



LIMPOPO BRIEFING NOTE

Investing in Nature: The Limpopo's Mangroves

The Limpopo River comes to an end on the coast of Mozambique, its mouth a broad stretch of sand battered by Indian Ocean waves. Here, on the shores of the grey river as it approaches the sea, is a natural barrier to the high waves and coastal erosion that come with climate change.

This is a barrier of trees that have adapted to living in the mixture of salt and fresh water in the places where rivers flow out into the sea: mangroves. The aerial roots of the mangrove trees make survival possible for these unusual plants and provide the perfect nesting and nursery environment for many birds, bees and aquatic

animals, including fish, prawns and crabs. The mangroves also break down pollutants in the water and provide wood and remedies for local people.

These valuable trees are now threatened by land use change and high floods in the Limpopo. Growing populations need wood for fuel and building, and extreme, long-lasting freshwater floods, such as those in 2000 and 2013 are killing the trees by covering the aerial roots. In some places the banks of the river have receded by as much as 100 metres because of the loss of 50 to 70 per cent of trees in the area. As these banks have eroded, sedi-

ments released into the river have increased so the mouth of the river is silting up and blocking its flow. The changes in the river's flow are creating new erosion close to the sea, erosion that is taking land and buildings from commercial tourism property.



Mangrove plant

Reclaiming the River Banks

Since 2010 local communities have been tackling this problem with the assistance of the Government of Mozambique's Centre for Sustainable Development of Coastal Areas. Villagers have been collecting seeds and growing mangrove trees in a nursery close to the river, and then planting them

out in areas where trees were killed by the floods. Nearly 10 hectares of mangroves have been replanted, with an 80 per cent survival rate of the transplanted trees, and fresh channels opened to feed the trees. The community also created dikes and small dams and set up pilot aquaculture locations

for crab and fish cultivation.

Challenges, however, remain as survival depends on the tops of the young trees not being covered with fresh water. The Limpopo's floods of 2013 destroyed hundreds of seedlings in the nursery, delaying the replanting programme.

Mangrove ecosystem:

Is a peculiar habitat found at the interface between land and sea;

Acts as a flood buffer between land and sea, they also help to stabilize climate by moderating temperature, humidity, wind and even waves;

Growing in the intertidal areas and estuary mouths between land and sea, mangroves provide critical habitat for a diverse marine and terrestrial flora and fauna. Healthy mangrove forests are key to healthy marine ecology.

The Science behind the Issue



Mangrove replantation at the Limpopo River mouth, Mozambique

A mangrove is a tree, shrub, palm, generally exceeding one half meter in height, that normally grows above mean sea level in the intertidal zone of marine coastal environments and estuarine margins.

The Limpopo's mangroves are made up of six species (*Avicennia marina*, *Bruguiera gymnorrhiza*, *Ceriops tagal*, *Rhizophora mucronata*, *Xylocarpus granatum* and *Thespesia acutiloba*). Each species has different characteristics and uses.

Mangrove species vary from a few meters to over 25 meters high. The height depends on the conditions at the place of growth. The tallest trees can be found in more developed mangrove forests in estuaries of the river Rufiji (Tanzania), Tana River (Kenya), the Zambezi River delta, estuary of the Limpopo River and along the west coast of Madagascar.

Mangroves are highly adapted to the coastal environment, with exposed breathing roots, extensive support roots, buttress roots, leaves that excrete salt and "live-birth" propagation. The trees are biochemically unique, producing a wide array of natural products such as latex, polyphenols and tannins. Mangrove soils are capable of removing certain amount of heavy metals from wastewater.

Mangroves protect against coastal storm surges by slowing the flow of water and reducing surface waves. Measured rates of storm surge reduction through mangroves range from 5 to 50 centimeters water level reduction per kilometer of mangrove width. In addition, surface wind waves are expected to be reduced by more than 75% over one kilometer of mangroves.

Thanks to McIvor et al., 2012. Storm surge reduction by mangroves. NCP Report 2012-02

The USAID RESILIM Program supports the LIMPOPO Watercourse Commission (LIMCOM) in helping the people and ecosystems of the Limpopo River Basin to adapt to climate change through effective transboundary water management.

LIMCOM's Integrated Water Resources Management plan has identified Disaster Prevention as a key challenge in the Limpopo Ba-

This work is supported by LIMCOM international cooperation partners



For further information contact: Lara Rall, RESILIM Program - email: lrall@resilim.com -