CLIMATE REFUGEES

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Case Study Submission 4 from Climate Refugees to the Warsaw International Mechanism for Loss and Damage to Update the Technical Paper on Non-Economic Losses in the Context of Loss and Damage Associated with Climate Change Impacts

Provided by Climate Refugees based on excerpts derived from our August 2023 report "Climate Change is Controlling Everything, Let Them Compensate Us": *Stories of Loss and Damage in Kenya*, by Amali Tower and Ryan Plano

Environmental Degradation:

The Case of Prosopis Juliflora or Mathenge in Kenya

Location: Baringo and Turkana Counties, Rift Valley, Kenya
Population: Indigenous Endorois People, Turkana, Ilchamus and several other minority groups
Climate Change Events: Slow-Onset Flooding, Extreme Heat, Rainfall Variability

An evergreen thorny shrub or small tree, Prosopis juliflora is a mesquite plant producing small pods found throughout Mexico, South America and the Caribbean. The plant is considered an invasive species in Kenya and throughout East Africa. In the arid and semi-arid regions (ASALs) of Kenya, it has been found to negatively impact livestock cultivation in pastoral communities, which is now being exacerbated by climate change.

During Climate Refugees' visit, Mathenge was observed growing wildly throughout Turkana and Baringo Counties, blanketing the region. It's especially problematic in Baringo where the plant was introduced in 1982 seemingly by the Kenyan Government's Kenya Forestry Research Institute (KFRI) and the FAO.

The plant's introduction to Baringo was part of the Fuelwood Afforestation Extension project, initiated as a means to protect natural vegetation from overexploitation from growing populations, reduce soil erosion, prevent desertification, reduce the effects of dust storms and to provide firewood and livestock fodder for pastoralists.

While it has done some of that, the plant has taken over all other natural and indigenous plants in the area. It is notoriously hard to manage because it bears constant fruit, germinates and grows on contact to any moisture, and when cut, regrows rapidly. Today, the plant is considered one of the world's 100 worst invasive plants.

Mathenge thrives in high temperatures and humidity, and once grew rapidly during periods of El Nino drains - climate change impacts that are now a mainstay in Kenya. According to Mongabay, "it restored the landscape, but also displaced native vegetation and people."

The plant is so invasive the Ilchamus community of Baringo County brought a lawsuit against the Kenyan government in 2006. The residents' complaint charged that they were misled to believe that Prosopis juliflora would curb deforestation and provide livestock fodder and firewood, while in reality the plant's rapid overgrowth killed indigenous plants in the area, causing a loss of pasture land and livestock and led to the blockage of roads, footpaths and rivers.

Other communities in Turkana see the effects of the drought being amplified by deforestation and the Mathenge plant. "Our forests are damaged. We used to have acacia trees everywhere that provided shade. Now trees are dying; we not only have no water, we also have no shade to protect us from this heat."

Scientists' findings concur with community experiences, pointing to the invasive nature of the plant that has now spread rapidly into natural shrubs, grasslands and croplands. A 2019 study undertaken by researchers at the Institute for Climate Change and Adaptation at the University of Nairobi found that the plant's rate of invasion is a major threat to the environment, economy and people, precisely because it depletes the groundwater table, suppresses rural livelihoods, negatively impacts livestock health and production, and increases costs of crop cultivation.

Using satellite data, the study also documented the shrub's rapid expansion from 882 hectares in 1988 to 18,792 hectares in 2016. In that same period, grasslands declined by 86%, irrigated croplands by 57% and rainfed cropland by 37%. The authors concluded that besides weather changes, deforestation, overgrazing and land clearing, the "Prosopis invasion was the cause of over 30% of these negative changes and the biggest driving force behind shrinking grasslands and croplands in the region." The authors say the extensive growth of Prosopis is accelerated from seed spread by livestock and wildlife to extreme climatic events like the 2013 floods, causing significant economic damage by severely limiting livestock production, increasing agricultural costs and consuming a lot of water.

Kenya's Environment and Forestry Cabinet Secretary recently declared Prosopis a threat to national security. Speaking in Baringo County on 2022 UN's World Day to Combat

Desertification and Drought, Tobiko cited the plant's devastating effects in 20 Kenyan counties, spreading at a rate of 15% yearly and occupying 2 million hectares of land.

Local residents told Climate Refugees they feed their livestock the seed pods that Prosopis produces, and following a plant management program instituted by the Kenyan government, communities harvest the mesquite trees to produce charcoal, a carbon-based fuel, and other commercial products as sources of income. Charcoal production is prolific throughout the region, and was widely observed during Climate Refugees' travels.

Turkana county is believed to have the most Mathenge trees in the country, amounting to twice the size of the massive Masai Mara National Reserve. Impoverished Turkana residents are concerned about the plant's impacts on farms, animals and groundwater, but survive on contracts to supply firewood to Kakuma Refugee Camp and through production of charcoal. A youth leader in the Turkana village of Loya spoke passionately about the uncontrolled spread of Prosopis "contributing a lot" to challenges like a lack of grazing land and water. "Governments must come together to solve the problem of the Prospis," he said. "We don't need short-term food relief, we need long term solutions like eliminating the Prosospis tree and replacing it with good trees."

Until recently, the Kenyan government has been controlling the spread of Prosopis through a 'management by utilization' method, filling shortages in firewood and charcoal that about 70% of Kenyans rely upon, however the strategy has not stemmed the annual growth rate of 4 to 15%. Not only is the plan ineffective in curbing the plant, it is also unsustainable. The government pursued a deforestation alongside reforestation policy by encouraging communities to reseed harvested areas with grass to sustain livestock, possibly explaining the observed increase in grassland between 2009 and 2016. However, the study's results concluded the plant management scheme is ultimately ineffective because residents do not completely remove the plant stumps, resulting in the plant's continued regrowth.

Even if reforestation had been successful, the deforestation part of the plan is counter-productive to efforts to curb climate change. According to the UN, an estimated 1 to 2.4 gigatons of CO_2e of greenhouse gasses are "emitted annually in the production and use of fuelwood and charcoal, which is 2–7% of global anthropogenic emissions." With about 70% of Kenyans reliant on charcoal for energy, the high carbon emissions in charcoal production via traditional kilns exacerbate the already extreme climate effects and pose health risks to highly vulnerable communities. According to one study by the Environment and Forest Ministry, the totality of Kenya's Mathenge trees could produce 30 billion Kenyan shillings or 295 million USD worth of charcoal. Thus alternate clean fuels or in the absence of that, sustainable charcoal production that reduces emissions and lower health and climate risks must be a top priority.

Noting the utilization methods ineffectiveness, the Kenyan government has now introduced a National Strategy and Action Plan to manage the colonizing plant through a combination of biological, chemical, mechanical and utilization methods that will involve communities in prevention and intervention systems.

Solutions:

The plant is having devastating impacts on peoples' lives. Their testimonies and the legal actions pursued by local communities more than confirms that. In the era of the climate crisis, there is a need for their concerns to be heard, further studied and truly addressed, chiefly to definitively assess whether Prosopis juliflora is contributing to adverse impacts of climate change, and to incorporate the realities of the plant into any existing and future environmental, climate, economic, and human security policymaking.