East Tiaty (Kokwototo and Orus) Visit Report

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Summary

The past week has been transformative for communities living in Kokwototo and Orus. The church, local administration, and community have successfully navigated through conflict and various environmental challenges to initiate a peace process and have achieved significant milestones. The focus on sharing resources while sustainably managing these resources can enhance and improve development of the area from this engagement, that have yielded positive results since 1986. The implementation of a peace process and resource management through sustainable conservation and sharing can be pivotal to driving area and agriculture development.

Key points

Agricultural Practices: In East Tiaty, specifically at Kokwatoto and Orus in Tangulbei, households largely depend on livestock (goats, camels, cattle) with shifting pastoralism. However, the church has introduced small plot gardening with their facility to encourage the local adopt agriculture and supplement their diet. The farmers plant and manage kales, black nightshade, pigweed, potatoes, and maize as the main crops in their plots. The farmers have no knowledge that manure can be used on the depleted soil on the farm to boost their crop production.

Access to Inputs & Services: Poor crop production may be caused by limited access to certified crop and fodder seeds, fruit tree seedlings, extension services, and veterinary care. The County government needs to be involved in the development of an agricultural strategy and services aimed at improving farmers' knowledge, providing alternative crops, and easing access to inputs and services for farmers. This can promote alternative income instead of relying entirely on animals.

Conflict & Land Use: Tiaty has a history of resource-based conflict, particularly around pasture and water points. Climate shocks (especially drought) cause food shortages and migration. Paddocking and digging more boreholes may reduce the conflict and promote other water-dependent activities such as farming.

FMNR and tree nursery establishment: FMNR could potentially increase biodiversity, leading to water retention and soil productivity. Increasingly unpredictable rains, extended dry spells, and loss of indigenous trees/shrubs vital for livestock and household use. FMNR may ease some pressure through recognizing and selectively protecting native tree species (e.g., Faidherbia, Acacia, Balanites, Terminalia), which can lead to the land becoming more productive.

Livelihoods & Food Security: Formation of cooperatives for utilizing the livestock resources, such as dairy and milk coolants, may increase income and nutrition. Identifying coping strategies and willingness to diversify livelihoods may promote peace in the community, especially among youth. FMNR could support fodder production and sustainable charcoal/firewood practices if regulated.

Introduction

This document is a visit report to Africa Inland Church (AIC) Kokwototo and Orus in Tangulbei, East Tiaty sub-County in Baringo County, for training livelihood & conservation and community peace dialogue facilitated by OikoDiplomatique. The visit is part of a broader effort to support faith-based land restoration through pasture conservation and Farmer-Managed Natural Regeneration (FMNR), as well as help in mediating processes for peace dialogue or resolutions with communities conflicting over resources. This is the first dialogue or peace process with such attendance comprising youth, elders, and local authorities since 1986. Therefore, the goal of this visit was to translate available knowledge into practical, site-specific applications surrounding environmental conservation and land restoration as relates to the peace deal among and between the communities living in these areas.

The objectives of the Visit

To understand prevailing land use practices, vegetation management, and local perceptions of tree regrowth and conservation. To assess and identify barriers that are culturally and ecologically appropriate for land restoration techniques and adopted practices such as FMNR, paddocking, grass planting, etc. to promote landscape conservation. To understand resource-based conflict, particularly around pasture and water points and seek solutions that would have a long-lasting peace between and among communities living in this area. The visit was also an opportunity to facilitate knowledge exchange, including community knowledge, traditional practices, and land tenure systems, with a focus on engaging stakeholders (including faith-based organizations) to explore and strengthen possible church-community partnerships. These efforts are aligned with OikoDiplomatique's mission to promote peace and sustainable agricultural systems that benefit both local people’s livelihoods and the environment.

Describe activities conducted and accomplishments to achieve the above objectives

22nd July – Kokwototo AIC demo site

The meeting started with welcoming us to AIC Tangulbei by Rev. Nambair, the regional church coordinator. Then, we all proceeded to Kokwototo, where more church officials, the area chief, and local community including Moran representatives had gathered. There was an introduction of the elders present that included: District Church Council Chairman (DCC) -Pastor Charles, Area Chief (Madam Josphine Kakuko), AIC regional Coordinator (Rev. Nambair). During the introduction, member mentioned the challenges faced by the community in the area (Kokwototo and Orus). The challenges and / or possible solutions from questions raised are discussed below:

- The team discussed with farmers various options and approaches for tree growth, soil fertility, and other relevant parameters relating to tree, crop spacing and their management.
- Majority of community members did not have experiences on how to establish a tree nursery, selecting suitable plant (crops, trees and grass) species for the area or manage them sustainably in their farm or church donated plot.
- The youth concentrate much on the animal (goats, sheep, cattle and camels) finding themselves involved in conflict experienced in the area while others Moran are lost in local brews, increasing insecurity. Pasture, watering points and livestock raiding are the major reasons for conflicts.

- There was no crop harvest this year due to drought, and even when the rain came, it was too late for maize to yield produce. They expect hunger from November. Diversification of maize crop with sorghum and beans with peanuts which are resilient to drought can boost food availability.
- There are many diseases for animals, both goats and sheep with sudden loss of weight and diarrhea, etc., followed by mental disturbance in the goats and eventually death of the animal. Other animals are also affected by a series of diseases.
- Farmers who are cultivating crops did not know the soil type in their farms and what they need to add to improve it. The use of manure as a source of organic fertilizer was limited as farmers too did not have knowledge that they can use it to increase soil fertility.
- Farmers do not know suitable germplasm for the area of various crops or fruit tree planted. For example, fruit trees grow to a certain height and die. This can be attributed to several causes which including access to suitable and improved drought-resistant seeds or seedlings for the area conditions
- Farmers cannot access suitable germplasm as they are costly. For example, a grafted mango seedling costs Ksh 300, and they are to be transported for over 70km from Marigat.
- The area has few genera that shed their leaves during the dry season, leaving few species such as *Balanites aegyptica* (soruchon - Pokot), *Fadherbia albida*, etc., that do not shed leaves to provide shade, fruits, and fodder for animals. Suggested indigenous tree species to promote both ecological and economic value include: *Acacia mellifera* (Bee forage), *Balanites aegyptica* (fodder for animals, fruits for dry season, vegetables from leaves), *Acacia* spp. (fodder for animals, and bee forage), *Faidherbia albida* (provides fodder for animals during the dry period), and *Terminalia brownii* (for construction).
- Survival for fruit trees is very low in the area. Water is salty, may have contribute to low survival rate. Ways of planting trees and their management such as planting on a deep and wide hole that can be made into a water pan to hold rain water.
- There were several pests and diseases observed on crops and their control management is essential to avoid spread to other crops and to improve crop production.
- With church provide community with a water point source at their facility, tree nursery can be established to promote tree planting. However, the salty water require treatment to reduce burning of crops and tree seedling leaves.
- With so many melliferous tree species in the area, quality honey is produced from the area using the traditional hives. However, introductions of modern hives and positioning them on shaded areas near homesteads away from public places can ensure more honey production and their safety. This can also promote conservation of bee energy in making

combs structure rather than putting honey on them. The use of modern hives can promote production of honey twice an year rather than once currently experienced.

- Introduction of improved grass variety (*Cenchrus ciliaris*) into the farms could promote animal food security from hay production. The grass can be propagated from seeds (broadcasted on pastures). A kilogram of this variety seeds goes for KShs 1000 at Marigat. The introduction of several other grass varieties and lucerne fodder in the area, which are climate-smart, can be a significant change in the dairy sector. This can encourage locals to consider alternatives to herding and nomadism and turn to localized rearing (paddocking) and improve their farm management skills.
- Crop (kale, black nightshade, maize) and fruit tree (papaya, oranges, and mango) planting method, spacing and management strategies was discussed at length. Spacing guidelines for different trees and crops: *Mangifera indica* (mangoes): 4-7 metres, *Citrus* spp.: 4–5 metres, *Carica papaya* (pawpaw): 3–4 metres, Kale (Spacing of 1-2 feet depending on the variety), Maize (1-2 feet). Promote tree planting strategy by providing and promoting alternative species, such as fruit trees that can provide economic benefits to the community.

At Kokwototo two sessions were held that included training of farmers on basic skills of farm management (crop and tree planting, spacing, watering, pest and disease management, etc.), FMNR, paddocking and alternating them, tree nursery establishment and management, These discussions are incorporated as above.

23rd July – Orus AIC demo site

Sandy red soil dominated this site. Soil was fertile in the valley floodplain plain and maize is still green despite the lack of water. At the demonstration site, there is a borehole, and the water in this site is not as salty as in Kokwototo. Visit their church demo plot, discuss the tree management strategies, and growth improvement skills.

- Conducted a site visit and critical discussion on various farm management techniques and rangeland management.
- Insects (locust) have invaded crops due to the dry season. The team discussed locust and other pest control methods that can be applied locally to control them. Use of tobacco and detergent was suggested as a possible control method for both locusts, fall army worms and aphids. (**Preparation of concoction**: Mix 3 spoons of tobacco with 30gms detergent (Omo, Persil, Ariel, etc.) in 20 litres of water. Spray with knapsack on the leaves).
- Explored methods of improving soil fertility status on the red soil found at the farm or site. Application of the manure was viewed as a possible method that can be used, as the soil is rich in rock minerals but poor in organic matter.
- Brew liquors attract youth into bad behaviour that results in requiring more money to continue drinking, leading to the raiding of animals and eventually the conflicts. Usually, selling liquor is a woman's business in the area.

24th July - Meeting with group member at Marigat town

The team explored and discussed various environmental challenges facing the Ilchamus community. These included:

Invasive species: Mathenge (Prosopis spp.) is invading the area, and the consequences of this invasion. Allelopathy effects (no other tree grow in the area), tree thorns injuring animals and people, animals dying from effects of eating this tree forage (after eating pods and seeds the animals' teeth get decayed and eventually, they are not able to eat, losing weight and this leads to death) and destruction of environment from charcoal burning. However, after weighing the issues at hand, other benefits from this species can be explored since there is no way of eliminating this tree from the environment. Such benefits, such as making fodder from the leaves and pods, burning charcoal from the wood, or using this species as a fence through careful trimming, can control the growth and spread of this species. Trimming the species eliminates the fruiting stage of the tree, resulting in the control of spread from seed dispersal. This was raised from the fact that the trees are found near the lake beach, but the trees are spreading to the upper side. The goat and sheep eat fruits and spread seeds away from the lake on the upper side, where homes and farms are located. These trees can be submerged for 7 years in the lake before they die. They have deep roots, which make them resilient to environmental challenges. However, where they are uprooted and their roots are buried, in most cases, they just die.

Soil erosion: New areas have developed recently where soils are carried downstream, causing siltation of the lake and rivers. Water quality has gone down due to the soil siltation. The group have engaged in improving water catchment to control flow and wastage so as to harvest enough water.

Migration and Extinction of some biodiversity: Elimination of indigenous species (plants and animals) due to the spread of *Parthenium* weed and the *Prosopis* spp. This has negatively affected wild animals (Zebra, Dik-dik, Gazelles, etc.) which do not get anything to feed on leading to most of them moving to neighbouring ranches in Laikipia County. Uprooting the *Parthenium* weed is the only way of controlling it at the moment.

Cultural Heritage: The community promotes and protects community cultural heritage through making traditional regalia and artifacts. This has also promoted the local tourism.

We visited Mr. Oscar farm (group member) to see how *Prosopis* can be trimmed to control growth. In this particular area they have introduced a biological agents to control growth and spread of Opuntia (Cactus); their stems and leaves turns from green to brown leading to death. We also encountered an example of paddocking, growing of improved grass (*Cenchrus ciliaris*) for hay production and managing indigenous species on-farm.

Observations (Kokwototo and Orus sites Visit)

- The Kokwototo area lies on black cotton soil type and *Terminalia-Acacia-Balanites* vegetation belt, whereas Orus has red soil rich in murram but with a similar vegetation type to Kokwototo.
- Land degradation occurs because of too many animals in a small parcel of land with poor land management. Controlling the number of animals for each farmer can alleviate the environmental condition. For example, in our previous site visit to Mr. Lekosoi farm in Oldonyiro, Isiolo County, he informed us that he has only rear 10 cows and 40 goats in his 50 acres of land to avoid land degradation from animal over-grazing to promote sustainable environmental management. Hence, paddocking with alternating grazing and sometimes cultivation can be a way-out land management that can be practiced in Tangulbei.
- The farmers did not know they could use manure on their farm to improve soil nor the spacing required for their crops and fruit trees. The spacing was advised based on the crops and fruit trees that was available at the church site and Mr. Julius farms where discussions were taking place.
- If the community can be offered alternative economic activities such as modern agriculture (vegetables) and fruit tree growing (mango, pawpaw, and *Citrus* spp.), modern beekeeping methods and equipment, and milk coolants in each sub-location. Then this can reduce conflicts as more infrastructure of resources may be installed while putting these facilities.
- To be successful in all these endeavors, all stakeholders should be involved from the initial stage of discussions to avoid future conflicts. The stakeholders to involve include: politicians, County government officials (Governor and CECs), National government officials (chief, sub-chief, County commissioner, etc.), Ministry of Agriculture, Ministry of Cooperatives, elders, local community, warriors/Moran's, youth, and women plus any other groups or person deemed necessary.
- The existence of indigenous trees and stumps on the farm can reduce the rehabilitating period drastically where FMNR is practiced. Too many bushy shrubs that need selective clearing to allow the growth of undergrowth vegetation (grass) and selected trees that are desired.
- Invasive species (*Perthenium hysterophorus*) on the grass in the area have hampered animals, including bees.
- The bees have migrated to other areas, and many of the traditional hives found on trees were empty.

- A naturally low-lying area of the Julius farm was given as an example where farmers could spread branches and rooting wood to slow runoff flow and encourage soil and silt deposition enhanced vegetation growth from soil deposit fertility. This site holds potential as a demonstration site for FMNR.

Challenges encountered during the visit

- Conflict within and between the community for resources sharing
- Population increases in the area (both people and animals) which is pressuring the already over-stretched resources.
- The political interest of different communities in the area especially with natural resource exploitation and mining.
- Logistical challenges of moving the local participants from one site to the other due to bad roads and long distances.
- Identification of trees and shrubs, especially *Acacia* (*Senegalis*) spp., was limited due to the absence of leaves, flowers and / or fruits during the visit, complicating identification and advice efforts on suitable species that can be developed.
- Poor road infrastructure significantly extends travel time and hampers regular site access, particularly to church demonstration sites at Orus.
- Birds eat tomatoes and pawpaw while still on the farm.

Recommendations

- **Improve Animal husbandry**: Farmers need to start using paddocking and rotation methods of animals in these paddocks to control grazing and erosion in their farms. The production of hay (*Cenchrus ciliaris*) in some of the paddocked enclosures will improve animal feeding throughout the year, especially in dry seasons.

- **Improve Agriculture**: Teach the community on various sustainable agricultural methods, including the application of organic matter. For example, the application of animal manure to the crops will improve the production of crops and soil structure.

- **Infrastructure Improvement:** To subdivide the land portions with tree species that can be integrated within the system and plant crops with alternating cycles, i.e., each season the plot should be planted with a different crop. For example, if this season the crop planted is maize, then the next season may be planted with legumes to increase the nitrogen resource to the soil that is exhausted during the removal of all the maize stalks for animal feed.

- **Value-Chain Development:** Initiate a dairy cooperative, using the milk collection coolant for a local aggregation hub. The County government ministries (agriculture and

cooperatives) can support, train, and seek market products for the local communities. This can be a source of livelihood for the local community and would greatly promote cohesion.

- **Tree Nursery Establishment:** Develop tree nurseries focusing on exotic fruits (*Mangifera*, *Papaya*, and *Citrus* spp.) and indigenous fruit species (*Balanites*, *Grewia*, and *Ficus* spp.) to reinforce reforestation and provide future income-generating products. Place the nursery in a highly visible and accessible area, such as near the water points and church facilities, to show-case the available species, provide security, and engage the community.
- **Livelihood Diversification:** Promote alternative livelihood strategies such as beekeeping (positioned in shaded, less trafficked areas within the farm), cultivation of fruit trees (*Mangifera*, *Papaya*, and *Citrus* spp.), hay production from improved grasses (*Cenchrus ciliaris*), and crops like kales, black nightshade, pigweed, and watermelon.
- **Control invasive species**: To control many of the invasive species that have invaded the area by cutting off or delaying their reproduction methods. For example, where Mathenge (*Prosopis* spp.) has already invaded the community and farmers should trim these trees regularly to control them from reaching the reproductive stage. *Perthenium* weed, which has invaded and taken over the grass growing area, can be manually be uprooted to prevent it from reaching the reproductive stage. Where Mathenge (*Prosopis* spp.) has already invaded and colonized the area, productive uses should be identified for the species - for example, utilizing it for charcoal production, firewood, and other practical applications (such as animal feeds).
- **Pest control**: There were fall armyworms (maize) and locust invasion (Orus) that can be controlled using a cheap, safe method where three tablespoons spoon tobacco is mixed with 30 grams of detergent in a 20-litre water container and mixed well. This mixture is sprayed on crops to control the pest: it is cheap, safe and organic.

Expected Outcomes

- **Follow-Up Support:** Participants gained practical knowledge and skills in methods of crop management in their plots within the church compound, tree nursery establishment and basic management methods, paddocking and grass planting methods, FMNR implementation, including farm landscape planning, and management. All these activities need follow-up and further training, each to trigger community interest in modern methods of farming, reducing pastoralism and conflict over resource sharing.
- **Replication Potential:** A successful landscape restoration needs to follow a multi-faceted approach to change the mindset of the community. Such an approach includes building or improving on what they already have in the ground, such as already existing demonstration church farm plots and learning hubs (under a tree) for the wider Baringo community, and

later introduce other modern methods or ways. This will encourage replication and amplify impact beyond the immediate beneficiaries.

- **Livelihoods and Environmental Impact**: Dairy farming introduction and formation of cooperative hubs in each location can promote the development of the area and harmony among the communities living in this area. Animal management (controlling animal numbers per acreage and paddocking), introduction of hay and fodder farming, FMNR, and proper agricultural methods support both immediate agricultural needs and long-term ecological health. By diversifying livelihoods, it provides economic alternatives and improves resilience among local populations.
- **Conflict Mitigation**: Regular gathering for peace talks with every stakeholder inclusion, including politicians, youth (including school children), elders, local and national government officials, and church elders, can promote the peace process. Restored landscapes and improved livelihoods could reduce cattle rustling and associated insecurity, promoting peace in the region.
- **Faith-Based Leadership in Restoration**: This initiative serves as a potential case study of successful FMNR on faith-based land. It highlights how religious institutions can lead in climate adaptation and resilience-building efforts.

Outlook

Looking ahead, we are committed to further enhancing peace resolutions, providing solutions and training to local communities, and further expanding and replicating our service to other communities. The focus will be on leveraging environmental sustainability, improved agricultural methods to promote peace, development, and exploring new livelihood opportunities to curb poverty. We are confident that the strategic initiatives will promote area development for sustained growth and success.

Despite the community conflicts and uncertainties, the church pilot project has demonstrated resilience and growth. Their efforts will promote harmony among the stakeholders (youth, elders, administration, and church) and we are hoping they will maintain this healthy relationship they have initiated with conflicting parties. Peace resolution strategies and sustainable resource management can contribute to environmental healing, community development, and stability.

Conclusion

By supporting and empowering faith-based institutions in East Tiaty (Kokwototo and Orus) as a demonstration site for the local community; to use sustainable land management practices through building on climate adaptation and resilience by maintaining water, nutrient, and

carbon balance and therefore contribute to a positive ecosystem; hence a better quality of life for the local community. This integrated, adaptive agricultural model is often described as ‘climate-smart agriculture’.

Finally, the achievements of the past week are a testament to the dedication and hard work of the church, administration, local communities, project team, and all the stakeholders involved. We are grateful for the support of all stakeholders and look forward to continuing the peace process and the journey of agriculture and environmental growth and innovation.