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A water-harvesting ditch that Charity installed on her compound to improve agriculture and tree-growing conditions. Photo: Sarah Juster

Refugee women grow trees to protect people and forests in northwest Uganda

Sarah H. Juster, John F. Munsell and Mary Njenga

Introduction

"Just as trees protect us, we need to protect trees. Trees need to be protected worldwide, no matter where you are staying."

Charity, general secretary and founding member of TRAYOL

Refugee displacement is an escalating global challenge that presents challenges — as well as opportunities — for the management and use of trees and forests. Tree cover loss is of particular concern in developing countries, which host the majority of the world's estimated 43.4 million refugees (UNHCR, 2024), and where refugees and host communities alike often rely on trees for building materials and fuelwood for cooking meals. Tree cover loss is also caused by land clearing for agricultural production to meet growing food and economic demands (Maystadt et al., 2019), and when unsustainable logging and charcoal production are primary livelihood activities (Bernard et al., 2022). Removal of trees in refugee settings can have negative social and environmental consequences. Those include the disruption of ecosystem health and groundwater recharge (Black, 1994), and the loss of wild non-timber forest products (NTFPs), which are used by refugees and host communities as food, medicine and fibre (Grosrenaud

et al., 2021). Insufficient access to trees can also increase the risk of exposure to gender-based violence for women and children, as the primary household-level collectors of fuelwood, when travelling long distances from home in search of wood (Mulumba, 2011).

Tree loss has affected the refugee-hosting regions of Uganda, the country that hosts the most refugees of all African nations. Most of the 1.7 million refugees within Uganda are escaping civil conflict in South Sudan and the Democratic Republic of Congo (UNHCR 2023). Analysis of remotely sensed imagery identified a 1,900-km^2 decrease in natural ecosystems in Uganda's West Nile sub-region between 2016 and 2019 (Bernard et al., 2022), where six refugee settlements are located. These ecosystems include woodlands, wetlands and savannah vegetation. Much of the tree removal is attributed to fuelwood harvesting and charcoal production by both refugees and host-nationals (Bernard et al., 2022). Although refugees in Uganda are provided with long-term access to small plots of land for home-building and agricultural activities, these plots rarely contain sufficient tree biomass to meet ongoing fuelwood and home-building demands, causing refugees to look for these materials in the surrounding woodlands and forests.

This article examines the challenges associated with deforestation in refugee settings, as well as refugee-led and woman-initiated efforts to address these challenges, through the case study of Charity, a South Sudanese refugee who has lived in Uganda since 2017. Charity's experience highlights the specific difficulties faced by refugee women, as well as the creative solutions these women have developed to protect local forests, and by extension, improve their own welfare.

Information for this article was collected through interviews with Charity conducted in December of 2024 in the Imvepi refugee settlement of northwest Uganda. Charity, who gave permission to include her first name and photographs of her in this article, also provided a tour of tree-planting activities around her homesite and the homes of her neighbours. This article is also informed by ongoing research conducted by the authors focused on fuelwood access challenges and tree-based solutions in Imvepi and other refugee settlements in Uganda.

Deforestation in displacement: specific challenges for refugee women

Safety

Collecting fuelwood to cook daily meals is a task traditionally carried out by women and girls in Ugandan refugee settlements. The extensive amount of time spent on fuelwood collection draws women away from other important household activities, looking after children, or pursuing education. Fuelwood collection is physically demanding work, as most wood is carried home from the bush on foot (Mulumba, 2011). Additionally, the collection and use of natural resources such as fuelwood, grass

Woodlands surrounding Imvepi refugee settlement, where fuelwood is often harvested. Photo: Sarah Juster

and water can be a primary source of conflict in refugee settings given the high levels of demand and limited supply. Fuelwood collection thus disproportionately exposes women to resource conflict, including the risk of sexual and gender-based violence when travelling long distances to harvest fuelwood (Kumssa et al., 2014). Preliminary data collected by the authors from a sample of 120 refugees within Imvepi refugee settlement indicates that 46% of women refugee respondents had experienced conflict with either hosts or other refugees while collecting fuelwood. Levels of conflict range from being yelled at, being chased, and having machetes stolen, to in extreme cases, physical attack and rape.

Loss of access to needed products

In the region of northern Uganda and South Sudan, women use wild NTFPs to a greater extent than men do, and retain greater control over the gathering, processing and selling of these products in local markets (Masters, 2021). The products include edible greens and fruits, tree leaves and fibres for basketry, and a wide diversity of medicinal products with critical sociocultural and functional importance for women in caring for their children, particularly where Western pharmaceuticals have limited availability (Kamatenesi-Mugisha and Oryem-Origa, 2007). Such products can provide women with livelihood opportunities through their sale at market. Furthermore, the regular use of NTFPs can be critical to sustaining the traditional ecological knowledge of refugee women, who apply generationally acquired ethnobotanical understanding of plant use from their countries of origin in settings of forced displacement. The depletion of woody biomass from forests and woodlands for fuelwood reduces the available habitat for wild NTFPs, which is concerning from both a human welfare and environmental perspective. From an environmental standpoint, the long-term conservation of native and potentially endangered NTFPs may be threatened as areas of natural forests and woodlands decrease due to fuelwood and building material consumption, and to charcoal production.

A woman-led, community-based response to protect trees and people in refugee settlements

Charity arrived at the Imvepi refugee settlement, located in Uganda's northwest corner, in 2017 as a single mother with small children. Facing increased civil violence in her hometown in South Sudan, she left behind her work as an accountant and fled to the Ugandan border. Once she reached the border, a bus operated by the United Nations High Commissioner for Refugees (UNHCR) brought her to Imvepi, where she was provided with 2,500 square metres of dry, rocky land on which to rebuild her life. In accordance with Uganda's refugee hosting policies, small land parcels are provided to refugees at no cost through long-term land leases negotiated between Uganda's Office of the Prime Minister (OPM), UNHCR, district governments and local land-owners. This model is intended to support refugee self-reliance and socioeconomic integration. Charity built four shelters on her plot of land, with each shelter requiring 18 trees for roofing materials. She also began to cut small trees and branches for fuelwood. Although Charity was careful to retain a few large native trees for protection against the strong winds that can whip through Imvepi and easily damage thatch-roofed homes, her plot was quickly depleted of most tree cover, forcing her to begin collecting her fuelwood in the woodlands and forests surrounding the settlement.

In 2024, a woman was raped in the area where Charity and her neighbours collected their cooking fuelwood. The victim was a refugee woman who walked to the

Fuelwood collection in the Imvepi refugee settlement. Photo: Sarah Juster

Charity prepares the roots of *Acacia hockii*, a native medicinal tree found in the bush, for treating cough. Photo: Sarah Juster

Tree seedlings raised by Charity, with mango leaves used as seedling wrappers. Photo: Sarah Juster

bush alone to pick up fuelwood, which she previously cut and hid to dry so it would be lighter to carry. This incident of gender-based violence was deeply troubling to Charity and her neighbours. Staff from OPM, UNHCR and other humanitarian organizations in Imvepi responded by convening community meetings. They issued new guidelines for fuelwood collection, such as to always travel with a group when collecting wood and to seek the permission of local land-owners before cutting trees. But Charity and her neighbours did not wish to return to the bush for fuelwood. Instead, they decided to focus their efforts on practising and promoting new solutions to meet their cooking energy and building material needs, while protecting the native forest ecosystems that their livelihoods depend on.

Replanting trees

From 2023 to 2024, Charity participated in an agroecology and tree-planting programme implemented by the NGO DanChurchAid (DCA), one of the key organizations promoting environmentally focused interventions in Imvepi. The concept of this programme, and of other tree-based interventions implemented in the settlement, is to maximize the tree-growing capacity of the small plots of land on which refugees are settled. This can enable participants to better meet their fuelwood needs without travelling to the woodlands. The programmes distribute tree species such as *Tectonis grandis*, *Melia volkensii*, *Gmelina arborea* and *Senna siamea*, which are fast-growing producers of fuelwood and building poles, and can also be coppiced for future regrowth.

Access to tree seedlings for planting at home can be limited or poorly timed, however, even for participants within these programmes. Tree seedlings grow best when they are distributed and planted well before the second rainy season (July through October) to withstand the brutal heat of Imvepi's dry season. Feeling curtailed in their efforts to grow trees because of a lack of available seedlings, Charity and her neighbours established small tree nurseries on their home plots and began to grow seedlings and distribute them to other refugee households in the settlement. This was the start of their community-based tree planting initiative, called Tree Replantation At Young Ornamental Level (TRAYOL). TRAYOL focuses on the challenges faced by women, and a majority of its executive leadership positions are filled by women.

In addition to the distribution of tree seedlings, Charity and the other women engaged with TRAYOL are role models and community educators, spreading the importance of growing trees on home compounds. Charity currently

maintains 169 trees on just 2,500 square metres of land. These trees have made her self-reliant in her supply of fuelwood, which she acquires by pruning tree branches and occasionally cutting small trees that she replants. She has also uses wood from her trees to build fences, structures for climbing beans, and shade structures for poultry. She enjoys the many environmental services that trees provide, including windbreaks, shade for children to play, and leaf material for mulching crops. Through TRAYOL, Charity has delivered training on the integration of trees within home compounds and how to manage tree growing alongside domestic activities. These training sessions have empowered other women in her community, including both hosts and refugees.

Conserving and managing native woodlands and forests

By growing trees as a sustainable source of fuelwood and building material, Charity and other TRAYOL participants contribute to forest conservation by reducing pressure on the use of native trees. As Charity explained,

Some of the 169 trees that Charity has planted at her home compound. Photo: Sarah Juster

A tree nursery on the plot of a TRAYOL member, used to grow seedlings to distribute to other refugee households. Photo: Sarah Juster

A fuel-efficient Lorena woodstove, which can significantly decrease fuelwood consumption and exposure to smoke among women. Photo: Sarah Juster

Charcoal briquettes hand-crafted in Imvepi for improved fuel efficiency. Photo: Sarah Juster

"...the more we invest in tree planting, it will give time for the natural ones to regrow. So as we continue getting cooking energy from the branches of the trees which were planted at home, our natural trees keep on growing, and we shall not even destroy them."

Charity

Other conservation measures that Charity promotes are methods to reduce wood consumption through alternative cooking technologies. One of these is the Lorena cooking stove, constructed from locally sourced materials such as sand and clay; it can reduce fuelwood consumption by an estimated 20–30% when compared to traditional, three-stone open fires (Barbieri et al., 2017). TRAYOL also promotes the use of charcoal briquettes, which are compressed blocks of carbonized biowaste such as charcoal dust. Charcoal briquettes burn longer and have greater heat consistency than fuelwood. They are also a source of income when sold to other refugees and hosts in the settlement.

Where refugees' fuelwood needs are not entirely met on their plots, as in the case of large households, refugee women need to continue to travel to the native woodlands and forests surrounding Imvepi to collect wood and other NTFPs. Along with the guidelines issued by OPM and other humanitarian groups, TRAYOL recommends certain tree-cutting protocols to mitigate the overall impact on forest resources and reduce the rate of forest depletion. These include cutting only two of any five trees in a stand and pruning tree branches instead of cutting whole trees whenever possible. TRAYOL and other groups have marked certain native tree species that are threatened by charcoal production, such as *Tamarindus indica* and *Vitellaria paradoxa* (shea nut trees), with red paint to deter cutting and save them. Charity and other TRAYOL members conduct community sensitization meetings with women to discuss these strategies and underscore the importance of protecting forests for the continued supply of medicines, foods, fibre and fuelwood that refugees and hosts both need. Since its formation in 2024, TRAYOL has conducted two such sensitization meetings, engaging a total of 144 refugee and host women.

Conclusion and recommendations

Tree-based interventions are critically needed in refugee displacement contexts to address widespread tree loss, which has negative repercussions for people and forests. Although organizations have introduced a range of interventions, with varying degrees of success, the most effective may be women-led efforts that are designed by, and thus tailored to, the specific needs of women, who are primarily responsible for the harvesting and use of wild NTFPs. Engaging women in these efforts can also provide empowerment opportunities and challenge regional gender norms whereby women are traditionally less involved than men with the planting and ownership of trees.

As leaders of TRAYOL, Charity and her women neighbours demonstrate an effective woman-to-woman model of community sensitization and education on best practices for safe travel to forests for NTFP collection and sustainable harvesting techniques to ensure that NTFPs will continue to be available in the future. They also demonstrate the ability of refugee women to integrate tree growing and tree seedling production with domestic activities. As conditions for survival in refugee settings globally are threatened by intensified climate change and the loss of foreign aid, community-based and women-led efforts such as those promoted by TRAYOL should be replicated and promoted to support the environmental, social and economic well-being of women in displaced and hosting communities alike.

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