

UNDERSTANDING THE PRINCIPLES FOR AND STEPS TO SUCCESSFUL MANGROVE RESTORATION AND REHABILITATION

Mangroves are important Coastal wetlands and love tropical climates. They are found in tropical areas where sea and air temperature are warm all year round. Mangroves grow in areas with brackish –salty environment and large tidal range. As such they are found along the intertidal zones and along rivers (estuarine/deltas) close to the ocean.

They provide benefits and uses for humans, for animal life and for environment. They are key biodiversity habitat, provide space for recreation, social, cultural and economic activities and help build resilient Coastal Communities. In addition, mangrove mitigate hazards through prevention of shoreline erosion, reduce wave action and impacts of strong cyclonic winds, sequesters or store carbon ,as such they help to halt or mitigate climate change.

Human social – economic development and infrastructural activities have resulted to the loss and degradation of mangroves along with their valuable services such as coastal protection and fisheries enhancement.

Restoration and rehabilitation of mangroves is necessary

Mangrove restoration and rehabilitation of existing areas is extremely important today. There are many different techniques (Tools and strategies) and methods in restoring mangroves and rehabilitation of sites with varying successes or failures. Mangrove planting has become popular but not always effective. The majority of restoration and rehabilitation fail to create the right condition for mangroves to grow and function better. It is therefore imperative to know and understand the principles for and steps to successful mangrove restoration rehabilitation.

The principles;

- Ensure biophysical conditions are appropriate for mangrove recovery and rehabilitation
- Ensure that socio –economic conditions allow mangrove recovery and rehabilitation

The steps;

Five (5) critical steps are necessary to achieve successful mangrove restoration and rehabilitation;



Step 1: Stakeholders need to know and understand the individual ecology of the mangrove species at the site, in particular the patterns of reproduction propagule distribution and successful seedling establishment. Create a table indicating species, type of seed (propagule/fruit) flowering, months, indicator of maturity and size (length/ weight) of seed at maturity. Need to understand the local mangrove seedling dispersal (species, season, month, distance form rehabilitation site and presence or absence of seeds at site.

Step 2: Understand the normal hydrologic pattern in the site that control the distribution and successful establishment and growth of targeted mangrove species. Different species require particular conditions



to grow. Some species tolerate none saline soil than others. Species occurring in these zones depend on depth decoration and frequency of tidal inundation, soil salinity and amount of freshwater available. Water depth, and substrate height, slope and topography of substrate is important. Each mangrove species thrives at different substrate level. This dictates the amount of exposure the mangrove will have to tidal waters.

Step 3: Assess modification or disturbance, original mangrove environment that currently prevent natural secondary succession and recovery after damage. Community mangrove area mapping and deterring the existence of stresses including past uses of the area is important. Determine whether or not the area intended for restoration is actually a mangrove area in the past. Examples of stresses include lack of ground water, blockage of tidal exchange, lowered substrate level as a result of shoreline abrasion and hypersaline soils.

Step 4: Design the restoration plan to restore appropriate hydrology and if possible utilize natural volunteer mangrove propagule recruitment for plant establishment. The plan could include hydro-rehabilitation design to recreate a natural slope and substrate height and open up breaches to support the exchange of tidal water.

Step 5: Mangrove planting – once the stress has been removed determine by observation if natural seedling recruitment is occurring and are seedling coming and taking root in the area. Only utilize actual planting of propagule, collected seedlings or cultivated seedling after determining (through steps 1-4) that natural recruitment will not provide the quantity of successful established seedlings rate of stabilization, rate of growth of saplings established as objectives for the restoration and rehabilitation. NOTE;

- Density in hectares minimum 1000, maximum 2000 seedlings
- Monitor growth and survival rate as a fraction of time
- Record level of failure of saplings
- Adjust density of saplings and seedlings to an optimum level
- Record rubbish accumulation
- Monitor characteristics of rehabilitated ecosystems

Mangrove Restoration – Means an activity aimed to return a system to a pre-existing condition whether or not this original area was pristine.

Mangrove Rehabilitation – Any activity including restoration and habitat creation that aims to correct a degraded system to a stable alternative.

Local Community Involvement- Involvement of local community where Mangrove restoration is taking place is essential to the longterm survival of the restored/rehabilitated Mangrove habitat.

Successful Mangrove restoration and rehabilitation results in the establishment of a sizeable, diverse, functional and self-sustaining mangrove forest that offers benefits for nature and people.



**For enquiries or for more information, please contact;
The Project Manager**

Mombasa office, Bububu Estate, House number D72
Off Mtongwe Road, Likoni, P.O Box 85148 – 80100

Email: rbemaronda@cancokenya.com

www.cancokenya.com

facebook/twitter: Community Action for Nature Conservation

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