

# **Sea dike erosion on coastal zone in North Vietnam**

**These dikes are built to protect fertile agricultural land inside**

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**Typical erosion on the sea facing batter of an old dike along the coastal zone facing Ha Long Bay. Note the collapse of the gabion/rock basket armour**



## Casuarina planting gave no protection





**Erosion has started on another old sea dike, despite the rock armour and this old dike was washed away during last year typhoon season**



**On a badly eroded section of this dike, Vetiver provided some protection on the sea facing batter, but this was not enough to protect this dike during last year typhoon season, all washed away**





No Vetiver

Vetiver

**Abandoned and lost fertile agricultural land to poor local farmers forever who only has only a very small farm for their subsistent living, as the government does not compensate for their lost of livelihood.**





**This is an new dike, about 1 000m inland, built to replace the old dikes shown previously, which were all washed away this year**

**Lost fertile agricultural land**

**Protected agricultural land**



**This new dike, heavily protected by the extremely expensive rock armour**





**But this new dike, heavily protected by the extremely expensive rock armour, its inside batter was not protected, cover only by local vegetation, mostly weeds**



On a section of about 2km long, vetiver was planted to protect the inland batter



**Much appreciated by the farmers who graze the vetiver planting regularly. This is the only feed source for their livestock during the wet and cold winter season**

**Protected agricultural land**





**Newly protected agricultural land, inside the new dike, but for how long??**





# The not so unexpected happened

- Although the local Dike Department officials noted that severe erosion often occurred on the inside batter of the wall due to surface runoff from the dike surface. That was the reason why they planted vetiver as shown before to protect the inside batter of the wall from this erosion
- With full confidence of their armour plated new dike the Head Office of the Dike Department ignored the local concern and left the inside batter unprotected.
- But the unexpected phenomenon happened during the 2005 typhoon season, the worst in 60 years, with huge storm surge during typhoon number 7, the dike was overtopped by sea water. Although the dike stay intact but its inside batter was badly damaged except on the section where vetiver was planted.
- Now the Dike Department has taken notice and ask VNVN to help them both technically and financially if possible to plant vetiver on these badly eroded section of the dike
  - So with the kind suggestion and support of HRH Princess Maha Chakri Sirindhorn, this is an excellent opportunity for RDPB to assist Vietnam in the moment of need and I am sure that the Vietnamese authority will appreciate and cooperate fully.