



International Training Programme Research support grant 2025

Final Report

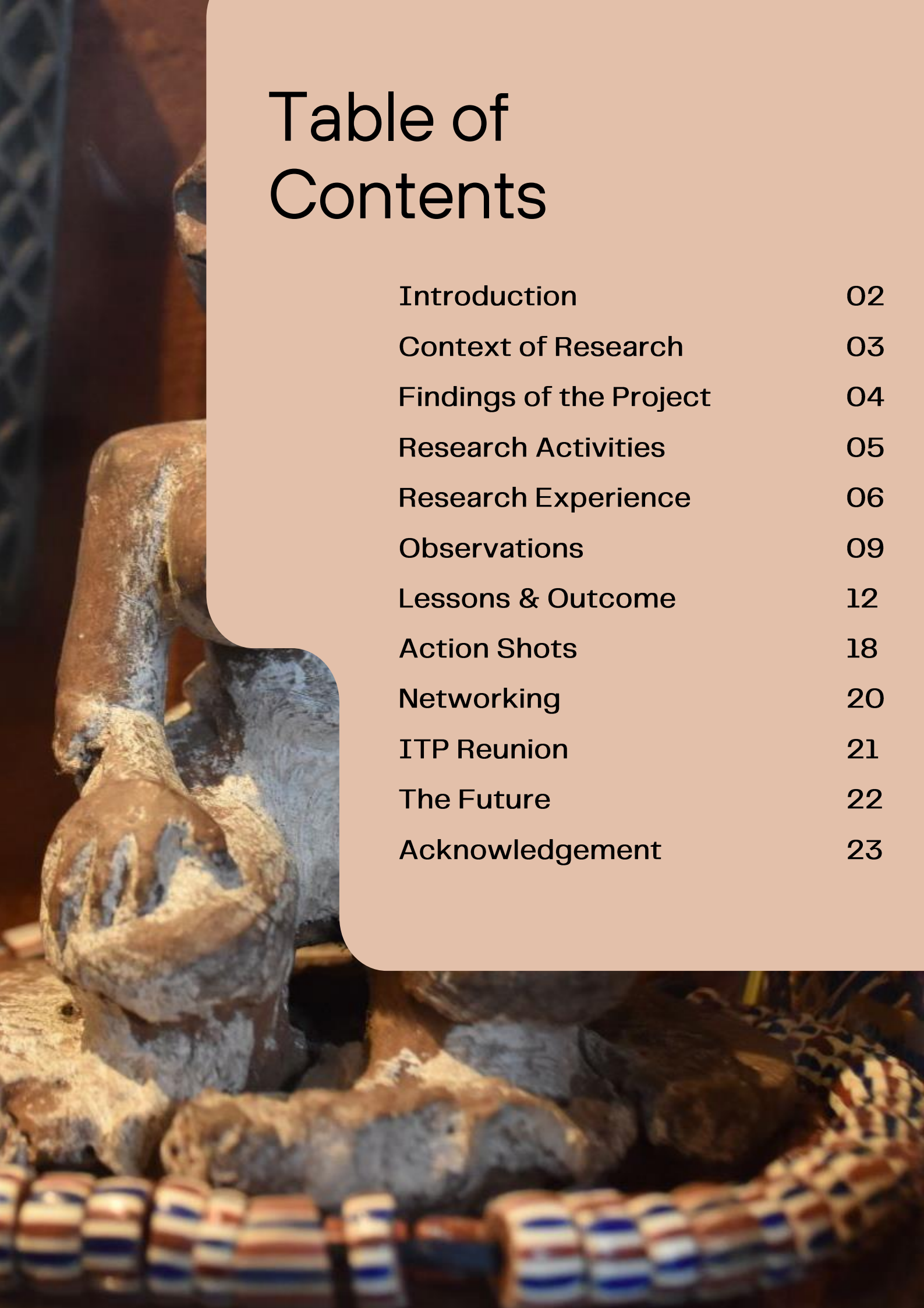
The background of the page features a close-up photograph of a sculpture and a beaded necklace. On the left, a portion of a sculpture is visible, showing a figure with a head and torso. The sculpture has a weathered, textured appearance with some blue and white paint or pigment applied to its surface. Below the sculpture, a beaded necklace is visible, featuring large, rectangular beads with a red, white, and blue striped pattern. The overall lighting is warm and focused on the objects.

Table of Contents

Introduction	02
Context of Research	03
Findings of the Project	04
Research Activities	05
Research Experience	06
Observations	09
Lessons & Outcome	12
Action Shots	18
Networking	20
ITP Reunion	21
The Future	22
Acknowledgement	23

International Training Programme

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Final Report

ESTABLISHING EFFECTS OF CLIMATE CHANGE ON NATIONAL MUSEUMS OF KENYA TANGIBLE HERITAGE FOR SUSTAINABILITY, ADAPTATION AND RESILIENCE; INTERGRATING CLIMATE ACTION STRATEGIES

The research was based in East Africa, National Museums of Kenya (NMK). The survey sampled six museums in three different regions of the country.

Central Region – Nairobi Gallery and Karen Blixen Museum.

Coastal Region – Malindi Museum (Vasco da Gama Pillar, Portuguese Chapel, House of Columns, Heritage Complex Museum), Gedi World Heritage Site.

Western Region – Kabarnet Museum and Tambach Museum.



Contributors to The Project:

Rodah Kalondu Lange,
Curator/conservator, Karen
Blixen Museum- ITP Fellow 2023,

Lillian Amwanda Ochieng,
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Museum - ITP Fellow 2024

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Museum - ITP Fellow 2024

Supported by the Marie-Louise von Motesiczky - Charitable Trust

Institution: National Museum of Kenya

Project Date: September – December 2025

Introduction

Rodah Kalondu Lange holds a Bachelor of Arts degree in Anthropology. She has been working with the National Museum of Kenya for the last 20 years. She started her career as an education officer and later changed to a curator a role - which she plays with a lot of passion and dedication. She is also a member of the Fellowship of the International Institute for Conservation of Historic and Artistic Works (IIC) in the recognition of her professional achievements and her contributions to the conservation profession.

Lilian Amwanda Ochieng hold Bachelor's Degree in Gender and Development and has completed a masters in Anthropology, specializing in Cultural Anthropology. Additionally, she holds a diploma in Cultural Tourism. She has worked as museum staff undertaking different roles and in different museums across the country for the last seventeen years.

Doris Kamuye holds a master's in Library and Information Science, and a diploma in Marketing and Public relations from the London Chamber of Commerce and Industry. She has worked with National Museums of Kenya since 2006.

The National Museums of Kenya

The National Museums of Kenya is a state corporation with a mandate to collect, document, preserve, research, and present the country's past and present cultural and natural heritage. In so doing, the NMK enhances knowledge, appreciation, respect, management and use of these resources for the benefit of Kenya and the world.



Context of the Research

Climate change has been a significant global challenge which has caused a lot of havoc to cultural heritage over time. National Museums of Kenya manages several cultural and natural heritage sites spread across different climatic zones in the nation. The effects of climate change are real and quickly affecting collections - leading to deterioration. If this trend is not checked some of these precious collections may not survive. By conducting the research the team wanted to establish the magnitude and necessary mitigation measures for adaptation and resilience. Capacity building to staff would be created and they will take a proactive role in monitoring, evaluation, reporting and adopting the recommended strategies for adaptation. Additionally the research findings will inform improvement in policy formulation on climate change, resilience and adaptation. This survey was important as the results will help in sourcing for funds to come up with mitigation and adaptation measures.

This research is significant in assessing climate change impacts on National Museum of Kenya regional museum collections and developing sustainable conservation strategies. It will enhance fellows' expertise in climate resilience for heritage preservation, inform climate adaptation policy formulation and strengthen community engagement. The findings will contribute to safeguarding cultural heritage for future generations.

Status of Climate Change Mitigation at NMK

Currently, there is no policy on mitigating effects of climate change at NMK. Our investigation will bring to light; practical challenges and possible solutions, which will greatly inform policy formulation.

The museums sampled as case studies are located in different parts of the country - almost representative of the various climatic dynamics. Findings of the investigation will give a broader perspective of the challenges and an inclusive approach to mitigation. The study will actually be useful and applicable to a large percentage of NMK's Museums, sites, monuments and collections across the nation.

Funding of the Project



Reasons for applying for funding from the ITP

As ITP fellows we are encouraged to apply for legacy projects after the end of the programme, and this was one opportunity that enabled us to apply for the research grant as a team since we are working in the same institution. Additionally, we applied for the funding to help ascertain some of the challenges we face as an institution through climate change, which has never been addressed due to limited funding. The ITP encourages partnerships and collaboration to support fellows in cultural heritage management.

Challenges to funding

Kenya as a nation has several key ministries that run programs which affect citizens. However, within the Ministry of Culture, gender and heritage is always less funded as priority, and is given to other ministries that provide essential services to citizens. This is a big challenge, forcing parastatals under the Ministry of Culture, like National Museums of Kenya, to look further for additional funding from local and international partners to run such important research.

Other sources of funding for the project

The team did not receive any other funding. However, the National Museums of Kenya supported the research in kind by giving the fellows and staff time to do the research and utilise equipment.

Research Activities



<https://www.facebook.com/museumsofkenya>



<https://www.instagram.com/museumsofkenya>

Research Experience

https://www.researchgate.net/publication/261965828_Impacts_of_Climate_Change_and_Sea-Level_Rise_A_Preliminary_Case_Study_of_Mombasa_Kenya

1. <https://www.scirp.org/journal/paperinformation?paperid=143848> UNESCO report: The Impacts of Climate Change on World Heritage Properties by World Heritage Committee at the 29th Session

2, An article at The Art Newspaper by Annaber Keenan 11th July 2025 Why devastating Climate Control rules for Museums Collections needs rethink/

2. Efstathia Tringa & Konstantia Tolika 2023, Greece: Climate Change Impacts on Indoor Cultural Heritage and Collections in Greece.

3. Kenya standard newspaper October 2025 : We must take Action on Climate Change now

4. Getting Climate Control Under Control Declaration. Declaration initiated by Tino Sehgal, ART 2030, and Ki Culture in 2023.

5. National Museums of Kenya Strategic plan 2023-2027

6. lectures / sessions- Net Zero by Programme and Innovate: Sustainability and Leadership in the New Times.

Interest in Study Topic

Lillian became interested in the research after attending an ICRROM led workshop titled 'Empowering Action for Climate Training for Collection-based Institutions'. This training was an eye opener on how to identify and mitigate impacts of climate change using the relevant United Nations Sustainable Development Goals.

Rodah became interested after attending a six-month training course on 'Innovate: Sustainability and Leadership in the New Times' by the International Institute for the Conservation of Historic and Artistic Works (IIC). During this training, she learnt about the Net Zero Programme and museum leaders' collective action to de-carbonize the sector and mitigate the impacts of climate and biodiversity crises.

Doris became interested because she saw an opportunity offered by ITP legacy project and a need within National Museums of Kenya to study how climate change affects tangible heritage.

People met during research

During the research period the three fellows met Director of Antiquities, Sites and Monuments NMK, Professor Fredrick Manthi, under whom the sampled museums fall. After explaining the objective of the survey, he gave us a go ahead with the project.

Additionally, we met Eileen Musundi (ITP 2008) virtually to inform her about the project. During the meeting she requested the possibility of incorporating the Nairobi National Museum 'Birds of East Africa' gallery in to the project. However, this was not considered as it was not in our initial proposal.

We equally met the National Museums of Kenya Climate Change and Adaptation Committee virtually to inform them of the project. We wanted to know the status of NMK climate adaptation policy. They informed us they are in the process of developing the policy and were happy to work with us.

In the coastal region we met the Acting Assistant Director Mr. Hussein Aden, whom we briefed about the project, and how we intended to do it. He welcomed the idea and gave us the go ahead.

We also met Khalfan Bini - the resident archaeologist at the Historic Town & Archaeological Site of Gedi. He gave us the background history of the World Heritage Site including some of the archaeological excavations that have been carried out on the site.

We met staff of the different sampled museums who participated in the survey.



We also visited the Nairobi National Museum gallery.

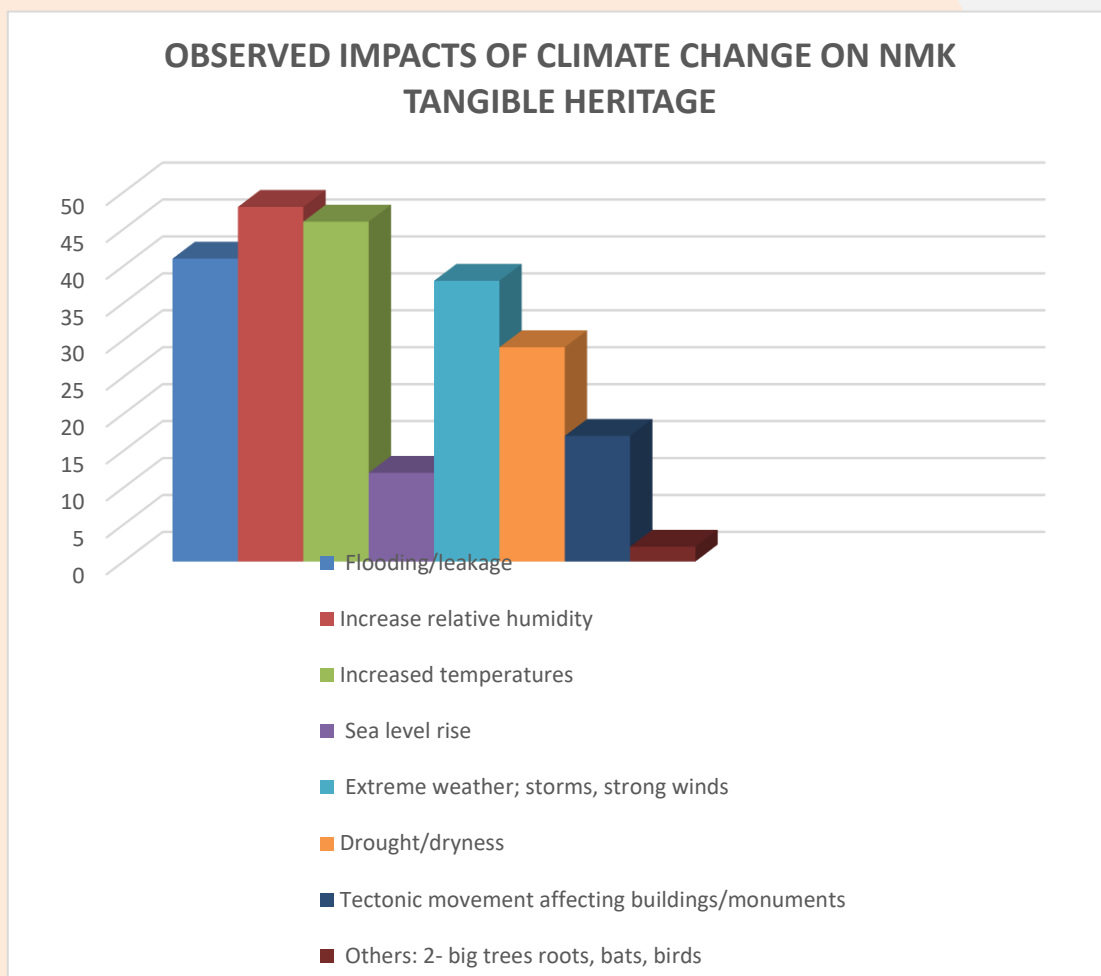
This a world class gallery with diverse collections on exhibition. There are also experts on the various collections - including conservators, exhibition designers and curators. By visiting this gallery, we expected to see and learn how the team is working in ensuring they combat impacts of climate change. We also intended to learn the challenges on climate change - if any - and if they have any existing tools they used to assess the impacts of climate change.

The Nairobi National Museum is a world class museum which is ideal for bench-marking. We learnt from the processes they have put in place, and the funding model for conservation work, how this could be replicated in the regional museums.

Day trips entailed travelling across Kenya by road and by train to reach the sampled museums. This enabled us to enjoy fascinating sceneries ranging from the coastal beaches, coastal coral rag forest and nature trail at Gedi; the expansive plateaus; the quiet Karen Blixen Museum and the buzzing Nairobi City - where Nairobi gallery is located; and The Great Rift Valley with its undulating landscape and fantastic views on our way to Kabarnet & Tambach Museums. Traversing the country and experiencing the diverse scenic views was an amazing and refreshing learning experience.



Observations



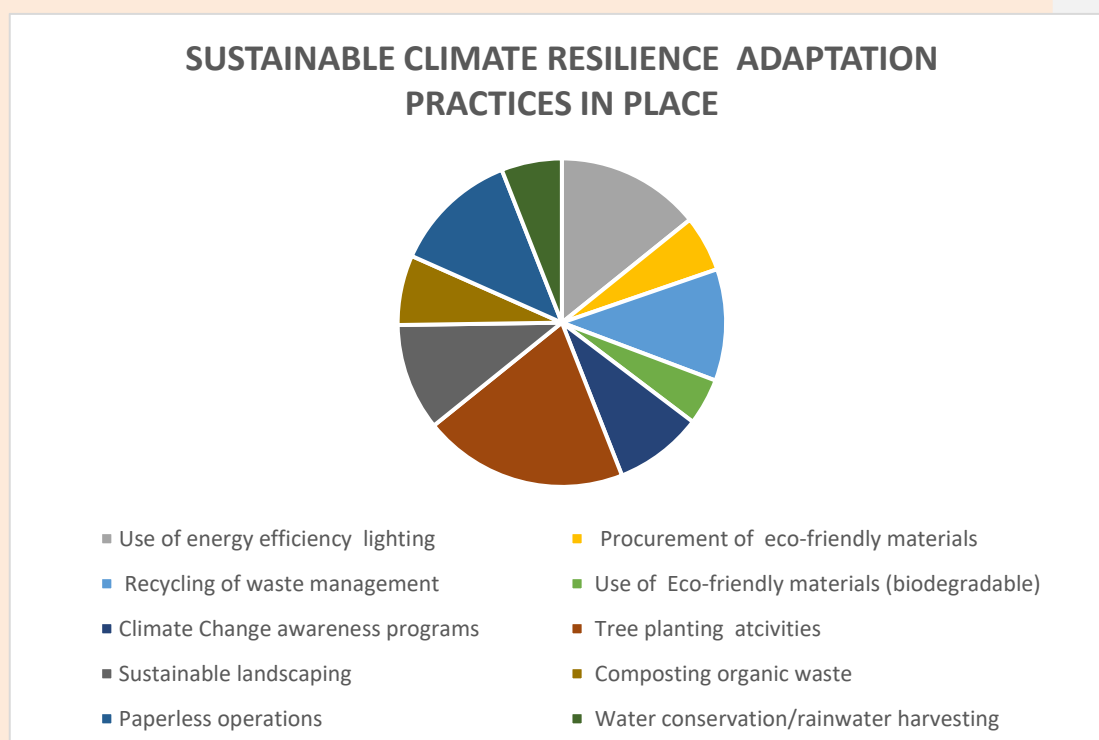
During the research period it was observed that different regional museums have different tangible collections ranging from ethnographic materials to textiles, paper, metals, artworks, buildings, wood, ceramics, glass, mixed material collections; and also natural heritage both on exhibition and in store. These collections are taken care of by curatorial staff, some of whom have no professional training but job training. These staff members have been battling with changing climate conditions which have been affecting the monuments, artifacts, documents and photographs in their own museums.

It was observed across all museums visited that relative humidity and increased temperature was a major challenge causing cracking, warping, mold, and in some isolated cases, long-term deterioration. There were no climate controlled showcases or micro-climate generators to protect the objects by maintaining a stable RH percentage, or to minimize fluctuations and precision control, even in challenging environments. Only one regional museum (Karen Blixen Museum) had a climate monitoring scanner making it difficult for the other museums to even know the correct relative humidity as well as temperature (Relative Humidity: 40–60% (with minimal daily fluctuations) Temperature: 18–22 C (64–72 F).

During the research it was observed that majority of the regional museums often focus on what is on exhibition and is visible to the public, giving less attention to collections in conservation stores despite their worth and the stories they tell. These objects in storage are usually kept for future exhibitions and research as well as restoration. Being kept in conservation stores for long periods of time makes them more vulnerable to the effects of climate change.

Most of the sampled museums are housed in old buildings which were not originally designed to be museums. At the time of their construction, certain climatic conditions suitable for museum spaces were not put into consideration due to the level of technology available. Currently, some of these museums have been affected by urbanization and the effects that arise out of such environmental changes, such as increased carbon emissions and blocked drains, among others. The buildings therefore become more susceptible to environmental and human factors which trigger the agents of deterioration. The environmental factors lead to flooding, leakages, mold and bacteria, cracks, and tilting columns; while the human factors lead to emission of carbon gases as well as flooding. The weather outside generally affects the internal environment of the museums. In addition to the damage to the collections, staff working in these buildings become more exposed to outdoor pollutants and allergens. Carbon surface deposits, emissions from traffic and hazardous dusts and mold is inhaled by staffs when cleaning the objects. This poses a health hazard to the staff.

The following sustainable climate resilience and adaptation measures were observed in the regional museums:



The museums had a good waste management system with all waste being collected by a service provider. There was no burning of waste within the museum premises. The historic town and archaeological site of Gedi World Heritage Site have well established separation/segregation of waste and have partnered with waste management entities for collection of all plastics for recycling and revenue generation. Both Malindi Museum and Gedi participate in regular voluntary clean ups with stakeholders, as a way of sensitizing communities on the realities of climate change, and informing individual and collective roles in minimizing effects of climate change on land and in the ocean.



The Karen Blixen Museum has partnered with artists in the recycling of waste materials, and adopted the use of non-toxic conservation materials in some objects.

It was observed that all the sampled museums conduct tree planting exercises with museum stakeholders including learning institutions, government, community, youth groups and non-governmental organizations as a climate action strategy. This aligns with NMK strategic plan on climate action, Vision 2030 plan and the United Nations Sustainable Development Goals 13 (Climate Action) and 15 (Life on Land).

LESSONS LEARNT / OUTCOMES

Lessons learnt included; team work, collaboration and partnership, time management, planning and execution, connecting to the relevant people, sharing of responsibilities, meeting deadlines and effective communication skills. We also learnt the importance of integrating indigenous languages in the interpretation of the research objectives to enhance understanding and active participation. For instance, in the coastal region the fellows learnt the Swahili name for monuments is *Magofu* and pillar is *Mnara*.

The National Museums of Kenya has put in place various activities to create awareness and combat effects of climate as per NMK strategic plan. For instance, Malindi Museum developed a climate change exhibition in collaboration with the community which is currently on display. Through the survey we were able to establish that the staff from sampled museums carried out several adaptation strategies we mentioned in our questionnaires. The most popular adaptation activities were repairs and maintenance of buildings, roof gutter and downpipes; elevation of vulnerable collections; vegetation management around buildings; regular risk assessments and monitoring; and community awareness and involvement.

Some Museums have existing partnership with Disaster Response Agencies. Seismic Protection measures was recorded as the least since its specific to museums located in the rift valley, as they experience tectonic movements regularly. In addition, use of corrosion building materials is popular in the coastal region due to effects of moisture from the Indian ocean. The installation of humidity and temperature monitoring device was unique to Karen Blixen Museum.

ADAPTATION AND RESILIENCE ACTIVITIES



Achievements

We were able to collect baseline data on how NMK tangible heritage on sampled museums are affected by climate change. We strengthened the capacity of staff through talks and discussions on climate change and how to use adaptation and resilience strategies.

Personal Input

The three ITP fellows brought in skills and knowledge learnt during the International Training Programme in the British Museum. Lillian brought her knowledge and experience learnt at ICCROM climate action training program in March 2024. Rodah brought her knowledge, skills and experience she gained from the Innovate: Sustainability and Leadership in the New Times training by IIC in 2024/25. She also brought her experience gained during a past ITP legacy project, the Museum Association Conference in Leeds 2024.

Personal benefits

Personal benefits gained from this include: knowledge, a better understanding of the effects of climate dynamics to different regional museums; and the spirit of team work, collaboration and partnership where the three ITP fellows worked together in the entire period to meet deadlines of the assigned duties. Also, the ability to manage time effectively where each ITP fellow was required to be at the research point on time; and mobilizing for resource skills.

It also brought to us the joy and experience of travelling to new places and sampling various landscapes and geographical features, some of which have a bearing on climatic conditions.



FINDINGS

COASTAL REGION:

The survey revealed that Kenya's coastal monuments face severe threats from climate change. Key in the impacts is rising sea levels which we visibly observed as affecting the Vasco da Gama Pillar. Changing temperatures and relative humidity have contributed to material decay leading to cracks, corrosion, and biological growth in the Portuguese Chapel and the House of Columns. In the Malindi complex gallery we realized that most of the collections made up of metals suffered from corrosion due to saltation in the moisture. Fluctuating temperatures in the area create a conducive environment for pests' infestation on collections made of organic materials.

At the historic town and the archaeological site of Gedi (WHS) it was noted that the outdoor site is severely affected by moisture and temperature variation which has caused molds, lichens and other vegetative growth. Strong winds have caused random falling of big trees and crumbling of the structures. The natural heritage flora and fauna on this site reduces during drought seasons.

The site requires maintenance using traditional/artisan building techniques specific to the 17th century and before. The site has a tree nursery and carries out regular maintenance by planting indigenous trees during the rainy season.

NAIROBI REGION

At Karen Blixen Museum, the house has experienced cracks overtime and is tilting due to tectonic movements and its location in the rift valley. Temperature fluctuations and increased relative humidity for most parts of the year has caused molds, corrosion, growth of mosses and lichens on buildings, and invasive species on the natural heritage. Increased ultraviolet light has caused fading on paper, artwork and textiles while strong winds cause accumulations of dust. Extreme weather conditions have adversely affected the outdoor early 1900s agricultural farm implements causing decomposition of the wooden frames, corrosion on the metallic parts and decay. Perennial rainfall has also caused leakages and flooding in the museum.

At Nairobi Gallery, carbon emissions from the nearby busy roads have led to accumulation of smoke and dust on the building and the collections.

The textile collections have been severely affected by light and dust leading to fading. Increased relative humidity and fluctuating temperatures have caused molds and conducive environments for insects' infestation on the collections in exhibition and stores. The building located at a busy round about is affected by carbon emission and dust from vehicles, and sometimes flooding when the drainage blocks. The roof leaks require regular maintenance. The glass windows and doors require UV protectors. The exhibition showcases need to be installed with humidity and temperature monitoring devices. The textiles on display requires regular curation to minimize further deterioration.

KABARNET & TAMBACH MUSEUM

These two museums located in The Great Rift Valley suffer from tectonic movements causing severe cracks on the monuments. Fluctuating temperatures create a conducive environment for pest infestation while heavy winds cause a lot of dust on collection both in stores and on exhibition. Increased relative humidity has caused molds on the collections and the building. Increased UV has caused fading - especially to the organic collections. The area also experiences heavy rains in some parts of the year causing flooding and roof leakages. Regular maintenance is required.

It was noted all the sample museums require UV protectors, regular maintenance, temperature and humidity monitoring and pest control systems.



NEXT STEP

Submit the research finding report to the NMK management with recommendations on mitigation measures. Share the research report with the NMK Climate Change and Committee to assist in policy development. Share the report with the staff of the six sampled museums.

Share the research findings with the ITP network for knowledge sharing. Work with ITP team to facilitate ITP virtual meeting to share knowledge of the project and get insights from other fellows and learn from them on how they are handling climate change crisis.

Considering that we sampled only 6 museums and sites out of over 28 gazette museums, sites and monuments in Kenya. We anticipate to use the baseline data collected to seek for more funding on a large scale to establish site specific needs and develop mitigation measures. This is in line with NMK mandate of preserving heritage for posterity.

MEDIA COVERAGE

We did not have a budget for media but had for social media. We did three blogs which were shared by the British Museum ITP. Personal social media handles. Institutional NMK, Kabarnet, Karen Blixen, Malindi.



<https://www.facebook.com/museumsofkenya>



<https://www.instagram.com/museumsofkenya>

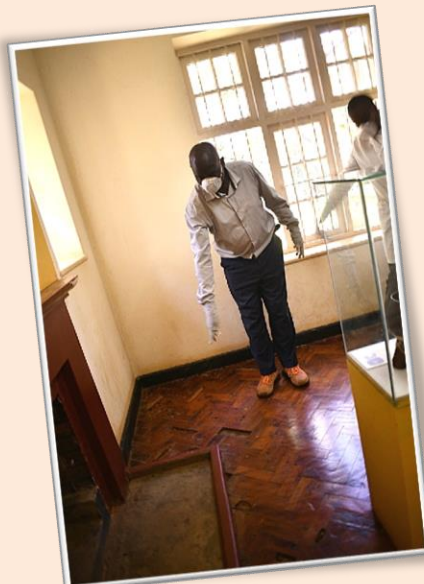
ACTION SHOTS

Nairobi Region



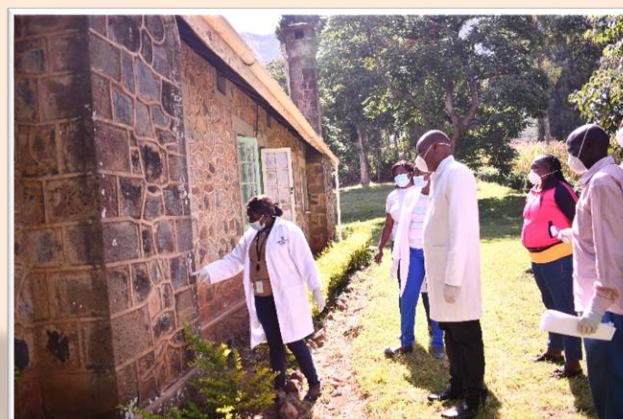
ACTION SHOTS

Western Region



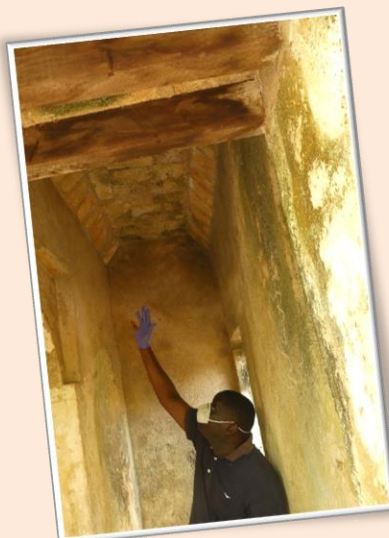
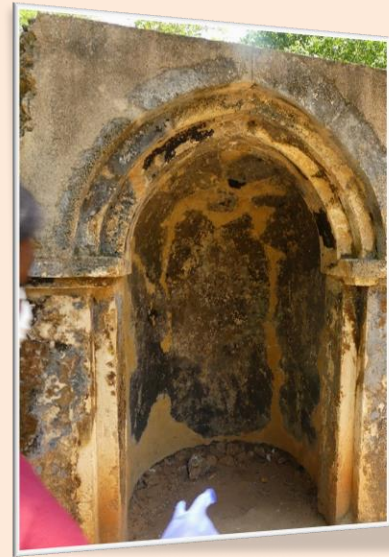
ACTION SHOTS

Western Region



ACTION SHOTS

Coastal Region



Networking

During the research the fellows met Dr Fredrick Manthi, the Director of Antiquities Sites and Monuments (DASM). He was relevant to the survey as he is in charge of all museum's sites and monuments under NMK. He gave the go ahead to carry out the research. We contacted him through writing and physically.

During the research we met the NMK Climate Change and Adaptation Committee chaired by Dr. Stephen Rucina. Other members were Dr. Beryl Bwong, Dr. Odanga and Philemon Ochieng. The Committee is mandated by the NMK Director General to develop the institution's climate change, adaptation and resilience policy. They contributed to the research by giving a guideline on the approach and the scope of the work which we should concentrate on during the research. We contacted them through email, phone calls and virtually.

In the coastal region we had a meeting with the Assistant Keeper, Mr. Hussein Aden, whom we briefed about the project. The meeting was important since the museums under our study were within his jurisdiction. He has an experience in the area for more than 15 years. He has worked on many projects and his contribution would enrich our study.

Additionally we met Mr. Khasan Khalid, the senior archaeologist of Gedi World Heritage Site, who briefed us of the various excavations that have been done on the world heritage site over time. He also informed us of the past research projects - some related to climate change which have been carried out on the site. He also gave a reference of past researchers on the site. We met him physically and interviewed him on some of the challenges the heritage site is facing due to climate change.



ITP reunions

We united with Eileen Musundi (ITP 2008) who is in charge of exhibitions at the National Museums of Kenya.

We met virtually with Eileen Musundi, and the meeting delved into looking at the possibilities of incorporating the Nairobi National Museums 'Birds of East Africa' gallery in the survey. However, in as much as it was ideal, this was not possible because it was not in the initial proposal.

We met with Abdalla Omar (ITP 2010). He was an active participant in the Malindi data collection survey.



Image with Malindi Administrator

The Future

The research findings will assist the development of NMK climate change adaptation and resilience policy. The findings will enable the institution to come up with a climate change framework tool for adoption by all the regional museum. The findings will be used to strengthen further collaboration with partners both locally and internationally. The report will be used to source more funding for mitigation strategies that align with the Sustainable Development Goals (SDGs) 13 'Climate Action' and 15 'Life on Land'.

Professionally the research has deepened our understanding on the impacts of climate change in various museums located in different climatic areas within the country. The acquired knowledge will be shared with staff, NMK management and the community around the museums. Community programmes on climate change will be developed to create awareness on climate change, its effects and the role the community can play in combating effects of climate change.

Some of the changes we will implement include monitoring the effects of climate change on NMK tangible heritage; incorporate traditional and innovative ways of conservation of our heritage; adopt relevant climate change mitigation strategies; and integrate the community in heritage conservation.

The research made us aware of Sustainable Development Goals and how they can be integrated in heritage conservation. It deepened our understanding on climate change effects on tangible heritage and how the community can contribute through traditional knowledge in combating climate change.

We will keep in touch with those we connected with during the research as their invaluable contribution made the research to be successful.

The research will lead to a detailed report publication which will be shared with the NMK Resource Centre for circulation to all staff and the public. The publication will help in sourcing for more funding from different partners and collaborators. The publication will be used as a reference by different academicians.

Acknowledgements

Special thanks to the following institutions and individuals for making the ITP research possible

- Marie-Louise von Motesiczky Charitable Trust
- The British Museum International Training Program
- ITP team Claire Messenger, Amelia Kedge, George Peckham, Caitlin Noble
- Director General NMK-Professor Mary Gikungu
- Director Museums Sites & Monuments - Professor Fredrick Manthi
- National Museums of Kenya Climate Change and Adaptation Committee
- Assistant Director Coastal Region - Mr Hussein Aden
- Curators-The Nairobi Gallery Mr Lenny Karuki, Tambach Museum-Mr Peter Munyao
- Staff of Malindi Museum Complex. Gedi Ruins, Karen Blixen Museum, Nairobi Gallery, Kabarnet Museum, Tambach Museum
- Photographers