live weight of chicken from 2kgs to 5kgs ✓	To reduce poverty level from 70% to 40% by 2043
	Low crop productivity Crop pest and diseases	Planting drought resilient crops Control of crop pest and diseases Soil and water conservation strategies	Increase maize outputs from 5 bags to 15 bags per Acre Increase green grams production from 1 bag to 3 bags per acre Increase beans production from 2 bags to 4 bags per acre	
	Scarcity of water	Water harvesting Construction of water pans Drilling of boreholes	Increased water availability	
	Low sales volumes of livestock	Establishment of market structures Strengthening of market associations (LMAs)	Increased livestock sales volumes	
	Insecurity	Peace meetings	Lower insecurity incidences	
Human diseases (water			40% waterborne disease eradicated	70% of water borne diseases
	Malnutrition Outbreak of cholera	Provision of clean water		

borne diseases)		Construction of enough medical facilities		to be eradicated
	Dehydration	Create awareness on waterborne disease outbreak Training of CHVs		
	High rates of anaemia incidences	Create awareness Provide supplements to children and elderly Provide blood banks at sub county level hospital Organize hygiene outreaches Regular immunization of children Have medical cover		

4.2 Effectiveness of adaptation/resilience strategies to future climate risks

Table 29 Effectiveness of adaptation/resilience strategies to future climate risks

Risk/Hazar	**Livelihood/Economic System**	**Climate Resilience Strategies**	**Stakeholder Group Applying the Strategy**	**Gender and Social Inclusion information**
Sporadic rainfall patterns	• Mixed Farming • Business/ Trade • Agro Pastoral	1. Capacity build the community on modern farming techniques and gardens practices 2. Livelihood diversification (promotion of precision and climate smart agriculture) 3. Improve climate information services and	• Farmers • Women groups • Youths groups • CBOs	• Involvement of all community members will help to ensure that all community members benefit

		early warning system		
Drought	• All livelihood zones	1. Promotion of Irrigation 2. Climate smart agriculture. (promotion of precision and climate smart agriculture) 3. Construction of water reservoirs 4. Enhance water harvesting and storage in institutions. 5. Pasture Conservation 6. School feeding program 7. Provision and installation of plastic water tanks 8. Provision of drought tolerant 9. Disease control, surveillance and treatment	• Farmers • Community based Organizations	• This will ensure that women spend less time in search for water and invest more in time in more productive activities

		10. HINI outreaches healing		
Environmental degradation	• All livelihood zones	1. Adoption of Climate Smart Agriculture and promotion of early maturing and drought resistant crops, 2. Soil and water conservation (terracing, construction of gabions) 3. Promotion of Soil erosion conservation	• Farmers • Women groups	• Both men and women will be able to increase agricultural yields and address food insecurity.
• Flash floods	• Pastoral • Business/ Trade livelihood zone	1. Investment in soil conservation 2. Promote construction of water pans and on farm water template 3. Setting up of disaster response unit.	• Farmers	• Women shall save time used to fetch water and engage in more productive activities
• Increased prevalence of pests and diseases	• All livelihood zones	1. Investment in soil and Land Management practices 2. Integrated crop pests and	• Farmers • CFA members	• This will enhance food security thus enhancing the economic status of

		disease management. 3. Increase investment in Pest and disease control measures		both gender.

CHAPTER 5: SECTOR STRATEGIC PRIORITY AREAS

As presented in chapter 4, the major climate risks and hazards identified by stakeholders across the county include unpredictable rainfall patterns, Drought, landslides, gulleys and soil erosion. During community consultation forums and the County Level Multi-stakeholder workshop, the climate hazards in the county prioritized at ward level were presented in the view of the current and projected climate outlook. This was followed by sector-wise identification and prioritization of the response actions for the identified climate risks. This section presents the prioritized strategies for addressing climate risks and their impacts in four priority areas namely water, agriculture, environment and disaster management. The strategies are summarized in the table 20 below.

Table 30: Strategic Priority Areas Summary

5.1 Drought			
Water	**Agriculture**	**Environment**	**Disaster management**
1. Enhance water harvesting and storage in public institutions, households and farms 2. Rehabilitation, protection and conservation of water catchment areas and water sources 3. Capacity development in water sector; application of solar energy in water supply and mobilizing resources	1. Promotion of climate Smart Agriculture achieved through irrigation, modern technology and early maturing and drought tolerant varieties and breeds and certified seeds. 2. Livelihood diversification such as apiculture and aquaculture 3. Strengthen extension services	1. Conservation and protection of water catchment areas to be achieved through afforestation and reforestation 2. Establishment of fruit tree nurseries and agroforestry; Supporting private and community tree nurseries with fruit trees, bamboo and indigenous tree species 3. Capacity building and resource mobilization	1. Strengthening of Early Warning Systems to be achieved through 2. Improving climate information systems. 3. Scaling up and Improving existing local weather stations.

5.2 Flash Floods

1. Storm and water harvesting and storage to be achieved through infrastructure development, capacity building on best water harvesting techniques and nature based solutions 2. Protection of riparian zones and river banks 3. Afforestation and increase in vegetation cover	1. Planting of cover crops 2. Terracing 3. Maintaining buffer zones between farms and water sources	1. Improved drainage systems 2. Physical planning requirements 3. Conservation of riparian zones	1. Strengthen disaster response institutional capacity 2. Community capacity building on Disaster Risk Reduction 3. Strengthening Early Warning System

5.3 Emerging pests, diseases and noxious weeds

Water	**Agriculture**	**Environment**	**Disaster management**
1. Nature based solutions in addressing pests to avoid chemical pollution of water sources	1. Strengthening crop pest and disease surveillance 2. Promotion of pest resistant varieties and nature based solutions to pests 3. Vaccination campaigns and extension services	1. Promote environmentally friendly pesticides 2. Strengthen capacity to monitor and control use of agrochemicals	• Setting up of an Agricultural Emergency kitty • Pest surveillance Strengthening extension services

5.4 Environmental degradation

Water	**Agriculture**	**Environment**	**Disaster management**

1. Promotion of water harvesting and storage 2. Conservation and restoration of water catchment areas 3. Climate proof water infrastructure and rehabilitation of existing infrastructure including promotion of clean energy in water supply	1. Afforestation, agroforestry and reforestation 2. Soil erosion control through construction of gabions terracing, grass striping and cover cropping with focus on ecosystem based solutions 3. Awareness, sensitization and capacity building	1. Conservation of water catchment areas to be achieved through afforestation and reforestation programs 2. Promotion of green energy e.g. biogas and solar 3. Capacity building and awareness creation on environmental conservation	1. Development and equipping of disaster response unit 2. Promote research and strengthen early warning systems
5.5 Intense rainfall/ Sporadic rainfall			
Rain water harvesting expand storage promote on farm water storage and conservation	1. Cover Cropping, 2. Soil erosion control (Grass stripping, trenching, terracing, gabions among others) 3. On farm water storage	1. Increased tree planting 2. Establish soil and water conservation structures	Improve climate information services
5.6 Lightening			
		Installation of lightening arrestors in institutional buildings	• Map lightning prone areas, carry out sensitization and install lightning arrestors

CHAPTER 6: RECOMMENDATION AND CONCLUSION

6.1 Recommendation

This PCRA report recommends that;

i. A Climate Change Action Plan be developed to provide an implementation framework for the proposed adaptation strategies over the next 5 years. The action plan should focus on addressing the most common climate risks.
ii. A Participatory Climate Change Risk Assessment (PCRA) process should be almost promptly followed with the Participatory Climate Change Action Plan (CCAP) process as it will save time and provide opportunity for logical flow of the process.
iii. That all stakeholders rally around the action plan and support the county government in implementing the priority actions identified in the plan which should be updated on regular basis to keep the document alive.
iv. There is need of development of ward specific climate change action plan owing to distinctive nature of these wards

6.2 Conclusion

Taking cognisance that Narok is composed by people of different tribe, the experienced the following challenges;

i. Language barrier was a clear challenge although there were a few facilitators who assisted in translating the local language though they were insufficient for all groups.
ii. PCRA technical terminologies were difficult to be translated to the local vernacular as words that could exactly bring out the real meaning of the terms were unavailable. The facilitators did their best to describe the terms to the community.
iii. The Community kept asking about the time of implementation of interventions discussed. It was explained by the team that they were the drivers of the whole process and it required full community participation and planning for their desired future.
iv. The duration for conducting PCRA Process in the community was not sufficient. However, the facilitators were able to achieve their goal and assisted the community to identify their climate priorities which would be crucial in development of county wide action plans.

Despite all this, the objective of this exercise was achieved in a collaborative process with the community.

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The Narok County Climate Change Fund Regulations, 2022

The Narok County Climate Change Policy, 2022

CHAPTER 8: ANNEX

8.1 Photo Gallery

8.1.1 Field Work Activities



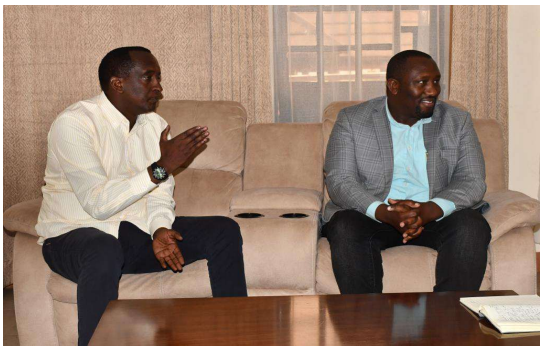





Figure 14 A visit by the FLLoCA team to Narok County,

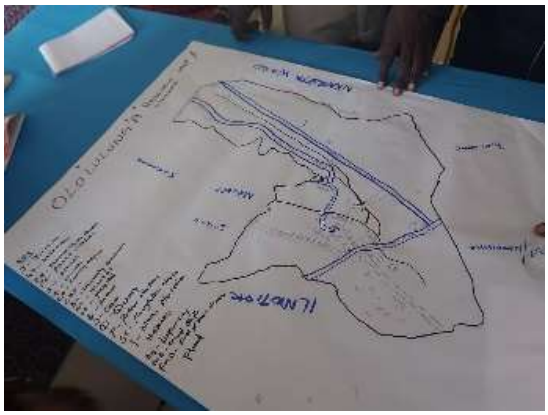


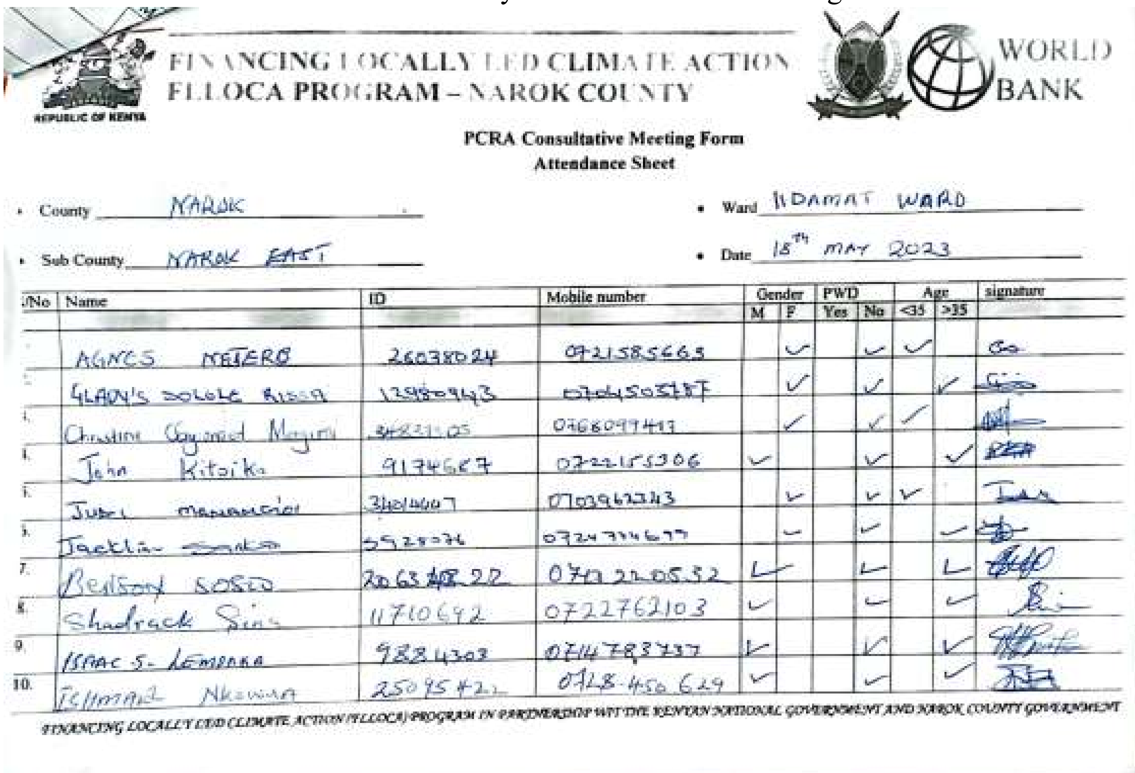
Figure 15 During PCRA Data Collection by the CCU team, Some of the tools used to Collect Data

Figure 16 During PCRA Data Collection by the CCU team, Some of the tools used to Collect Data

8.2 Attendance Sheets

8.2.1 Sampled Attendance sheet for PCRA Process at the Ward

Attached are some of the attendance sheets from ward PCRA consultation Meetings. It should be noted that attendance from all the thirty ward consultation meeting was taken.



REPUBLIC OF KENYA

FINANCING LOCALLY LED CLIMATE ACTION

FLLOCA PROGRAM – NAROK COUNTY

WORLD BANK

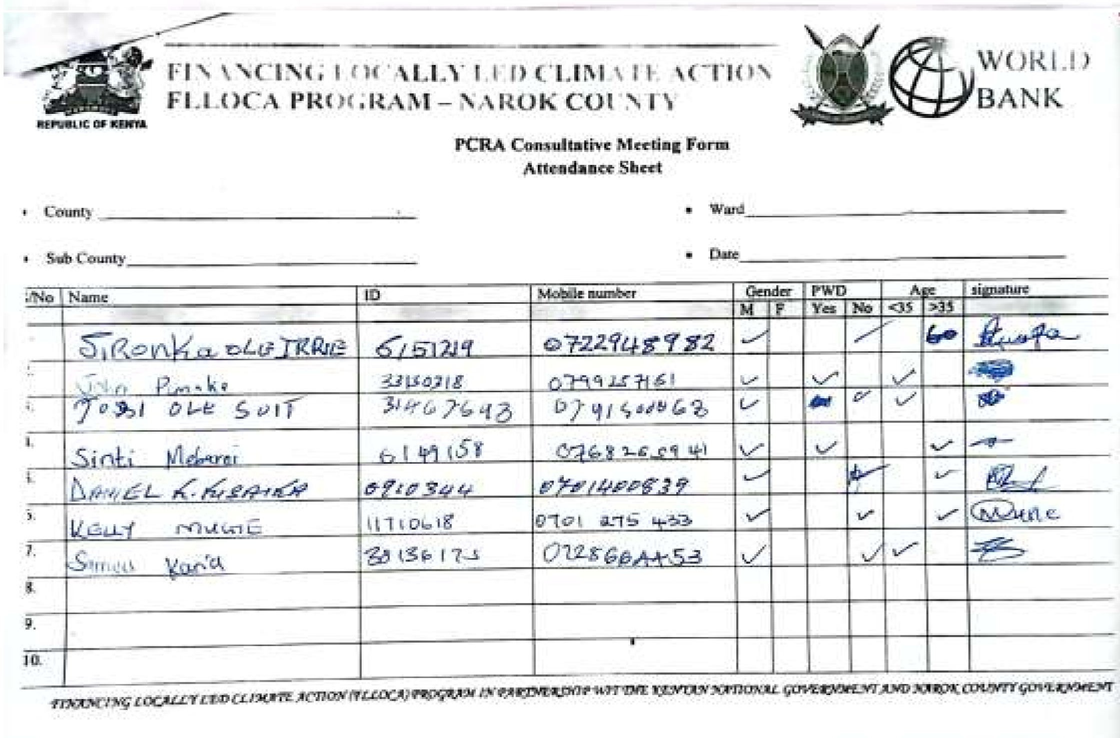
PCRA Consultative Meeting Form

Attendance Sheet

- County NAROK
- Sub County NAROK EAST
- Ward ILDAMAT WARD
- Date 18th MAY 2023

S/No	Name	ID	Mobile number	Gender M	Gender F	PWD Yes	PWD No	Age <35	Age >35	signature
1.	AGNES METERO	26038024	0721585665		✓		✓	✓		
2.	GLADYS SOLOLE RISSA	13980943	0704503787		✓		✓		✓	
3.	Christine [illegible]	[illegible]	0768099417		✓		✓	✓		
4.	John Kitoiko	9174687	0722155306	✓			✓		✓	
5.	Jubel [illegible]	34014607	0703962243		✓		✓	✓		
6.	Jacklin [illegible]	5528076	0724774677		✓		✓		✓	
7.	Benson Soseo	2063[illegible]22	0740220532	✓			✓		✓	
8.	Shadrack Sein	11710692	0722762103	✓			✓		✓	
9.	ISAAC S. LEMPAKA	9884303	0714783737	✓			✓		✓	
10.	Ishmael Nkuwaa	2509542[illegible]	0728 456 629	✓			✓		✓	

FINANCING LOCALLY LED CLIMATE ACTION (FLLOCA) PROGRAM IN PARTNERSHIP WIT THE KENYAN NATIONAL GOVERNMENT AND NAROK COUNTY GOVERNMENT



REPUBLIC OF KENYA

FINANCING LOCALLY LED CLIMATE ACTION

FLLOCA PROGRAM – NAROK COUNTY

WORLD BANK

PCRA Consultative Meeting Form

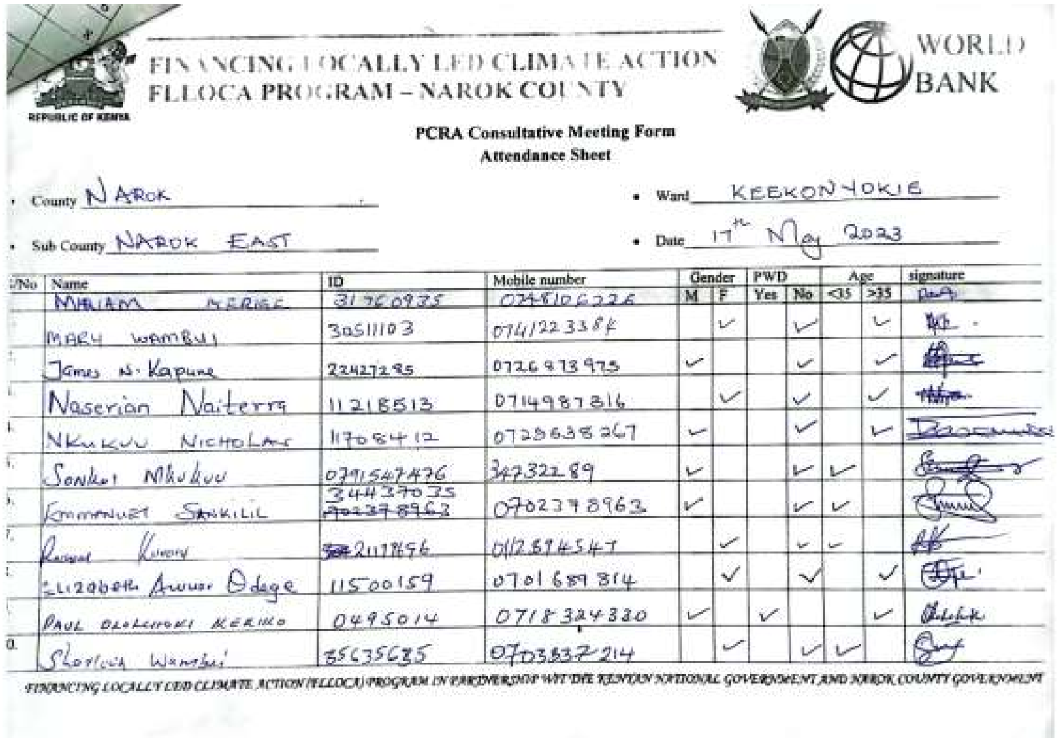
Attendance Sheet

- County
- Sub County
- Ward
- Date

S/No	Name	ID	Mobile number	Gender M	Gender F	PWD Yes	PWD No	Age <35	Age >35	signature
1.	SIRONKA OLE [illegible]	6151219	0722948982	✓			✓		60	
2.	John Pimako	33150218	0799257161	✓		✓		✓		
3.	JOSI OLE SUIT	31467643	0791500068	✓		[illegible]	✓	✓		
4.	Sinti Mebarei	6149158	0768265941	✓		✓			✓	
5.	DANIEL K. KISAIKA	6910344	0701400839	✓			✓		✓	
6.	KELLY MUGIE	11710618	0701 275 453	✓			✓		✓	
7.	Simon Koria	33136173	0728[illegible]453	✓			✓	✓		
8.										
9.										
10.										

FINANCING LOCALLY LED CLIMATE ACTION (FLLOCA) PROGRAM IN PARTNERSHIP WIT THE KENYAN NATIONAL GOVERNMENT AND NAROK COUNTY GOVERNMENT

Figure 17 Attendance Sheet for Ildmat ward



FINANCING LOCALLY LED CLIMATE ACTION
FLLOCA PROGRAM – NAROK COUNTY

REPUBLIC OF KENYA

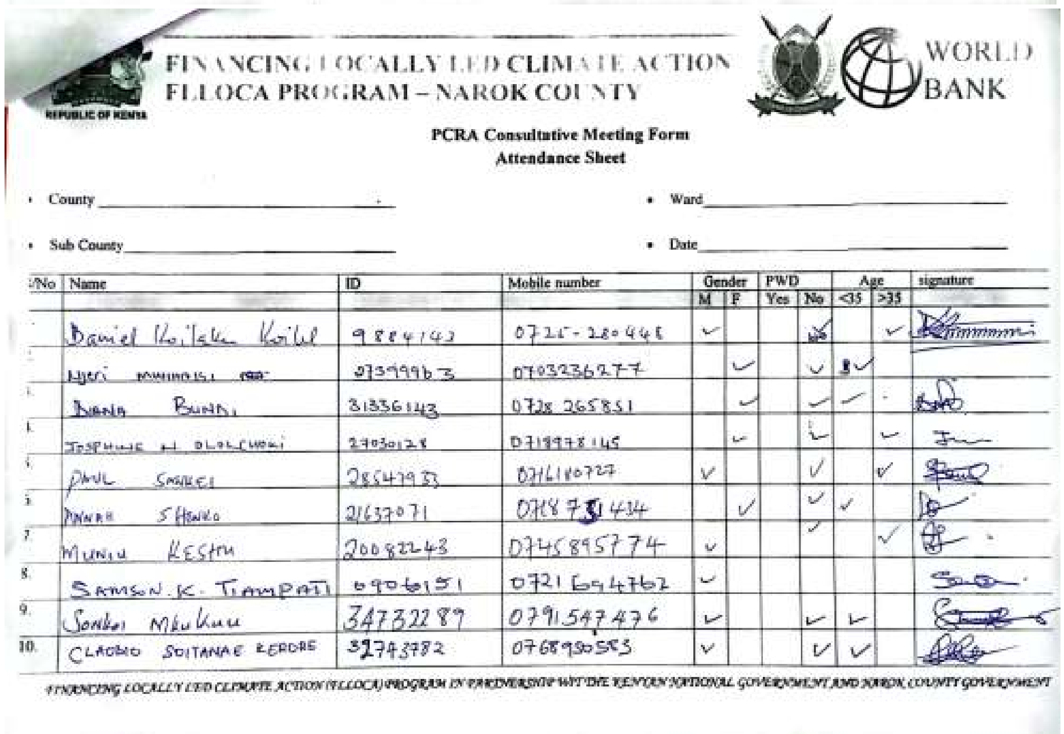
WORLD BANK

PCRA Consultative Meeting Form
Attendance Sheet

- County NAROK
- Sub County NAROK EAST
- Ward KEEKONYOKIE
- Date 17th May 2023

S/No	Name	ID	Mobile number	Gender M	Gender F	PWD Yes	PWD No	Age <35	Age >35	signature
	MARIAM MERIGE	31760935	0748106226							
	MARY WAMBUI	30511103	0741223384		✓		✓		✓	
	James N. Kapune	22427285	0726973975	✓			✓		✓	
	Naserian Naiterra	11218513	0714987816		✓		✓		✓	
	NKUKUU NICHOLAS	11708412	0728638267	✓			✓		✓	
	Sonkoi Nkukuu	0791547476	34732289	✓			✓	✓		
	EMMANUEL SANKILIL	34437035 ~~0702378963~~	0702378963	✓			✓	✓		
7.	Rachael Kuroiy	2117856	0112894547		✓		✓	✓		
	Elizabeth Awuor Odege	11500159	0701689814		✓		✓		✓	
	PAUL OLOLCHOKI MERIKO	0495014	0718324330	✓		✓			✓	
10.	Florence Wambui	35635635	0703837214		✓		✓	✓		

FINANCING LOCALLY LED CLIMATE ACTION (FLLOCA) PROGRAM IN PARTNERSHIP WIT THE KENYAN NATIONAL GOVERNMENT AND NAROK COUNTY GOVERNMENT



FINANCING LOCALLY LED CLIMATE ACTION
FLLOCA PROGRAM – NAROK COUNTY

REPUBLIC OF KENYA

WORLD BANK

PCRA Consultative Meeting Form
Attendance Sheet

- County
- Sub County
- Ward
- Date

S/No	Name	ID	Mobile number	Gender M	Gender F	PWD Yes	PWD No	Age <35	Age >35	signature
	Daniel Koileken Koikai	9884143	0725-280448	✓			✓		✓	
	Njeri Mwihaki	27399963	0703236277		✓		✓	✓		
	DIANA BUNDI	31336143	0728 265851		✓		✓	✓		
	JOSPHINE N OLOLCHOKI	27030128	0719978145		✓		✓		✓	
	PAUL SAKIKEI	28547933	0716180727	✓			✓		✓	
	NANAH SHENKO	21637071	0718731434		✓		✓	✓		
7.	MUNIU KESIAH	20082243	0745895774	✓			✓		✓	
8.	SAMSON K. TIAMPATI	09060151	0721694762	✓						
9.	Sonkoi Mkukuu	34732289	0791547476	✓			✓	✓		
10.	CLAUDIO SOITANAE KERORE	32743782	0768950553	✓			✓	✓		

FINANCING LOCALLY LED CLIMATE ACTION (FLLOCA) PROGRAM IN PARTNERSHIP WIT THE KENYAN NATIONAL GOVERNMENT AND NAROK COUNTY GOVERNMENT

Figure 18 Attendance Sheet for Keekonyokie Ward

REPUBLIC OF KENYA

FINANCING LOCALLY LED CLIMATE ACTION
FLLOCA PROGRAM – NAROK COUNTY

WORLD BANK

PCRA Consultative Meeting Form
Attendance Sheet

- County: Narok
- Sub County: Narok North
- Ward: Melili
- Date: 17/05/2023

S/No	Name	ID	Mobile number	Gender M	Gender F	PWD Yes	PWD No	Age <35	Age >35	signature
1.	Charles Lokula	24452027	0721884580	✓			✓		✓	[signature]
2.	Kanito Nkarrabali	20658578	0714773661	✓			✓		✓	[signature]
3.	Alex Otie	25111105	0728658009	✓	✓		✓		✓	[signature]
4.	[illegible]	[illegible]	[illegible]		✓				✓	[signature]
5.	William Tongoto	11533009	0716535850	✓			✓		✓	[signature]
6.	Dickson Sanoe	29762363	0798858045	✓			✓	✓		[signature]
7.	Emmanuel Kemoi	22412560	0716685094	✓			✓	✓		[signature]
8.	Joel M. Tarbo	26032063	0706808577	✓		✓			✓	[signature]
9.	Lilian Kelemet	37156027	0718157817		✓		✓	✓		[signature]
10.	Amai Kinyaikuoo	29109876	0743381434	✓			✓		✓	[signature]

FINANCING LOCALLY LED CLIMATE ACTION (FLLOCA) PROGRAM IN PARTNERSHIP WITH THE KENYAN NATIONAL GOVERNMENT AND NAROK COUNTY GOVERNMENT

REPUBLIC OF KENYA

FINANCING LOCALLY LED CLIMATE ACTION
FLLOCA PROGRAM – NAROK COUNTY

WORLD BANK

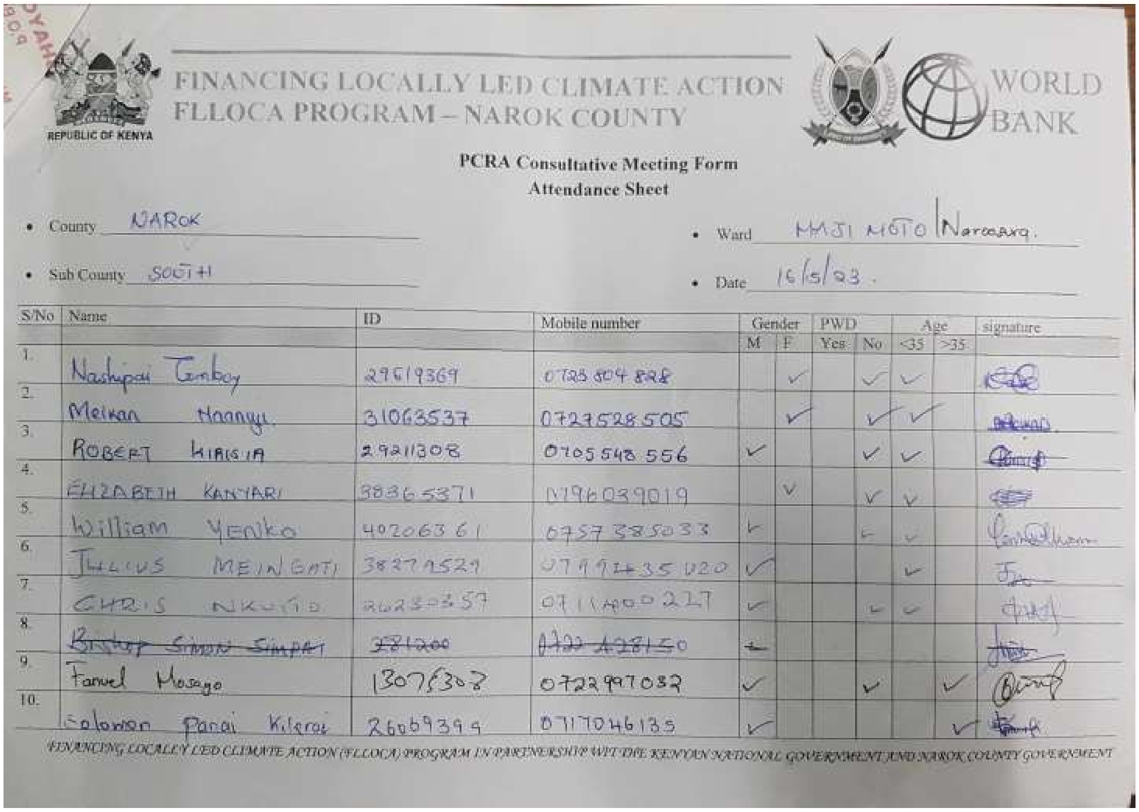
PCRA Consultative Meeting Form
Attendance Sheet

- County: Narok
- Sub County: Narok North
- Ward: Melili
- Date: 18/05/2023

S/No	Name	ID	Mobile number	Gender M	Gender F	PWD Yes	PWD No	Age <35	Age >35	signature
1.	Peter K. Maritim	10892083	0700389420	✓			✓		✓	[signature]
2.	Simon Lokula	24543533	0722802259	✓			✓		✓	[signature]
3.	Jackson Lengoro	23008757	0716228091	✓			✓		✓	[signature]
4.	Sen Otyie	12979536	0114486676	✓			✓		✓	[signature]
5.	Benard K. Ithonyo	20610968	0713230499	M			✓		✓	[signature]
6.	AH Johnson Mdhanik	Q2810397	0713810311	M			✓		✓	[signature]
7.	Daniel Sanaeu	27517[illegible]	07[illegible]56	M			✓	✓		[signature]
8.	Mwaniki Moses	23994458	0741142688	M			✓	✓		[signature]
9.	Nkurumah Ratia	25081113	0712824510	M			✓		✓	[signature]
10.	Victor G. Lokula	26857245	0729215636	✓			✓	✓		[signature]

FINANCING LOCALLY LED CLIMATE ACTION (FLLOCA) PROGRAM IN PARTNERSHIP WITH THE KENYAN NATIONAL GOVERNMENT AND NAROK COUNTY GOVERNMENT

Figure 19 Melili Ward Attendance Sheet



FINANCING LOCALLY LED CLIMATE ACTION
FLLOCA PROGRAM – NAROK COUNTY

REPUBLIC OF KENYA — WORLD BANK

PCRA Consultative Meeting Form
Attendance Sheet

- County: NAROK
- Sub County: SOUTH
- Ward: MAJI MOTO / Naroosura.
- Date: 16/5/23.

S/No	Name	ID	Mobile number	Gender M	Gender F	PWD Yes	PWD No	Age <35	Age >35	signature
1.	Nashipai Tenboy	29619369	0723 804 828		✓		✓	✓		[signature]
2.	Meikan Naanyu	31063537	0727528505		✓		✓	✓		[signature]
3.	ROBERT KIRISIA	29211308	0705 548 556	✓			✓	✓		[signature]
4.	ELIZABETH KANYARI	38365371	0796039019		✓		✓	✓		[signature]
5.	William YENKO	40206361	0757385033	✓			✓	✓		[signature]
6.	JULIUS MEINGATI	38279529	0799435020	✓				✓		[signature]
7.	CHRIS NKUITO	30238357	0711400227	✓			✓	✓		[signature]
8.	~~Bishop Simon Simpat~~	~~381200~~	~~0722 428150~~	✓						[signature]
9.	Fanuel Mosogo	13075308	0722997032	✓			✓		✓	[signature]
10.	Solomon Parai Kilerai	26069399	0717046135	✓					✓	[signature]

FINANCING LOCALLY LED CLIMATE ACTION (FLLOCA) PROGRAM IN PARTNERSHIP WIT THE KENYAN NATIONAL GOVERNMENT AND NAROK COUNTY GOVERNMENT

FINANCING LOCALLY LED CLIMATE ACTION
FLLOCA PROGRAM – NAROK COUNTY

REPUBLIC OF KENYA — WORLD BANK

PCRA Consultative Meeting Form
Attendance Sheet

- County: Narok
- Sub County: South.
- Ward: Maji Moto / Naroosura
- Date: 16/5/23

S/No	Name	ID	Mobile number	Gender M	Gender F	PWD Yes	PWD No	Age <35	Age >35	signature
1.	Moses Otuni	12981110	0717399444	✓		✓			✓	[signature]
2.	Kuniyo Mojauga									[signature]
3.	Naanki Pai Nampaso	9785559	0728784673		✓	✓	✓		✓	[signature]
4.	Jemimah Kesie	30400966	0100517734		✓		✓		✓	[signature]
5.	Masaanku ole Kijape	9657568	0706033747	✓			✓			[signature]
6.	Pst Harrison Kyalo	24420865	0717722790 / 0112187474	✓			✓		✓	[signature]
7.	Walter Ratemo	11689015	072141807	✓			✓		✓	[signature]
8.	~~Meikan Naanyu~~									
9.										
10.										

FINANCING LOCALLY LED CLIMATE ACTION (FLLOCA) PROGRAM IN PARTNERSHIP WIT THE KENYAN NATIONAL GOVERNMENT AND NAROK COUNTY GOVERNMENT

Figure 20 Naarosura Ward Attendance Sheet

Figure 21 Stakeholder's Validation at Zebu, Narok Town Ward

Figure 22: Cabinet Sensitization of the two documents, Eserian Resort - Naivasha


LAND OF DIVERSITY