

AFTERMATH OF TYPHOONS NUMBER 6 AND 7

(OCTOBER 2005)

**ON THE COASTAL ZONE FACING HA LONG
BAY**

HAI HAU DISTRICT, NAM DINH PROVINCE

VIETNAM

Storm fury on the sea shore



Storm fury on the town



Storm fury on the beach



Storm fury on the town



Before the typhoons
Photos taken in January 2005

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



But this new dike, although its outside batter 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 inside batter, but not in a correct layout design



After the typhoons
Photos taken in December 2005

The same dike shown before was badly damaged by enormous sea waves



The rock armour was ripped up





Sea facing batter



The opposite inside batter without vetiver planting, badly damaged by the typhoons



Temporary repair with the universal sandbags on the breached section



Sea facing batter



The opposite inside batter with vetiver planting, undamaged by the typhoons





Another section of the sea facing batter



The opposite inside batter with vetiver planting, undamaged by the typhoons



The inside batter of another sea dike with vetiver planting, undamaged by the typhoons



The inside batter of another sea dike with vetiver planting, undamaged by the typhoons



Erosion on a new and incorrectly planted inside batter





**Less than 1 year old and
almost 2m root.**

New planting by the Dike Department after damages by the typhoons. With correct design this time, they have learnt the lesson!!



Old rock baskets

Socio-economic costs

This is once a house and home of a poor farmer in the section where the dike collapsed



What can I do now? How can I pay for this???



This was once a solid sea dike

1/10/2005



This was once a town



Temporary repairs have to be done





A big community effort



This was once a nice sea side promenade



What happened to it now??

