

# **Fauna & Flora International and The Ecoboat Project**

Present:

“Man’s Impacts on Ha Long Bay”

Real life environmental education on Ha Long  
Bay world heritage area - Vietnam





# Voyages of Discovery





A photograph taken from the perspective of someone on a boat, looking out over a body of water towards a series of steep, forested limestone karsts. In the foreground, the backs of four people are visible as they look out at the water. From left to right: a woman in a light orange shirt, a young boy in a grey t-shirt with 'ATHLETIC' on the back, a woman in a black shirt and white cap, and a man in a yellow shirt. The woman in the black shirt is holding binoculars. The water is a clear turquoise color, and a small boat is visible in the distance. The sky is a pale blue.

**and an understanding of tomorrow...**

**...for children who will have to live with  
the consequences of today.**





Why choose a paradise like Ha Long Bay for an environmental education program?



# It is a “Paradise” with many problems

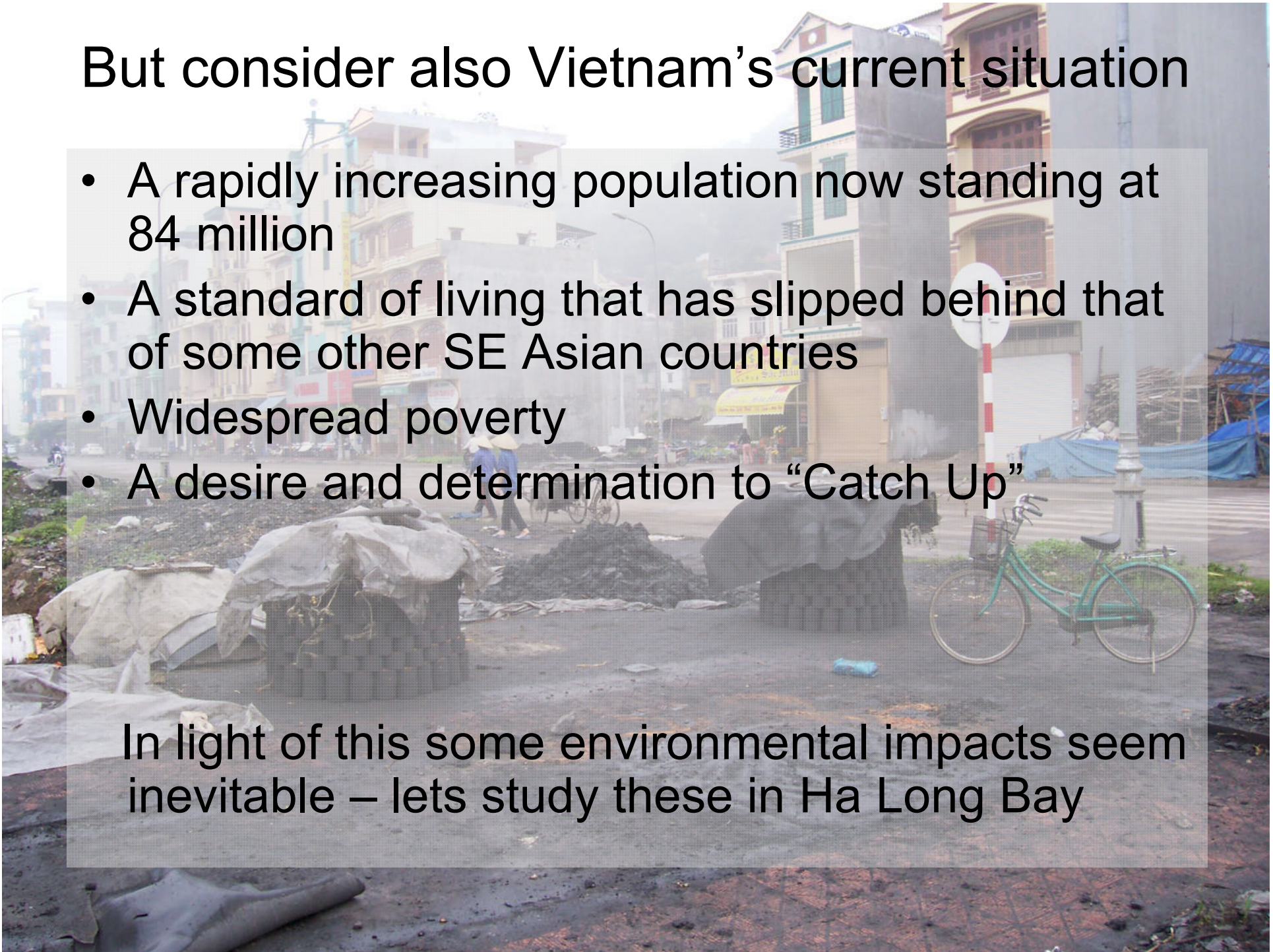
- Loss of mangrove wetlands
- Litter
- Coastal reclamation
- Sedimentation
- Heavy metal leachate and coal spillage
- Port development and dredging
- Risk of oil spills



## But consider also Vietnam's current situation

- A rapidly increasing population now standing at 84 million
- A standard of living that has slipped behind that of some other SE Asian countries
- Widespread poverty
- A desire and determination to "Catch Up"

In light of this some environmental impacts seem inevitable – lets study these in Ha Long Bay





# Aquaculture Impacts



Mangrove wetlands converted into shrimp ponds.  
The loss of biodiversity and destruction of marine  
breeding grounds impacts on other parts of bay



# The loss of mangrove wetlands has been huge

- in 1989: 25.000 ha
- in 2001: 8.946,4 ha

That is a annual loss of 1,330 ha

If that rate of loss has continued

there will be about 2,000 ha

remaining now – a 92% loss





# Reclamation

- This site is outside of the “Coast Road”





Another building outside of the  
coast road

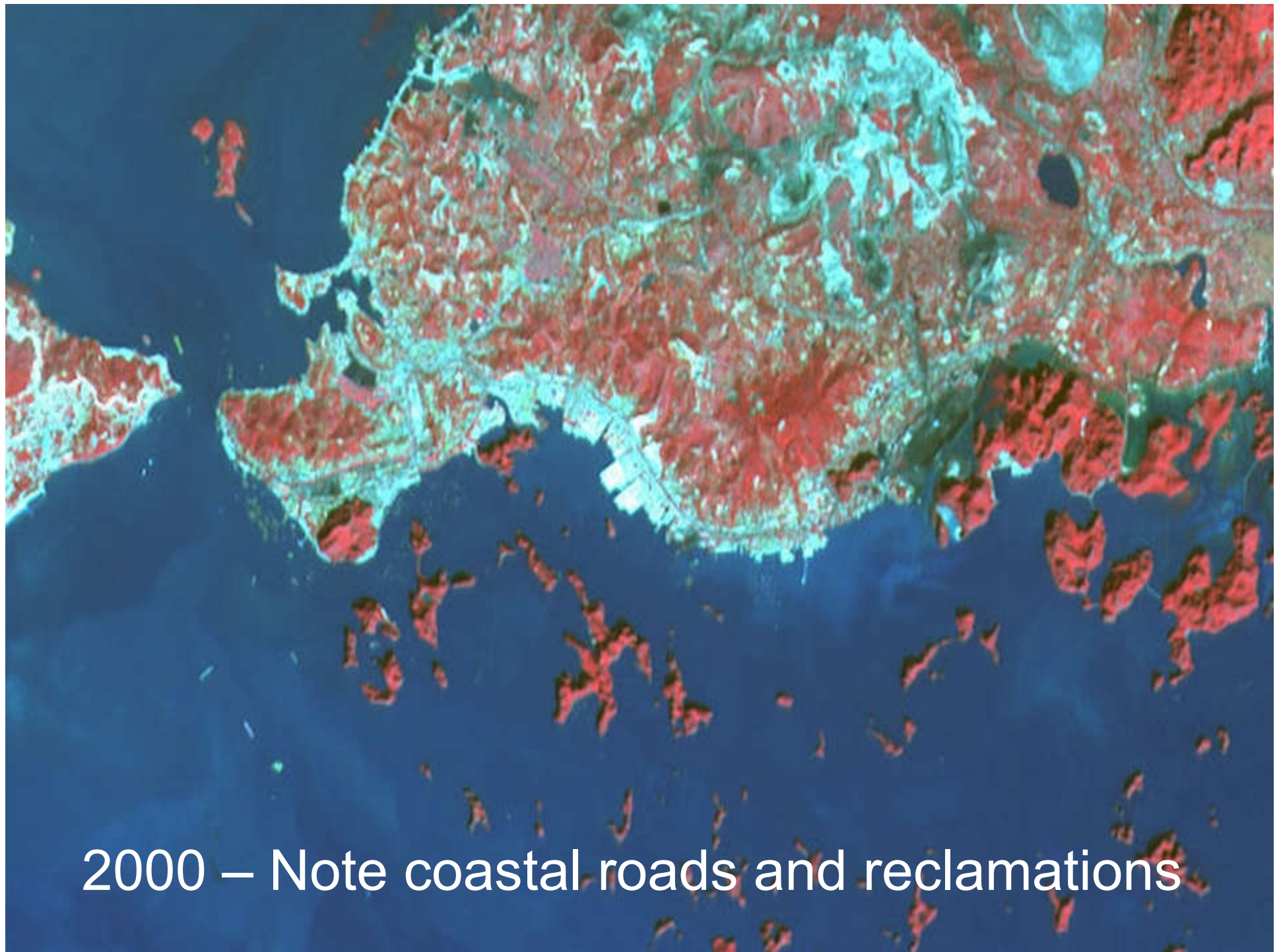




# Hong Gai Coastline 1967







2000 – Note coastal roads and reclamations



# Some current reclamation projects





# A causeway for a new tourist resort





# Tidal flows before causeway built







Near Ha Long City the bay is only 2 to 3 metres deep

- Each passing tourist boat stirs up bottom sediment
- Shallow water becomes eutrophic more readily
- Turbid water is heated more easily by sunlight
- Restricting normal tidal flows will possibly elevate water temperatures



Note sediment stirred by this boat







For larger ships a channel has to be maintained by dredging



Suction dredging releases fine  
sediments back to the sea





# Larger ships disturb deeper sediments

- Rudder has been applied here to change direction





The turbidity of coastal water is extremely high where tour boats congregate



**Here we lost sight of the Secchi disk at 150mm**



Coral Reefs are under severe threat

Illegal harvesting is only one problem



# Recent reports claim that few live coral reefs survive

High levels of suspended sediment have been shown to be a likely cause of death





**Terrestrial sediment sources include coal mining..... ↓**

- Note the coal barges and the road-related reclamation





**...and infrastructure development**

**These road works are for the new bridge which is a major component in the highway from Hanoi to China**





...but earthworks carried out in the wet season can be hazardous..







..and in this case much sediment  
reached the bay..



after passing through streets and  
houses





The sediment can spread a long way and reach the sea by many routes

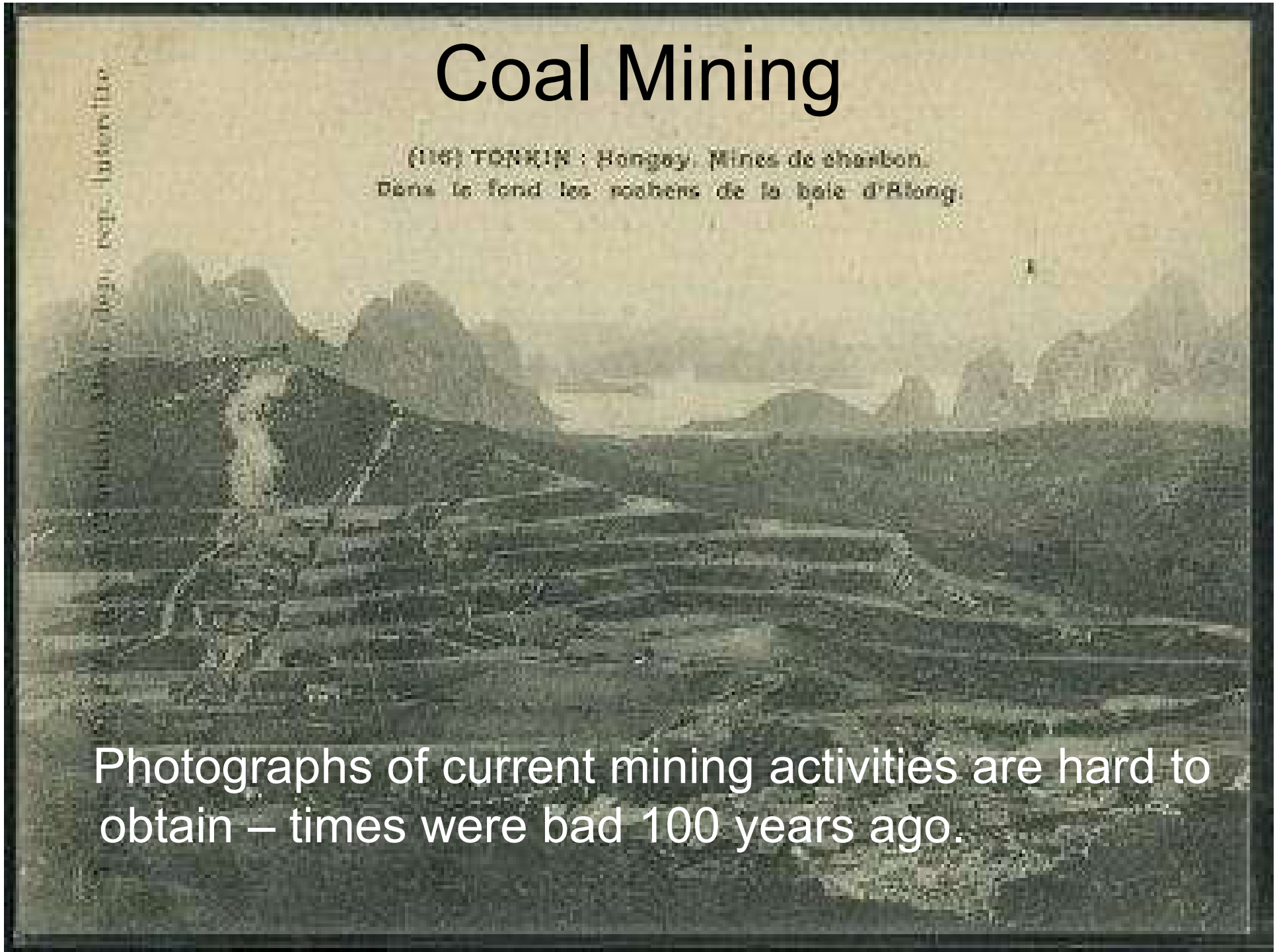




# Coal Mining

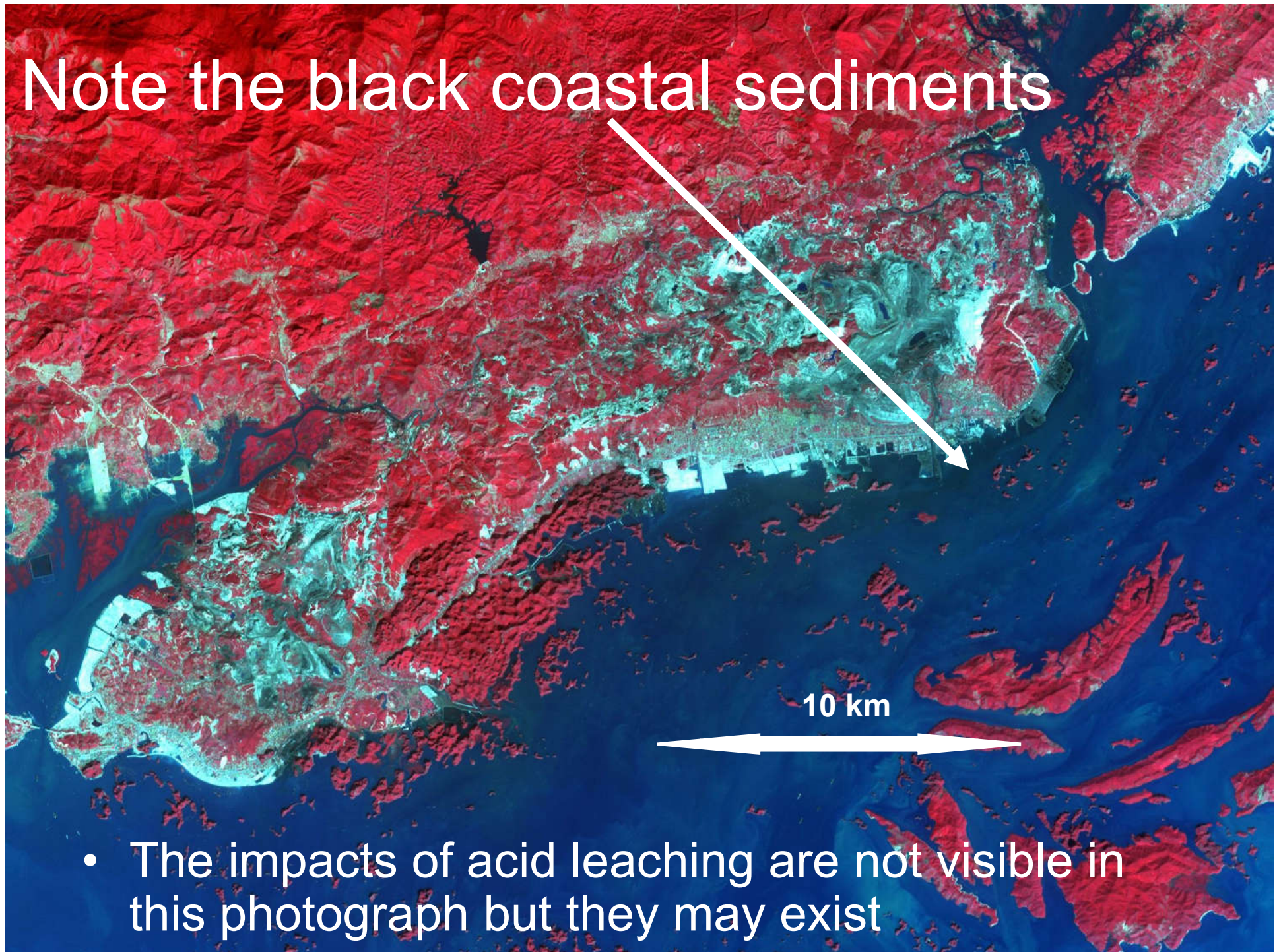
(116) TONKIN : Hongay. Mines de charbon.  
Dans le fond les rochers de la baie d'Along.

Photographs of current mining activities are hard to obtain – times were bad 100 years ago.





Note the black coastal sediments



- The impacts of acid leaching are not visible in this photograph but they may exist



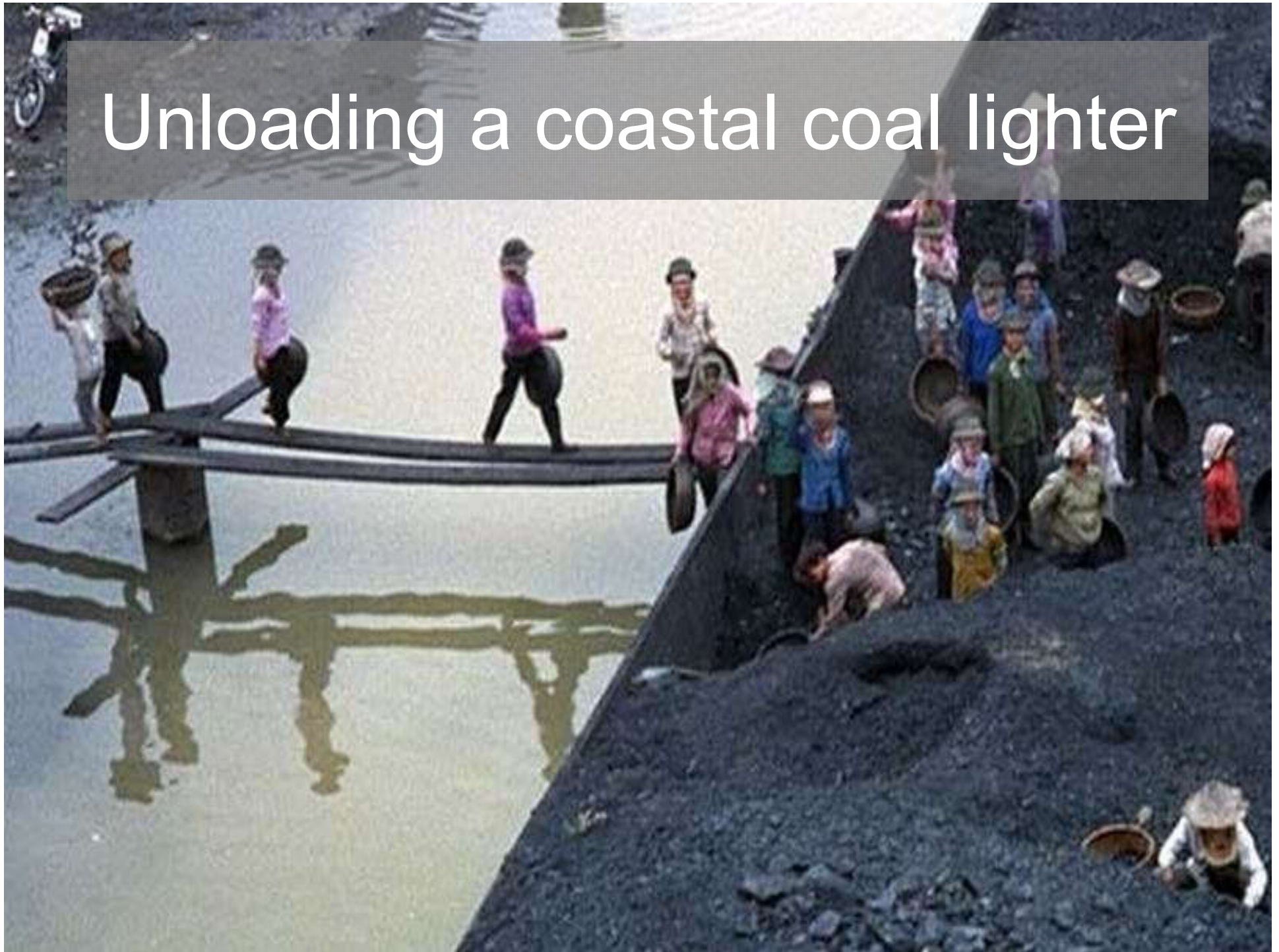
# The waste heaps are a threat

- Instability
- Acid leachate
- Dust
- Illegal scavenging of coal





# Unloading a coastal coal lighter





# Loading a coal ship from coastal lighters

Spillages inevitably occur, but now barges are required to be covered to control coal dust and sediment wash





## Location of the Mong Duong Thermal Power Project in Cam Pha District, Quang Ninh Province

**A new 2000 megawatt coal fired thermal power plant is being built at Cam Pha**

VIET NAM

### MONG DUONG THERMAL POWER PROJECT





# The Economist

SEPTEMBER 9TH-15TH 2006

WWW.ECONOMIST.COM

The Blair leadership crisis

**Yet another issue for coal rich  
Quang Ninh Province**

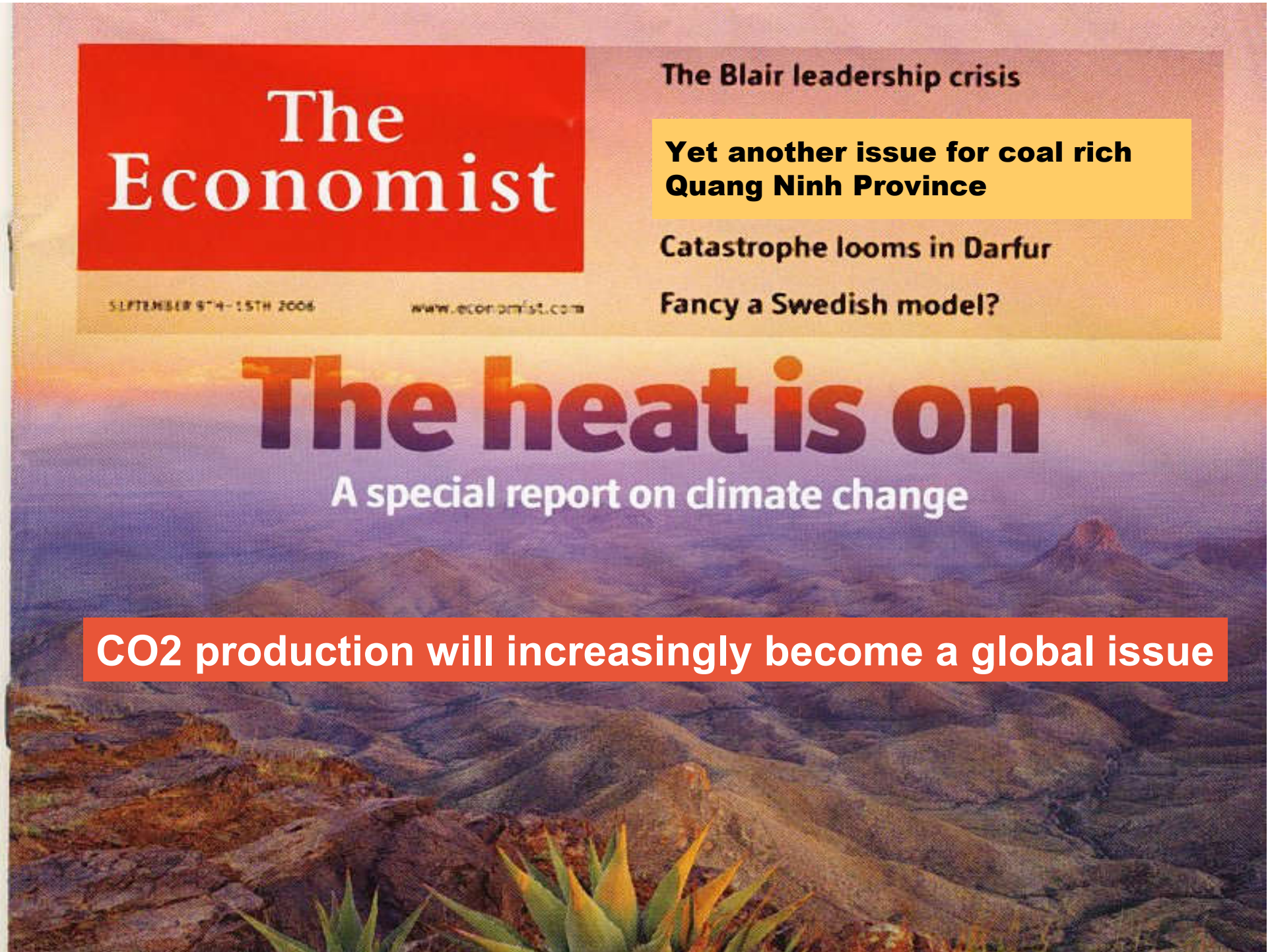
Catastrophe looms in Darfur

Fancy a Swedish model?

## The heat is on

A special report on climate change

**CO2 production will increasingly become a global issue**





# On the Brighter Side....

- Vinacomin, the major coal company here in Ha Long Bay, is now taking its environmental problems very seriously
- These problems were inherited from the French colonists and later management
- A German aid program has been operating for 1 year already to identify the problems and to design practical solutions





# Litter

Floating litter, mostly plastic, is widespread







On land, plastic is just discarded



To be washed to the sea in the  
next downpour....







...where it floats around in between the times it is stranded on beaches.



# Possible Remedies

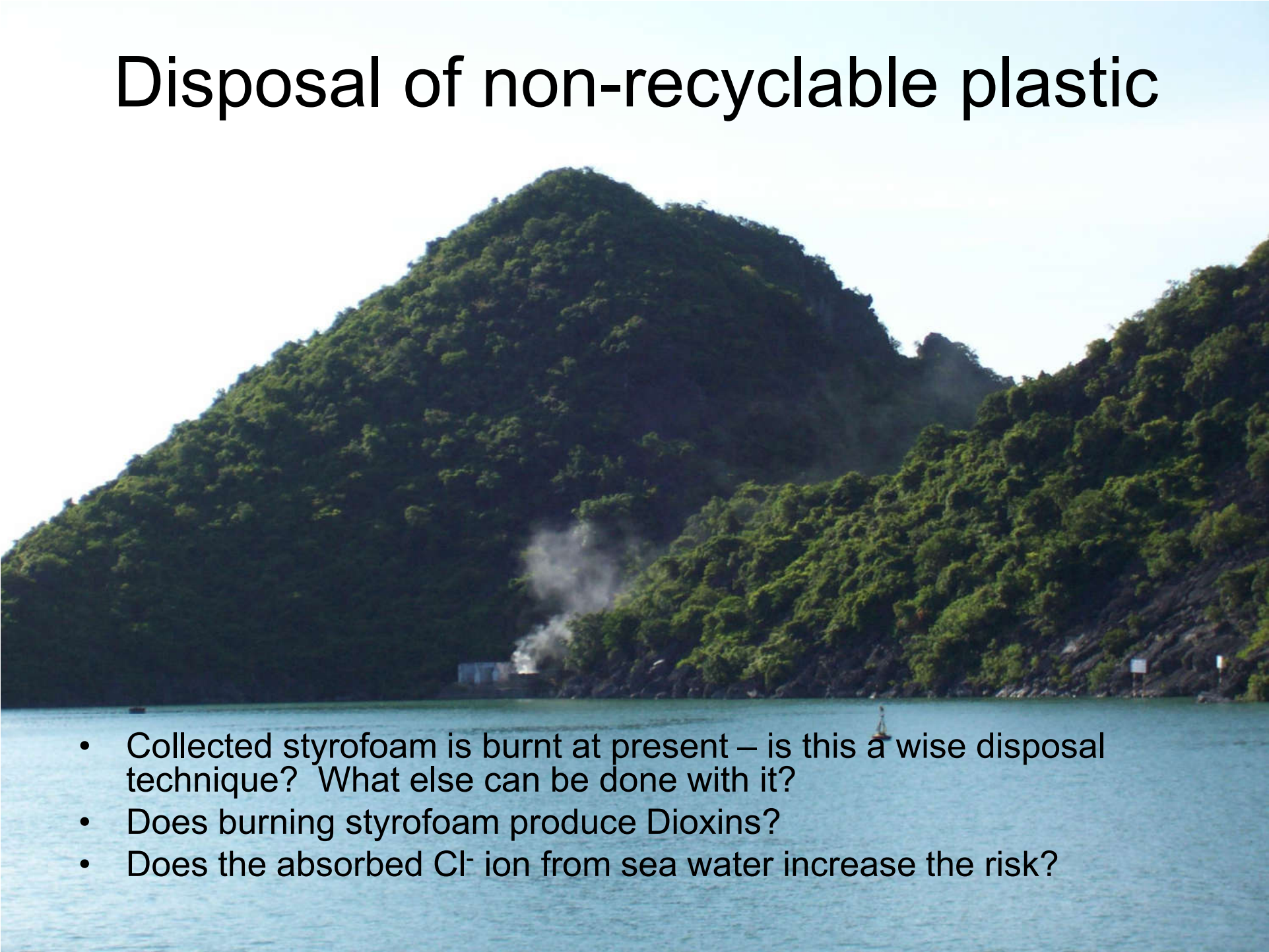
- The value of recycling plastic is gradually being realised
- A company has been established near Hanoi to produce plastics recycling equipment

**GERMAN-TEC**





# Disposal of non-recyclable plastic

- 
- A photograph of a lush green mountain with a small building at its base emitting smoke, situated next to a body of water. The mountain is covered in dense green foliage. A small building is visible at the base of the mountain, with a plume of white smoke rising from it. The building is situated on a rocky shore. The water in the foreground is a deep blue. A small boat is visible on the water. The sky is a clear, pale blue.
- Collected styrofoam is burnt at present – is this a wise disposal technique? What else can be done with it?
  - Does burning styrofoam produce Dioxins?
  - Does the absorbed  $\text{Cl}^-$  ion from sea water increase the risk?



# The World Heritage Area has a very narrow buffer zone

Which is obviously intruded on by development





An aerial photograph showing the severe desertification of the Aral Sea. The water has receded, leaving vast areas of dry, cracked, and sandy earth. Several large cargo ships are stranded on the exposed seabed, which is now a barren landscape. The ships are scattered across the frame, with one large ship in the foreground and several smaller ones further back. The overall scene is one of environmental devastation.

Does this mean Ha Long Bay could become Vietnam's "Aral Sea"?

Could excessive development destroy a unique and priceless asset and create a charmless biological desert in its place?



# Why do these impacts continue?

- Consider these issues:
- The living standard of many local people is not high and needs to be lifted
- Tourism brings in large sums of foreign currency
- Coal is a major energy resource for this province and a major export to China
- Transport links to nearby China are very important
- Does Vietnam have other options?



Can tourist numbers be maintained or increased without destroying this?





# Can unique ecosystems survive?





Will rare plants still be found in the future?





Will un-spoilt cave systems....





...become highly developed?





The over-riding problem is that development and conservation are very difficult to balance.





Meanwhile we on the Ecoboat think about issues such as:

- the inadequate buffer between the World Heritage Area and the mainland development

The loss of landscape values

- and how to best make a positive difference to Ha Long Bay's future, while not doing anything counterproductive.





One has to try to keep the issues in  
perspective.....

...which can sometimes  
be difficult....

