

A three tier approach can be envisaged for the proper dissemination of the information regarding the benefits and use of dune and vegetation restoration. The approach would have to touch different level of stakeholders including official and Authorities, the lessee as the direct beneficiary and the public at large.

The information and awareness campaign could further be merged into a larger programme which aims at providing appropriate information with regards to climate change and coastal erosion to the stakeholders and the public at large.

The most pertinent information to be disseminated would be to explain how such measures can help in controlling erosion, any alternatives that can be used and also the benefits of the use of such technology especially in terms of being environment friendly with little negative impacts on the surroundings.

### ***3.3 Action Plan for Wetland Protection***

#### ***3.3.1 About the technology***

The backfilling of wetlands along the Mauritius coast has significantly decreased the area of wetlands and significantly increased surface water flow to the sea. This has resulted in elevated levels of suspended solids, nutrients from sewage and fertilizers, and contaminants entering coastal lagoons. Declining water quality and algal growth has already been detected in several portions of the lagoon (Baird report 2003). Coral-reef ecosystems are also highly sensitive to eutrophication (such as algal blooms that rob the water of oxygen) from nutrient runoff, sedimentation, and temperature changes, and must be protected from such sources if possible.

Wetland restoration re-establishes these advantageous functions for the benefits of coastal flood and erosion protection. Techniques have been developed to reintroduce coastal wetlands to areas where they previously existed and to areas where they did not, but conditions will allow.

The major cost involve in the implementation of this technology would be in the purchase properties that holds wetlands and a buffer area of 30 m. The benefit of having these wetlands under official jurisdiction would ensure its proper protection and rehabilitation and also ensure that the wetlands provide their services to the environment.

#### ***3.3.2 Target for technology transfer and diffusion***

The target group for the implementation of this technology would be those private property owners with portions of land under wetlands or in the buffer of 30 m from the wetlands. The target to be achieved for the transfer and diffusion of wetland protection would be during the next five years. It is urgent to address the issue of wetland protection as these are sustaining enormous pressure from property developer.

#### ***3.3.3 Barriers to the technology's diffusion***

##### ***3.3.3.1 High Cost***

Wetlands usually occur close to the coastal zone and as such are in areas where properties are of very high value, examples are Grand Bay and Flic en Flac. In view of offering the best protection

to wetlands, it must be ascertained that the wetland is under some official control and being under private ownership does not afford wetland this protection. In view of getting such control, acquisition of the wetlands should be undertaken and thus the high cost to achieving wetland protection.

### ***3.3.3.2 Inadequate legislative / regulatory framework***

Wetlands need to have a specific legal instrument for its protection. Till now there has been the Wetland bill and the ESA Bill which have been drafted with the main objective to protect the wetlands in Mauritius and properly manage these sensitive areas. Both bills are still under consideration and have not been passed through the parliament for eventual enactment. This is seriously hindering the protection and conservation effort as there is an inadequate legislative and regulatory framework for such environmentally sensitive areas as wetlands.

### ***3.3.3.3 Inefficient enforcement***

Enforcement measures are limited with existing legislation and thus the pressures and threats over wetlands are constantly accruing. Most coastal wetlands are found in the immediate vicinity of highly developed and built up area and this proximity makes them prone to be backfilled in view of a forthcoming development.

### ***3.3.3.4 Lack of participation and communication between Institutions***

Wetlands in Mauritius fall under the responsibility of the Ministry of Agro Industry and food security through the National Parks and Conservation Services. However, when it comes to enforcement, it is mostly the Ministry of Environment who has the legal instrument to take actions under the EPA act 2002. Wetlands in Mauritius are legally framed under various section of the law and different Authorities have jurisdiction over them. The proper management of wetlands is thus challenging under such situation.

### ***3.3.3.5 Lack of information on wetland ecosystems***

Wetlands are wrongly perceived, by the general public, as being wastelands and proliferation ground for mosquitoes and other insects or pests. This misperception is directly related to lack of information on wetlands and their importance in the ecosystem and the services it provides. This misperception over the wetlands is the main reasons for these to be at risk of being backfilled. Thus it becomes more challenging to protect the wetlands under those circumstances.

## ***3.3.4 Proposed action plans for Wetland Protection***

In view of ensuring wetland protection it would be important for following actions to be taken:

- a) Acquisition of Wetlands
- b) Improve Legislations and regulations and
- c) Information and awareness raising

### a) Acquisition of Wetlands

<b>Why</b>	Some wetlands are privately owned and it efficient protection can only be under Official jurisdiction
<b>Who</b>	The government
<b>When</b>	0 – 5 years
<b>How much the measure/action will cost, how can it be funded</b>	Approximately MUR 1,000,000 for consultancy services for review and putting forward appropriate legislation. Domestic Funding
<b>Indicators of success, risks</b>	Enactment of a Wetland Protection Legislation A risk would be the time usually taken from drafting to enactment of a proper legislation.

In view of better protecting the wetlands, the government could acquire the plots which are under wetlands or in the 30 m buffer zone. Whilst compulsory acquisition for plots of land is usually a long process, the Government may provide incentives to wetland land owners to either voluntarily give or exchange their plot for other plots which would be more appropriate for development.

The above measure has been spelled out in the ESA Study (2009) Policy Report. This measure would make the wetlands come under an official jurisdiction thereby facilitating its proper protection.

### b) Improve Legislation and regulation

<b>Why</b>	No specific Legislation for Wetland Protection
<b>Who</b>	The Government
<b>When</b>	0 – 5 years
<b>How much the measure/action will cost, how can it be funded</b>	Approximately MUR 1,000,000 for consultancy services for review and putting forward appropriate legislation. Domestic Funding
<b>Indicators of success, risks</b>	Enactment of a Wetland Protection Legislation A risk would be the time usually taken from drafting to enactment of a proper legislation.

In view of ensuring the proper protection of wetlands, it would be of utmost importance to have a dedicated law that would fulfill this gap. Up and until such law is passed, the wetlands would only be protected under ancillary laws such as under EPA 2002. The ESA bill as prepared under the ESA Study (2009) would have been most appropriate in ensuring the protection of wetlands and other ESA in Mauritius. Moreover the legislation should also contain appropriate enforcement actions and measures of the laws with severe penalties.

### c) Information and awareness raising

<b>Why</b>	Lack of awareness of the importance and role of wetlands
<b>Who</b>	The government with the support of NGOs
<b>When</b>	0 – 5 years
<b>How much the measure/action will cost, how can it be funded</b>	MUR 1,000,000 for the production of leaflets and sensitization materials. Can be funded domestically and through the support of International Funding Agencies under environmental programmes.
<b>Indicators of success, risks</b>	Increase awareness of the Officials and the public in general

An information and awareness campaign on wetlands in general would be most appropriate as the importance of wetlands in the ecosystem and the services it provides remains unknown to the public at large. The ignorance of the above is usually the source for wetlands being backfilled. It is far too common for people to realize their importance following heavy rainfall causing flooding in the surrounding areas.

The most pertinent information to be disseminated would be the services provided by the wetlands, its importance and of course how to ensure that it fulfills these in the best of their capacity. It would also be appropriate to provide information on what would happen in the surrounding areas following backfilling of the wetland.

### ***3.4 Action Plan for Rock Revetment***

#### ***3.4.1 About the technology***

Revetments are hard engineered structures with the primary function to prevent further erosion of the shoreline. They are built usually with stone, concrete or other durable materials and are shaped in a slope facing the sea and they aim at holding or preventing a scarp or embankment against erosion by wave action (UNFCCC, 1999). Revetments are to be differentiated with seawalls which are vertical or near vertical shoreline protection works separating the land and water areas.

Revetments are frequently used in locations where further shore erosion will result in excessive damage, e.g. when roads and buildings are about to fall into the sea.

Rock Revetments aim at controlling erosion of the land behind the structure due to direct wave attack. They act by blocking the dynamic removal and return of dune and beach material during and following an extreme event such as cyclone or storm surges.

Rock revetments do not address the root causes of erosion and therefore the erosion processes will persist unabated and any beach that is present may gradually diminish in width and height eventually creating escarpments and severe damages to the beach and dunes. Rock revetments do not preserve or enhance beaches. In addition beach may be lost in surrounding areas due to wave reflection and refraction from the structure.

Rock revetments when appropriately designed, may have a high amenity value. It is common practice in many countries to have rock revetments incorporating promenades and other amenities which encourage recreation and tourism. Rock revetments are potentially long-lived structures provided they are adequately maintained.

Rock revetments are at a rate of MUR 10 Million for 100 meter of coastline. This technology is implemented in areas where infrastructure such as roads and houses are at risk. It shall provide the appropriate protection and would not necessitate relocation of local population and also prevent cut-off access to certain areas especially when roads are concerned.

#### ***3.4.2 Target for technology transfer and diffusion***

The government would be the major stakeholder for the implementation of this technology. However,