

***Global Climate Change
Where are rising sea levels
threatening
human and natural
environments?***

***Massimo Sarti
Università Politecnica delle Marche***

Vulnerability of coastal areas to sea level rise is driven by both global environmental changes, socio-economic development, as well as the ability of affected communities to cope with such changes.



Geographic features and morphology of the coastline also determines the intensity of the impacts of natural hazards, making South East Asia one of the most vulnerable regions in the world.

- ***With more than 3200 km of shoreline,***
- ***with its population and economic development concentrated along a narrow coastal stripe,***
- ***hosting two of the largest delta of the world and vast expanses of low land wetland and lagoons...***

... Vietnam is the one of the most of vulnerable countries in the region, impacted by typhoons, storm surges, erosion, environmental pollution and sea level rise related to global climate change.

Human activities deriving their resources for subsistence and economic development from the coastal zone, such as fisheries, aquaculture, agriculture, tourism, transportation, urbanization, mangrove extraction etc. are a further element under threat.



It is since the 2007 World Bank working paper that the red flag has been raised, prospecting that 11% of the population could be displaced as a result of 1 m sea level rise I the next century.

*Even under less severe projections, the impact of climate variability could heavily affect the country lowlands , with more frequent, severe and southerly typhoons, heavier floods and stronger storm surges that could ultimately affect **socio-economic development, fishery – one of the main country economic drivers - and food security.***

The Impact of Sea Level Rise on Developing Countries: A Comparative Analysis

By

Susmita Dasgupta^{*}
Benoit Laplante^{**}
Craig Meisner^{*}
David Wheeler^{***}
and
Jianping Yan^{**}

World Bank Policy Research Working Paper 4136, February 2007

For these reasons, for almost two decades, the FAO, first, and World Bank more recently (CRSD*) deployed attention and resources to the lagoons and wetlands of Central Vietnam, for raising the alert on safety and protection of some of the most vulnerable ecosystems on Earth and on the communities relying on them for food and subsistence.



Vietnamese lagoon project 'a success'

WorldFish/David Mills

Speed read



- Scientific strategies have reduced pollution, and tension between competitors
- The coastal lagoon is now on the path of to sustainable development
- Fishers now only invite scientists to meetings when they need them

111

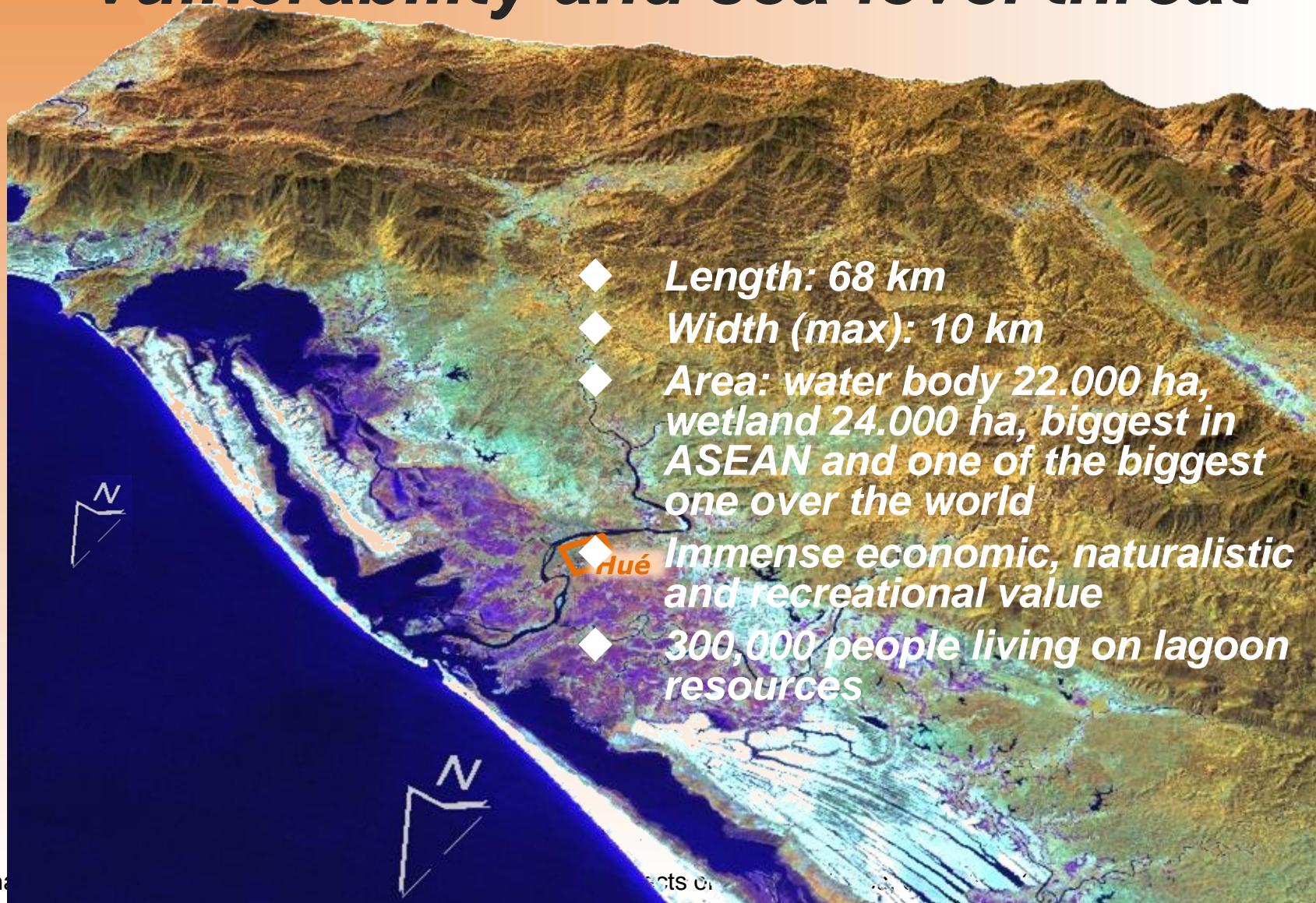
Shares



A development project in Vietnam which has involved local people in applying scientific strategies has helped to halt the degradation of a large lagoon ecosystem, say scientists.

An update about the IMOLA project (Integrated Management Of Lagoon Activities) — funded by the Italian and Vietnamese governments along with Italy's Veneto Region — was presented during the 38th session of the UN Food and Agriculture Organization (FAO) conference in Rome, Italy, last month (19 June).

The lagoon of Tam Giang-Cau Hai – a paradigm for coastal vulnerability and sea-level threat



***The lagoon of Tam Giang-Cau Hai
– a paradigm for coastal
vulnerability and sea-level threat***



The lagoon of Tam Giang-Cau Hai – a paradigm for coastal vulnerability and sea-level threat

Capture Fisheries:
Overexploited

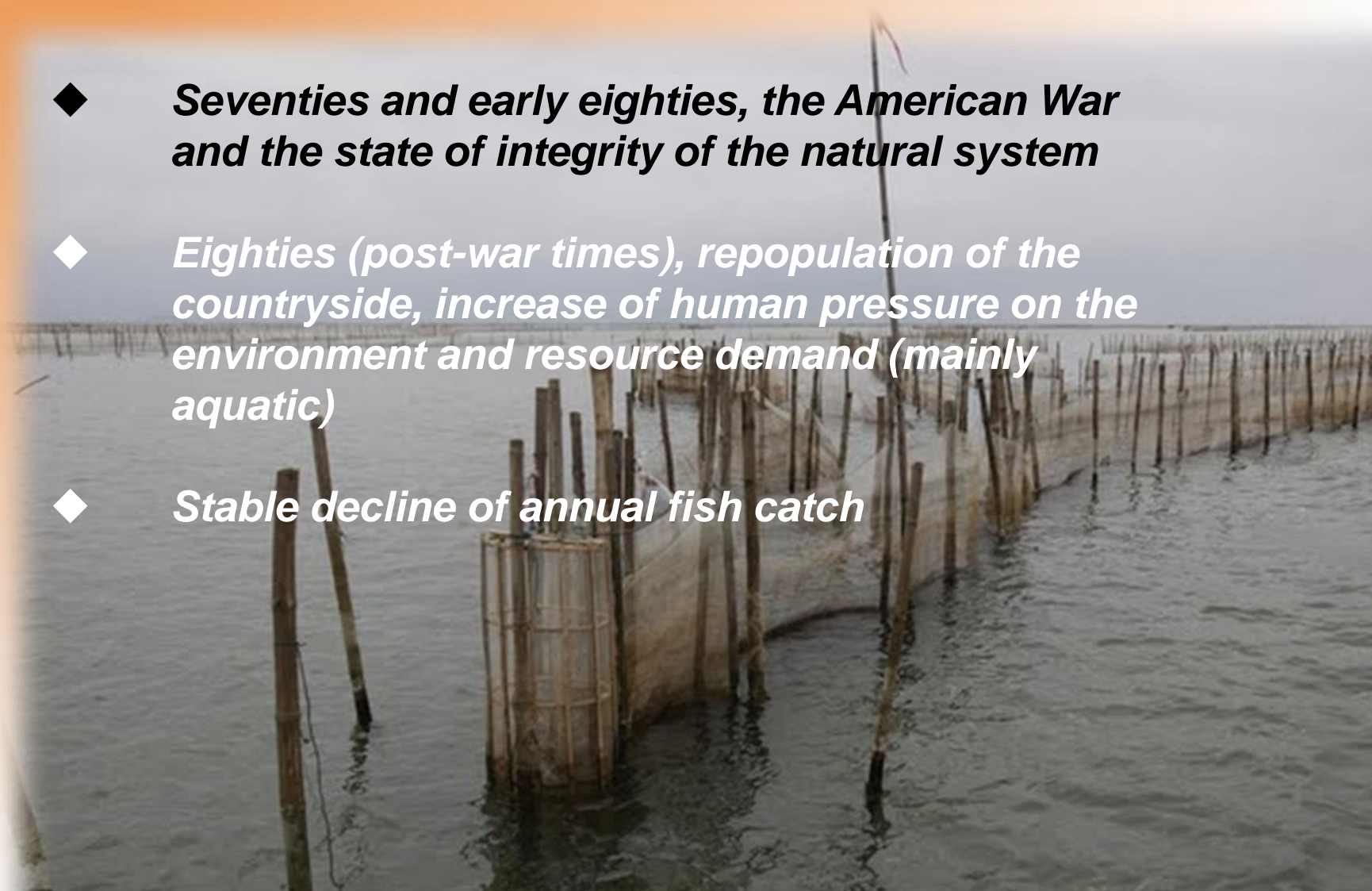
Aquaculture:
Excessively developed
since 1990

Population Growth:
300,000-350,000 people
rely on its resources (about
30% of the Provincial
population)

**Other Natural and
Developmental Factors:**
flooding/storms, infra
development, agriculture,
tourism, etc.

Historical background

- ◆ ***Seventies and early eighties, the American War and the state of integrity of the natural system***
- ◆ ***Eighties (post-war times), repopulation of the countryside, increase of human pressure on the environment and resource demand (mainly aquatic)***
- ◆ ***Stable decline of annual fish catch***



Historical background

- ◆ ***Nineties, development of aquaculture as a propeller of Provincial economy***
- ◆ ***Organic pollution and degradation of the aquatic environment***
- ◆ ***Habitat destruction and eradication of mangrove forests***
- ◆ ***Obstruction to water circulation, siltation, freshwater dominance, loss of biodiversity***

Recent socio-economic developments



FAO strategies to rehabilitate the Tam Giang-Cau Hai lagoon?

***Mitigate the impact of human actions:
adjust fishery and aquaculture***

***Emplace a community-based system
of environmental monitoring***

***Enhance preparedness and
coping capacity of communities towards climatic hazards***

***Conservation and protection of
habitats and biological resources***

Hydraulic adjustments



***Open-access regime:
the lagoon facing the
tragedy of commons***



IMOLA assisting and facilitating this transition through Fishery Associations



***Area-based lagoon
co-management
regime***

Characteristics of conservation areas





Improvement of the aquatic environment through modeling and engineering



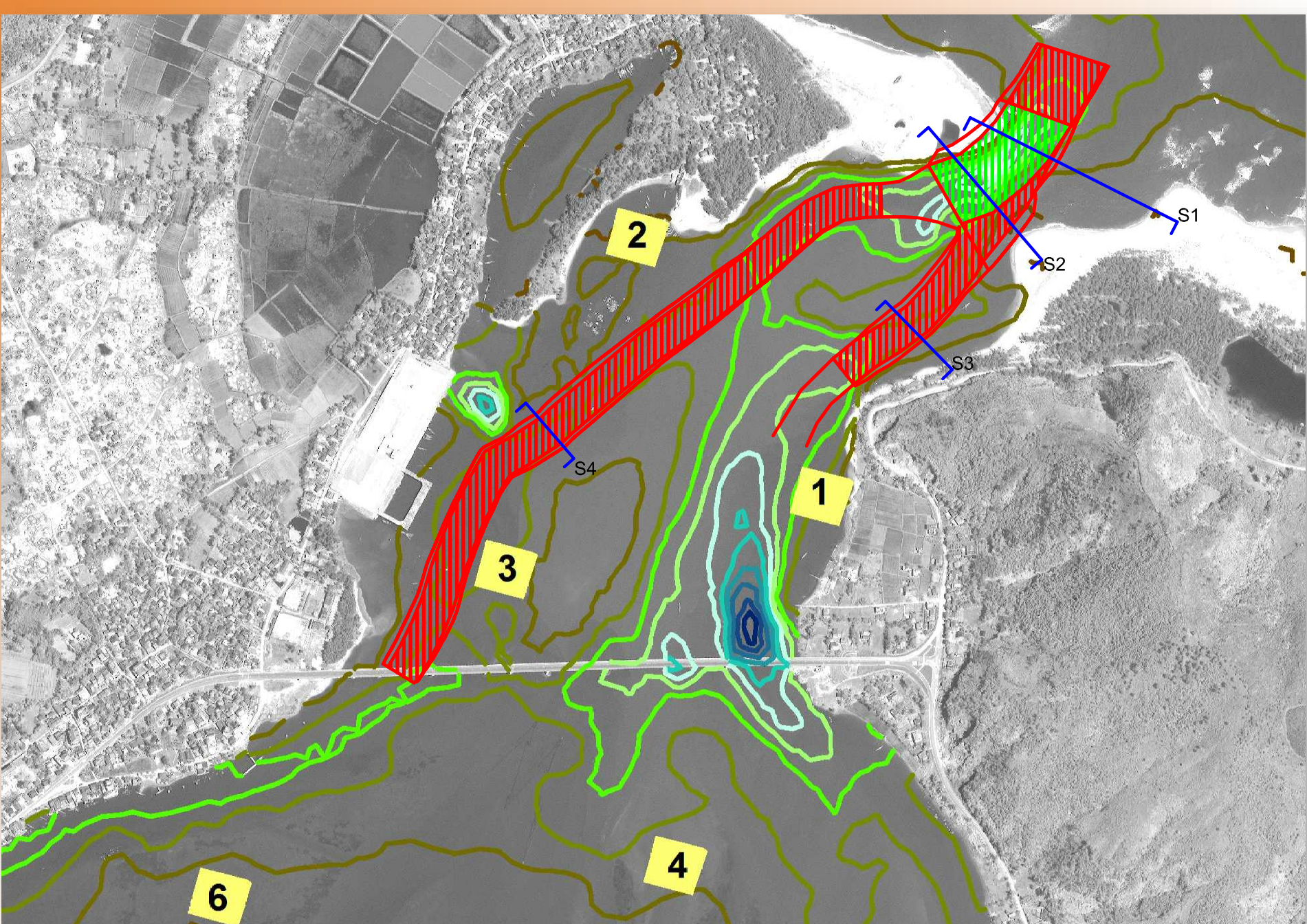
Thuy Tu channel
(5 km away)

Tu Dung occluded inlet
(2 km away)

Hai Phu lake

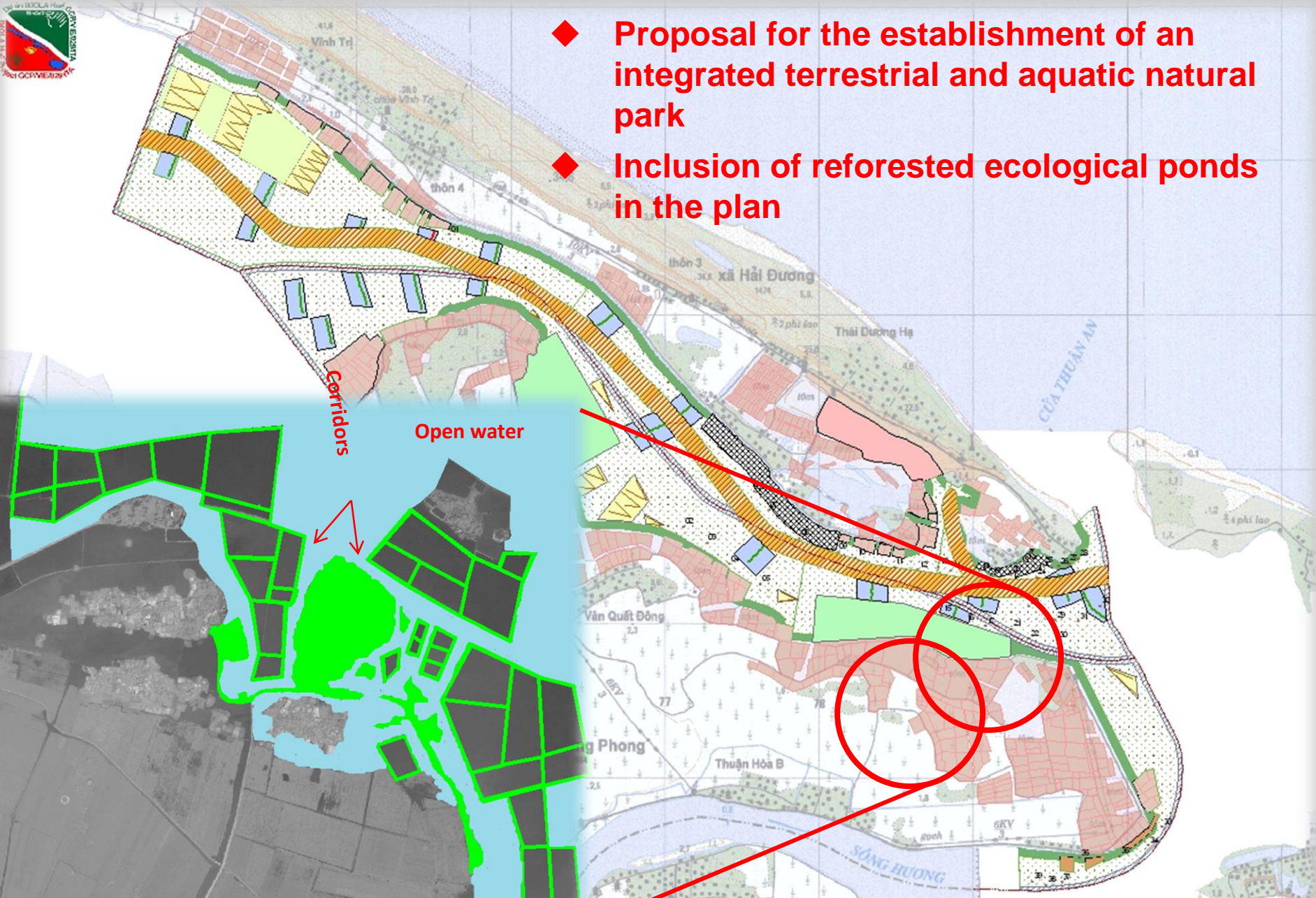
Tu Hien inlet

Long-shore sand drift





- ◆ Proposal for the establishment of an integrated terrestrial and aquatic natural park
- ◆ Inclusion of reforested ecological ponds in the plan



THE DIFFUSE MUSEUM

Each site is characterized by different conditions.
So there will be different design themes.

ANALYSIS





HERITAGE VALORIZATION

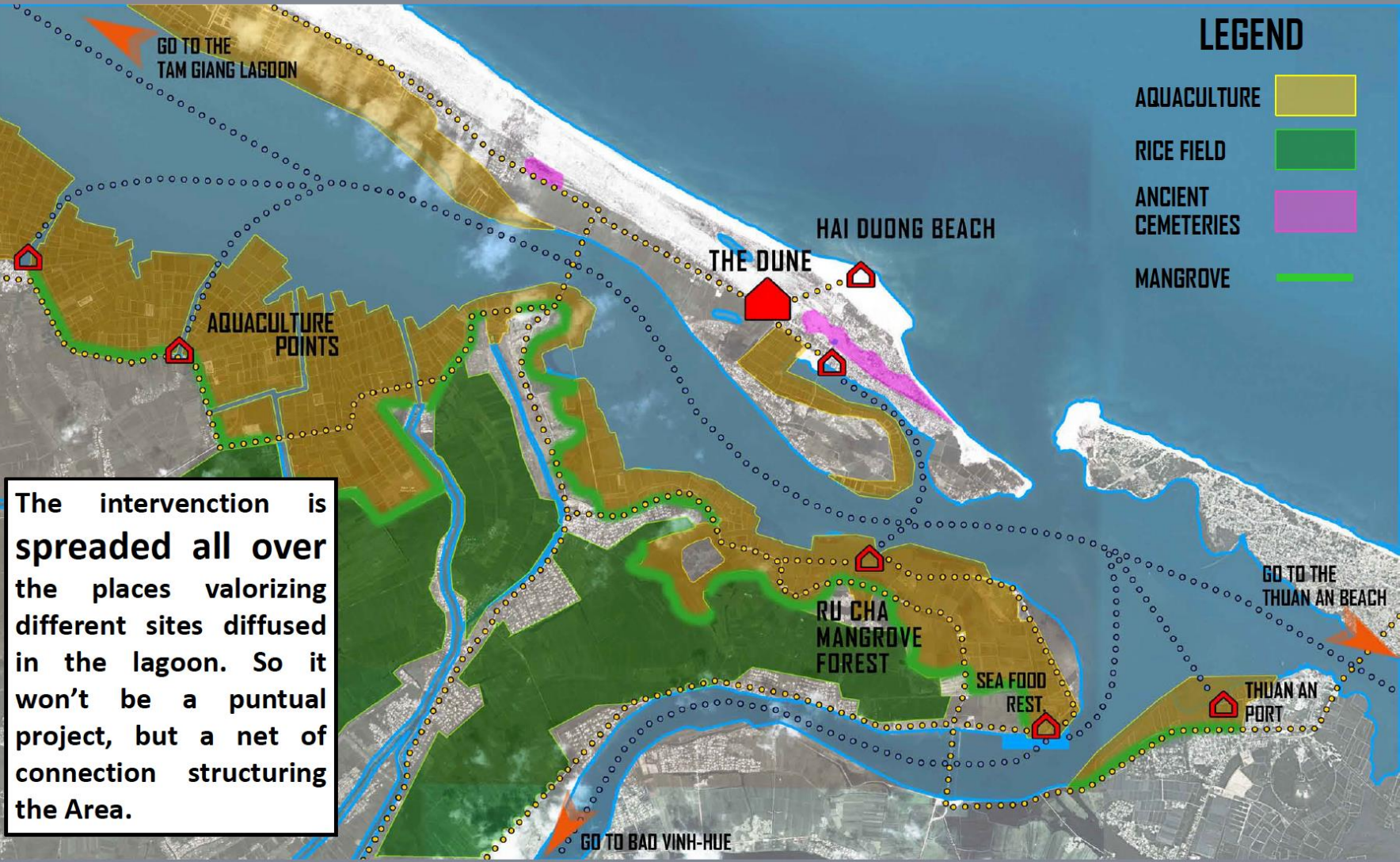
PROJECT GOALS

SITES

PROJECT

LEGEND

- AQUACULTURE 
- RICE FIELD 
- ANCIENT CEMETERIES 
- MANGROVE 



The intervention is spreaded all over the places valorizing different sites diffused in the lagoon. So it won't be a puntual project, but a net of connection structuring the Area.



An aerial photograph showing a vast expanse of brown, muddy floodwater that has inundated a coastal region. In the background, a city with a grid-like street pattern and a winding river are visible. The foreground shows the wing of an airplane, indicating the photo was taken from an elevated perspective. The overall atmosphere is hazy and somber, suggesting a significant environmental impact.

How does the future looks like?



*How to cope with this prospect in
the next century?*

*“no sign of a beginning, no
prospect of an end”*



***Community adaptation, enhance
coping capacity with changes,
improve community resilience***

***How to develop an adaptation
strategy?***



Identify diagnostic indicators of changes
Short-term prospect (decadal)
Proactive adaptation

**THANK YOU FOR YOUR KIND
ATTENTION**

