

## Final Evaluation Report

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Your Details	
<b>Full Name</b>	Teresiah Muciku Mungai
<b>Project Title</b>	Improving Ngong Hills Forest Conservation Efforts through Raising Local Community Awareness of Biodiversity Conservation.
<b>Application ID</b>	38496-1
<b>Date of this Report</b>	19/02/2024

**1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.**

Objective	Not achieved	Partially achieved	Fully achieved	Comments
<p>Awareness Creation on the importance of biodiversity conservation and building the local capacity in conservation</p>				<p>Four training meetings in different regions of Ngong (awareness creation) were organised to educate the locals on the importance of conserving biodiversity, especially native and locally threatened plant species. A meeting was held with the elders of the Kikuyu community in Ngong; two meetings were held with the neighbouring Nalepo community in Kahara and one with the Oloolua forest community and It is indeed the first step towards Ngong Hills Conservation Throughout the project cycle from inception to the dissemination of project results, over 800 locals (mostly interacted with during the mapping and planting exercise) were made aware of the importance of the conservation of Ngong hills. We also trained 30 trainers of trainees in best practices of nursery management practices and to build capacity towards plant conservation. These trainers went on to train other community members on setting up a nursery in their homes using locally available materials. Two of the trainers have already established a nursery in his homestead under a tree shade where they are growing native</p>

			species. 14 of the trainees were women, and 16 were men. We also prioritised working with representatives of FIVE local community-based organisations, one national group, and the local government representatives including two chiefs, four Maasai community elders and six Kikuyu community elder representatives to ensure we reached more people.
Conservation Training and implementation of school-based restoration trainings			<p>Informative sessions on effective restoration techniques engaged both students and teachers. Three schools, Uppah Matasia Primary School and Junior School, and Upper Nalepo, actively participated in training sessions and planting activities. More than 300 students benefited from these training sessions.</p> <p>However, our plans faced limitations due to an extended dry season, leading to water scarcity in the schools. This prolonged wait coincided with exam schedules, resulting in the closure of schools as per curriculum planning.</p> <p>Consequently, students were unable to grow seedlings from seeds on their own. To address this challenge, we cultivated the seedlings in the nursery, and once the school opened, we planted them together with the students within the school compounds.</p>
Mass seedling propagation and restoration of the native species			The project has achieved a significant level of success in fulfilling its original objective of seedling establishment and restoration of native species within

			<p>Ngong forest. With over 9000 trees planted, surpassing the initial target of 4000, the community's enthusiastic involvement played a pivotal role in this accomplishment. The establishment of the nursery proved to be instrumental in providing genetic material and enhancing gene flows, with seeds collected from various areas of Ngong to ensure high genetic diversity and resilience.</p> <p>Collaborations with local community-based organisations such as Ngong Go Greening, Ngong Umoja Environmental Management, Empakasi Green Movement, Ooloolua Forest Association, and Kajiado County officials significantly contributed to capacity building and raising awareness. However, despite surpassing the set planting goal, there remains a substantial gap in restoration efforts. Ngong forest continues to face severe degradation, necessitating ongoing attention to achieve full functionality, restore healthy vegetation status, and enhance species composition and genetic resilience. Continued collaborative efforts and community engagement will be crucial in addressing these remaining challenges and ensuring the long-term sustainability of the forest ecosystem.</p>
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**2. Describe the three most important outcomes of your project.**

**a).** Increased local community awareness of biodiversity conservation: The project succeeded in raising awareness of the importance of conservation efforts among the local community. Through educational sessions and training programmes, community members gained knowledge of effective restoration techniques, sustainable ecosystem restoration efforts, and the impact of human activities on the environment.

**b).** Strengthened community-based conservation: By involving local communities in the conservation efforts, the project aimed to fortify the forest against threats like habitat loss. Here, we established the first community nursery in Ngong Hills and produced over 6000 seedlings for planting and restoration.

**c).** Enhanced ecosystem resilience: Through tree planting initiatives, tree cover was increased, contributing to the restoration and preservation of the local ecosystem. The trees selected were carefully chosen to incorporate structural diversity, including both pioneer species with fast growth and slower-growing species with longer survival rates. The project followed the principles outlined in the "10 Golden Rules of Reforestation," providing a robust framework for effective forest restoration. Forest biodiversity was maximised through the selection of suitable areas and species. Long-term resilience and sustainability factors were considered throughout the project implementation.

**3. Explain any unforeseen difficulties that arose during the project and how these were tackled.**

The project encountered several unforeseen difficulties, primarily stemming from the impact of climate change on weather patterns. Delayed rains and prolonged dry spells affected the project's schedule, hindering mapping and seedling collection efforts. The long rains expected between March and May were unexpectedly low, disrupting the timing of seedling planting. Additionally, the second rainy season, typically occurring from October to December, was delayed until November, prolonging the dry season beyond projections. Subsequently, when rainfall did arrive, it exceeded average levels, leading to flooding and landslides, particularly challenging due to slippery conditions in the Ngong hills where planting sites were located.

Interaction with schoolchildren within their institutions was also delayed due to weather changes, impacting tree planting activities. Furthermore, a lack of water in schools hindered the watering of seeds. Community perceptions posed another challenge, as some community members mistakenly believed there was direct

monetary benefit associated with the project, leading to false and exaggerated information. Additionally, embarrassment over the damage caused to the forest led some individuals to provide false information about the area.

The main challenges associated with planting indigenous trees included water scarcity. To address these challenges, various solutions were proposed. These included harvesting and storing water during the rainy season, training on sustainable methods of watering trees during dry periods (such as using recycled bottles as makeshift irrigation devices) and focusing on growing indigenous tree species known to withstand harsh weather conditions like *Acacia* and *Vepris*. Furthermore, comprehensive training programmes were implemented covering tree growing and maintenance, seed collection and nursery management, as well as seed handling and care techniques. These measures aimed to enhance the resilience of the project against future unforeseen difficulties while promoting sustainable restoration efforts.

To address delayed rains and prolonged dry spells, the project implemented adaptive measures such as adjusting schedules and planting dates to align with changing weather patterns. Additionally, to combat water scarcity in schools, students were encouraged to take responsibility for caring for their assigned trees by bringing water from home at least once a week and watering them. Makeshift irrigation devices, utilising recycled plastic bottles filled with water and inserted upside down next to the tree seedlings, were also employed. Furthermore, mulching and the use of manure from their homesteads were encouraged to support tree growth amidst water scarcity.

Concerning community expectations of monetary benefits, the project adopted a cooperative approach aimed at fostering mutual benefits. Throughout the project cycle, local community members were actively engaged in project activities, and the results of these activities were shared with them. Moreover, training sessions were conducted to educate community members on fundamental procedures, such as creating optimal potting material ratios, fostering a sense of ownership and understanding of the project goals beyond monetary gains.

#### **4. Describe the involvement of local communities and how they have benefited from the project.**

The involvement of local communities has been crucial to the success of the project. Through informative sessions, nursery management training, and tree-planting activities, the project has empowered local communities with knowledge and skills that are critical for sustaining the environment. By involving local communities in conservation efforts, the project has strengthened the forest against threats like habitat loss. This approach aligns with the global paradigm shift towards

Participatory Forest Management (PFM), which advocates for decentralising management responsibilities to local communities.

In addition to acquiring valuable skills, local communities have gained a deeper understanding of the importance of biodiversity conservation. Their new found awareness has led to a change in their attitudes and behaviour towards the environment, making them more environmentally conscious. Moreover, they have developed a sense of ownership and responsibility towards the forest, leading to an increase in community participation in conservation efforts.

The involvement of local communities has been instrumental in enhancing ecosystem resilience and ensuring the long-term health of Ngong Hills Forest. By collaborating with local communities, the project has not only contributed to preserving the environment but has also generated income and sustained the livelihoods of local communities. For instance, the nursery collaborates with the Kenya Forestry station in Ngong Hills to supply seedlings to the community and groups working on restoration projects in Ngong.

#### **5. Are there any plans to continue this work?**

Absolutely, we are committed to ongoing efforts. The success achieved so far has motivated us to continue our efforts towards biodiversity conservation and restoration of Ngong Hills Forest.

Currently, much of the Ngong Hills area remains threatened by overutilisation and the impacts of climate change. Our future plans involve sustained monitoring and evaluation of the already established restoration sites, as well as expanding mass propagation and restoration initiatives. While genetic diversity persists, it has been significantly reduced by habitat destruction, overexploitation, and the effects of climate change. Notably, there's a noticeable disparity between canopy and ground cover, affecting trophic complexity and spatial patterns. The forest's ability to rebound is hindered by invasive species inhibiting native plant growth and overexploitation impeding recovery efforts. Despite these challenges, some positive interactions with the surrounding environment are observed through landscape flows and genetic/habitat connections, offering hope for the Ngong Hills. Our goal is to establish additional nurseries in the region to facilitate the flow of genetic material across different areas of the Ngong Hills. And continue to develop and model restoration sites that incorporate a high structural vegetation diversity, including at least two tree layers, a layer of shrubs and a ground layer of herbaceous plants.

While we initially collaborated with three schools, our aim is to expand this educational concept to more schools in and around the Ngong Hills area. Continued education will be essential for conducting monitoring and evaluation,

ensuring project implementation, and nurturing the growth of planted trees to maturity, thereby increasing success rates.

Furthermore, we aim to amplify our impact by engaging with local farmers who have shown keen interest in tree planting on their lands. Collaborating with them will not only enhance tree cover but also foster a deeper connection to environmental stewardship within the community.

Additionally, we have forged robust partnerships with other community-based organisations (CBOs) who share our commitment to the restoration efforts. These collaborative relationships will be instrumental in continuing our collective mission of revitalising the Ngong Hills ecosystem. By pooling resources, expertise, and manpower, we can amplify the impact of our restoration initiatives and ensure the long-term sustainability of the project.

## **6. How do you plan to share the results of your work with others?**

To effectively share the outcomes of our efforts, we've implemented diverse channels and strategies aimed at ensuring broad awareness and dissemination of knowledge. It involves recognising the invaluable support from the community and stakeholders, fostering not only gratitude but also cultivating trust and mutual respect.

During the project phase, our efforts were showcased on Kenya Television Network (KTN) during the National Tree Planting Day on November 13th, reaching a broad audience nationwide. We also collaborated closely with key partners such as the National Museum of Kenya (Botany Department), contributing our findings to their broader conservation initiatives aimed at safeguarding Kenya's rich biodiversity.

Locally, we utilised WhatsApp to directly communicate results to community members and stakeholders, organising meetings with Kajiado County administration, chiefs, and other community-based organisations to provide updates on project outcomes. Social media platforms like Instagram were leveraged to reach a wider online audience, facilitating engagement and information dissemination.

Moving forward, we plan to share comprehensive project reports with key institutions such as the Kenya Forest Service (KFS), National Museum of Kenya (NMK), and the Kajiado County Ngong Department. Additionally, detailed project results will be submitted for publication in peer-reviewed journals, ensuring scientific dissemination and contributing to the body of knowledge on species selection and best restoration practices. Furthermore, recognising the power of visual storytelling, we aim to produce YouTube videos documenting our conservation efforts, allowing for a dynamic and immersive experience that can inspire and educate viewers about



the importance of environmental stewardship. Through these diverse communication channels, we endeavour to amplify the impact of our work and inspire others to join us in the journey towards conservation and restoration.

## **7. Looking ahead, what do you feel are the important next steps?**

Firstly, we must urgently implement monitoring and management protocols for the sites we restored to ensure the trees survive and reach maturity where they are self-sustainable and can withstand the harsh climate conditions. Simultaneously, mass propagation and restoration initiatives are imperative to address the remaining areas needing rehabilitation.

Expanding the network of community nurseries is essential to engage more people in conservation work and increase the pool of seed collectors, thereby enhancing genetic diversity within the region. Moreover, to ensure the sustainability of our conservation endeavours, it's vital to educate and train more local communities on alternative livelihoods, reducing pressure on biodiversity.

Furthermore, exploring climate-smart beekeeping practices and conducting socio-economic research on wild vegetables and fruit trees, such as *Solanum nigrum* and *Urtica dioica*, can unlock economic and nutritional benefits for the area's inhabitants.

Developing a checklist of plant species will provide valuable insights for sustainable forest resource management. Additionally, efforts should be made to preserve traditional indigenous knowledge regarding medicinal plant use. Documenting the diversity, usage, abundance, and distribution of wild medicinal plants is crucial, accompanied by education and training on sustainable extraction practices.

Conducting resource mapping exercises will inform locals about value addition and marketing strategies, further enhancing community engagement and economic opportunities. By addressing these multifaceted aspects, we can ensure the holistic and sustainable conservation of the area's biodiversity and cultural heritage.

## **8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?**

Yes, the logo of The Rufford Foundation featured in various project activities throughout the duration of the study. It was included into all publicity materials, including t-shirts, banners, and leaflets. Additionally, the foundation's logo was utilised in the nursery's name and on attendance and data collection forms. The Rufford Foundation received acknowledgement for its financial assistance during

project inception, dissemination of findings meetings, training sessions, and other project-related gatherings. Furthermore, the foundation will be duly credited in the final project report, manuscripts, and any resulting articles arising from the project.

**9. Provide a full list of all the members of your team and their role in the project.**

**Dr. Teresiah Muciku Mungai**, serving as the Principal Investigator, spearheaded the management and coordination of project activities. With certification as an ecological restoration practitioner in training, she played a pivotal role in project design and execution, ultimately serving as the lead author of the final project report.

**Dr. Veronicah Mutele Ngumbau**, is a plant taxonomist stationed at the National Museums of Kenya, she contributed significantly to the project's success. Her responsibilities included acquiring permits, species identification, and conducting training sessions.

**Duncan Gichuki** actively participated in field surveys to gather primary data, assisted in nursery establishment, and contributed to conservation and identification efforts.

**Dr. Godwin Leslie Muhati**, an advisor affiliated with the Kenya Wildlife Service, provided invaluable guidance to the team. His expertise in program and project management, particularly in arid and semi-arid regions, proved instrumental in advising on research techniques and project implementation strategies.

**Francis Kariuki**, The Ngong Forester, facilitated project activities by granting access and ensuring security within the forest. He also shared his knowledge and materials to support the project's nursery and community engagement efforts, particularly in Ngong Hills.

**Samuel Koitee**, served as a crucial link between the project team and the local community, managing the community nursery and restoration site. Trained as a community trainee, Samuel played a vital role in training other locals and served as a translator, bridging communication gaps with his proficiency in two local languages.

**Jackline Mugure**, played an essential role as an assistant, organizing documentation and logistics during the planning phase, contributing to the project's efficiency and effectiveness.

## **10. Any other comments?**

The project team and all stakeholders, including the local community, extend our heartfelt gratitude for your generous support, which has been pivotal in driving significant progress in raising awareness about biodiversity conservation and enhancing local capacity in conservation efforts. Through your support, we have been able to achieve remarkable milestones in educating the community about the benefits and best practices of restoration, as well as highlighting the conservation work facilitated by the Rufford Grant.

The establishment of the nursery has emerged as a vital component, facilitating the preservation of genetic material and enhancing gene flows. Seeds collected from diverse areas within Ngong have ensured a robust genetic diversity, enhancing the resilience of the ecosystem. Your support has played a crucial role in the ongoing restoration of the Ngong Hills forest, and we are deeply appreciative of the opportunity to contribute to the long-term sustainability of the forest ecosystem.

Our commitment to collaboration remains steadfast, as we continue to monitor the restored areas as exemplary models of restoration initiatives. Additionally, we are dedicated to increasing seedling production in the nursery to address any remaining challenges and ensure the full functionality of the forest. We sincerely hope for your continued support, particularly in endorsing our proposal to extend restoration practices in Ngong Hills forest and within schools and farms in the quest to build a healthy and fully functioning forest.