Technology Fact Sheet

Technologies for Coastal wetland rehabilitation[i]

1) Technology description

- Mangrove swamps can be restored by growing types of saline grass. Grass roots can stabilize and protect mangrove swamps. Mangrove trees like *Melaleuca leucadenra Myrtaecae*, plants of *Rhizophoraceae (Bruguiera), Avicenniaceae, Myrsinaceae (Aegiceras), Rubiaceae (Ixora)* are adapted to saline habitats and popularly used in Vietnam. Choosing the right mangrove plants for a particular ecological environment to serve protection purpose is important.

2) Socio-economic benefits

- It cost less as wetland ecosystems can adapt to gradual sea-level rise.
- Increasing fish catching yield in neighboring seas, increasing income for coastal community and contributing to local sustainable development.
- Developing ecotourism and entertainment.
- Reducing construction capital and maintenance costs for coastal structures.

3) Environmental benefits

- Reducing wind forces, storm, and soil erosion; creating new habitats; improving the environment.
- Restoring functions of wetland ecosystems and protecting coastal zones.
- Improving water quality, climatic conditions, retaining sediments, eliminating land pollutant discharge, increasing carbon storage and providing necessary nutrients.

4) Status of technology

- On 03/16/2009, the Prime Minister has approved the *Restoration and development of mangrove forests for 2008-2015* project. In the first phase, there will be 32.870 ha of forest to be expanded or improved, and 97.554 ha of new forest, bringing the total forest area of coastal flooding is the country from 209.741 ha to 307.295 ha in 2015. The scheme was implemented in 29 coastal cities. Priority is for planting and protecting mangrove belt before dike.

5) Application technology

- Increased community interest in ecosystem conservation.
- Cheap and beneficial in terms of landscape.
- On 9 October 2007, the Prime Minister signed Decision 158/2007/QĐ-TTg to establish the *Program on Integrated Management of North Central Coastal Zone and Central Coast by 2010, with vision towards 2020*, which forms a legal framework for 14 provinces and centrally controlled cities alongside the Northern Central coastal strip and Central Region to manage their beaches in an integrated manner.

6) Barriers

- Requiring large space, leading to conflicts in land use.
- Limited understanding of community on wetland benefits.
- Lack of comprehensive programs and plans.

7) Costs

Implementation technology application costs

- Dr. Nguyen Hoang Tri et al (1998) shows that the initial capital investment and cost for forest care (including forest trimming costs from year 6 onwards) was estimated 41 USD per hectare of mangrove forest (2009 constant prices).
- The cost of wetland restoration is complex and depends on a large number of factors. The cost of the project should be calculated separately in each specific case. The main factors affecting the investment costs are as follows:

    - Type of wetland to be restored, expertise, your chances of success.
    - The level of wetland degradation and restoration requirements.
    - Expected level of recovery (for example, it is difficult to restore all the functions of wetland ecosystems once it is located in the urbanized area where is highly industrialized and recovery solutions cannot be expected higher).
    - Cost to purchase land if the land to convert wetlands.
    - The labor costs.
    - Cost of transport seedlings from the nursery where the planting.
    - Survival rate of seedlings (from seed collected until after planting).
    - The cost of cultivation saplings.
    - The cost of monitoring and protection after planting.

Incremental costs to adapt to climate change (compared to conventional technology)

- Subject to changes due to natural climate conditions and the extent of its impact to the wetland ecosystem.

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[i] **This fact sheet has been extracted from TNA Report - Adaptation for Vietnam. You can access the complete report from the TNA project website http://tech-action.org/**