

# Technology Fact Sheet

## **Beach nourishment<sup>i</sup>**

### **1) Technology description**

- Widely used in The Netherlands, Belgium, Germany, Denmark, the USA and Australia, etc.; under research in developing countries such as Nigeria, Ghana or Malaysia, etc.
- Feasibility studies in provinces namely Hai Hau, Ca Mau, and Kien Giang and some islands in Vietnam.

### **2) Socio-economic benefits**

- Maintaining, restoring beaches to stop coastal erosion and breaking winds. Although erosion still happens, beaches are provided with sediments and kept stabilized, which helps to protect the coastline and its structures.
- Maintaining the landscape and providing tourism, entertainment benefits, increasing income for local community.
- Flexible, providing access to future sustainable coastal management.

### **3) Environmental benefits**

- A structural measure without disturbing coastal natural processes or having adverse impacts on neighboring areas in contrast to dikes or dams.
- Providing ecological benefits to coastal zones.

### **4) Status of technology**

- In Vietnam, there have been studies to review the applicability in areas such as marine coastal Hai Hau landslide, Ca Mau and Kien Giang... and the islands.

### **5) Application potential**

- Can be combined with other adaptation technologies and even used as protection for structural measures such as dikes or dams.
- Utilizing sediment materials associated to dredging projects for coastal structures and marine transportation.
- Applicable in small islands with highly-needed for beach nourishment.

### **6) Barriers**

- Requiring high investment capital costs, periodic re-investments and provision of beach sediments. Large-scale application may lead to increases in nourishment material prices and capital costs.
- External beach nourishment materials may result in negative impacts, such as increasing turbidity in water column, to the local environment and ecosystem.
- Requiring experts specialized in ecology and natural conditions of the area.
- Limited understanding of local community.

## 7) Costs

### Implementation technology application costs

- According Linham et al. (2010), the costs in developed countries range from 3-15 USD /m<sup>3</sup> for materials (2009 constant prices). The costs in the developing countries may be similar to or higher because the coastal technologies have not really developed.
- The cost of technology is more flexible, depending on the specific conditions of each country. Major factors affecting the cost include the following:
  - Project scope, socio-economic efficiency.
  - The distance from the dredge material to raise beach area.
  - The cost of transporting materials.
  - Beach topography and conditions of transport routes.
  - Breeding grounds Materials.
  - Loss of material.
  - The cost of dredging (type, size can use the machine, the machine is not readily available).
  - The accessibility of the area dredged material taken (waves, wind ...).
  - Tidal water level.
  - The requirements of a third party.
- Costs of monitoring, supervision and management of the collection work should be included in the cost of raising dumps. This cost depends largely on the labor costs of local, national projects, so it is quite large fluctuations (Mason, pers. Comm.).

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

- When there is climate change, sea level rise would increase material costs by increasing the volume of materials and labor.

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<sup>i</sup> 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/>