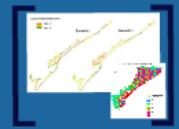


# Coastal Vulnerability Study to the Lagamar Area, South Coast of São Paulo, Brazil

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# To identify the Lagamar's vulnerable areas by the InVEST.

## No planned urbanization processes:

- Valo Grande freshwater's channel construction;
- Intense deforestation of mangrove and restinga vegetation;
- Intense LULCC between 1986 - 1999 (adding agriculture and urban areas).



Erosion by Subsidence process and Natural Sea Level Rise.

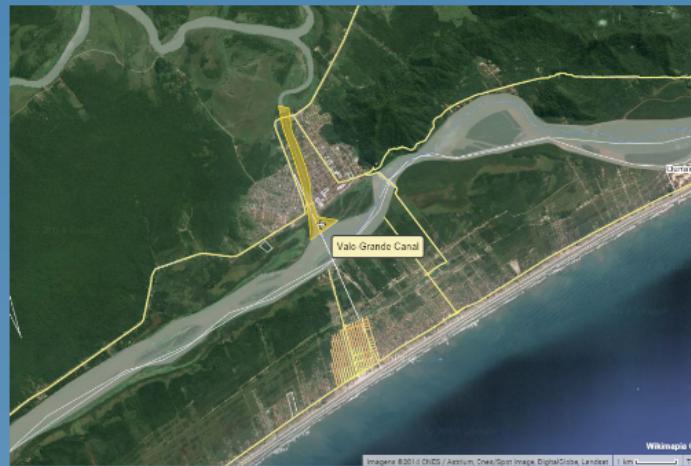


Flooding caused by extreme rain event, increasing the river's flow rate.



Subsidence + Erosion due to the intense flow of Valo Grande channel





## Scenario 1

The current environment.

Mangrove and Restinga forest areas were occupied by 15 traditional communities. This area is very deforested and threatened by human activities.

The Valo Grande channel brings a huge freshwater amounts from the continent to those estuaries ecosystems. The sand strip is almost completely reduced.

It shows high vulnerability indexes ( $\geq 4$ ), affecting mainly two urban population centers. The damage caused by extreme events would be potentiated.

## Scenario 2

The highest ecosystem conservation status.

The sand strip was recomposed and the original riparian vegetation was rebuilt on the riverbanks, restoring the mangrove and restinga vegetation.

The housing areas and the Valo Grande channel were also kept.

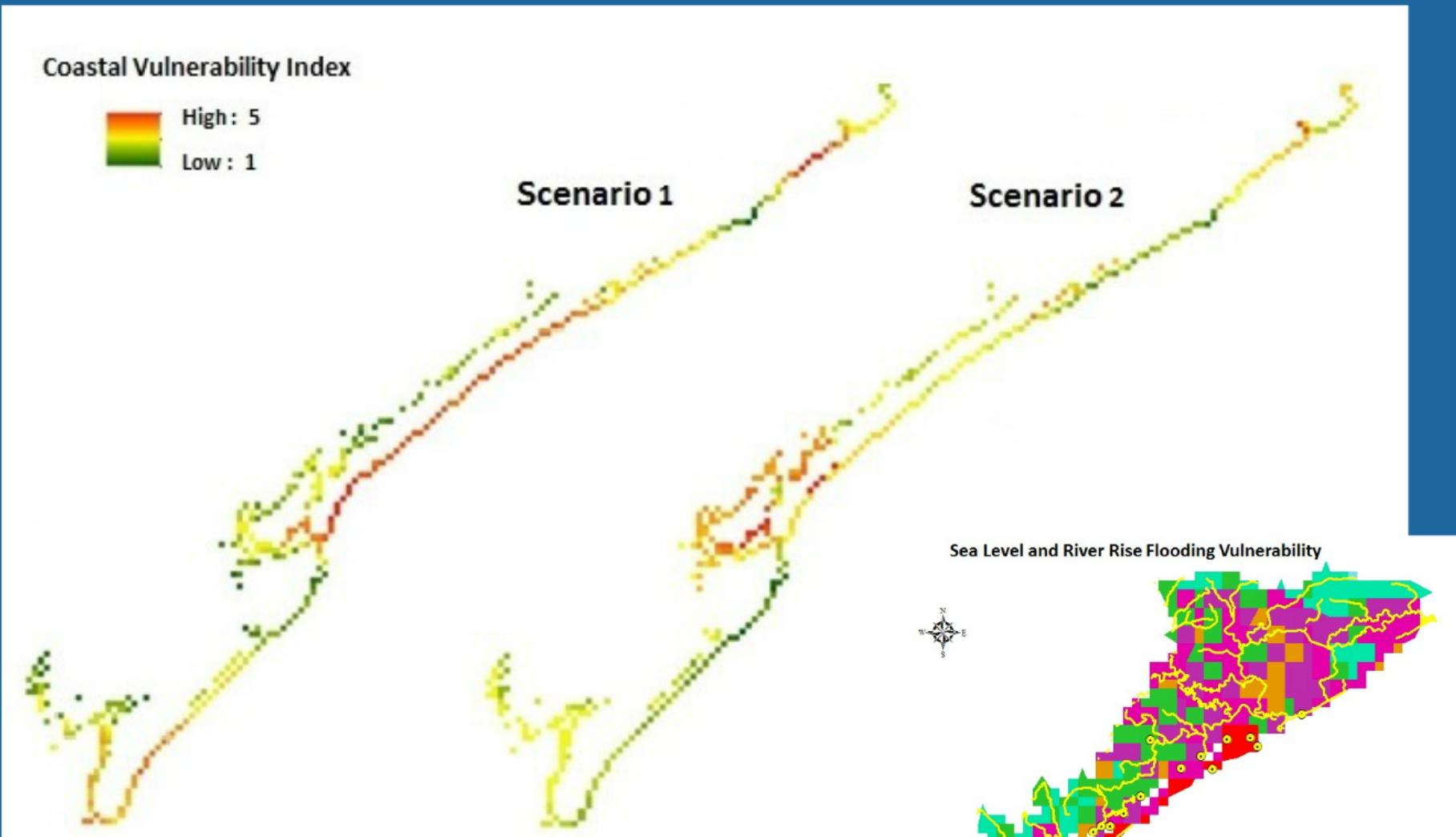
It shows lower vulnerability indexes (1.5 to 3.4), demonstrating how ecosystem conservation is essential to avoid economic losses and preserve lives and livelihoods.

# InVEST

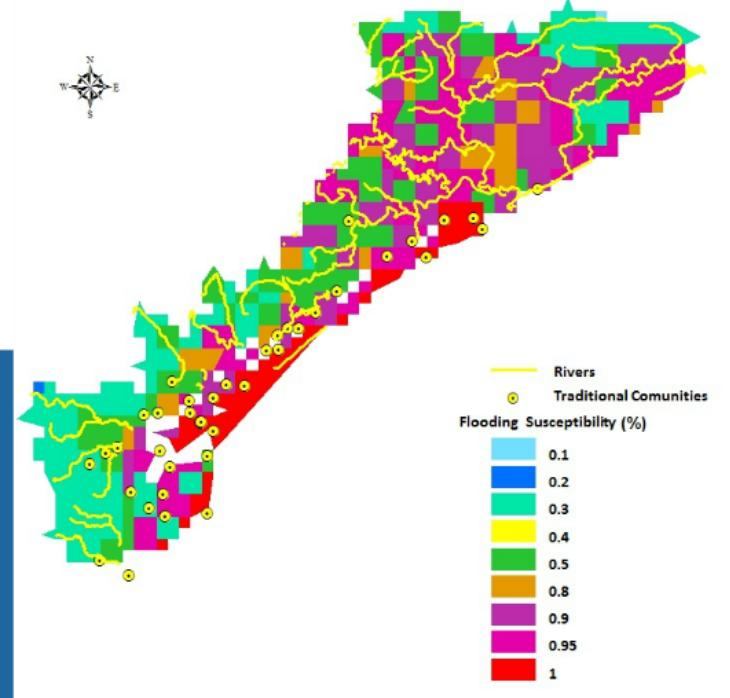
Integrated Valuation of  
Environmental Services and Tradeoffs

The Natural Capital Project  
University of Stanford (USA)





Sea Level and River Rise Flooding Vulnerability



# CONCLUSION

1. The recompose the strip sand and the endemic vegetation (especially on the urban area) minimizes or prevents the damage caused by the flooding, sea level rise and erosion processes.
2. Removing of the homes from vulnerable areas is a political decision that has been avoided.
3. An interesting transverse public policy would be the deployment of mussels breeding and oysters farming, both near the sand strip as within the mangroves rivers.
4. It would represent a sustainable alternative: socioeconomic to traditional populations and ecological, to improve the water's quality and restore the sediment originally lost by subsidence processes and erosion;
5. In addition, this paper indicates how the ecosystem modeling tools can help to the planning and management areas, achieve a balance among conservation, social, cultural and economic interests.



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