



# World Conference on Climate Change


Oral Presentation

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Land Use Exposure  
Analysis in the  
Occurrence of a  
Storm Surge Event

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# Background of the study

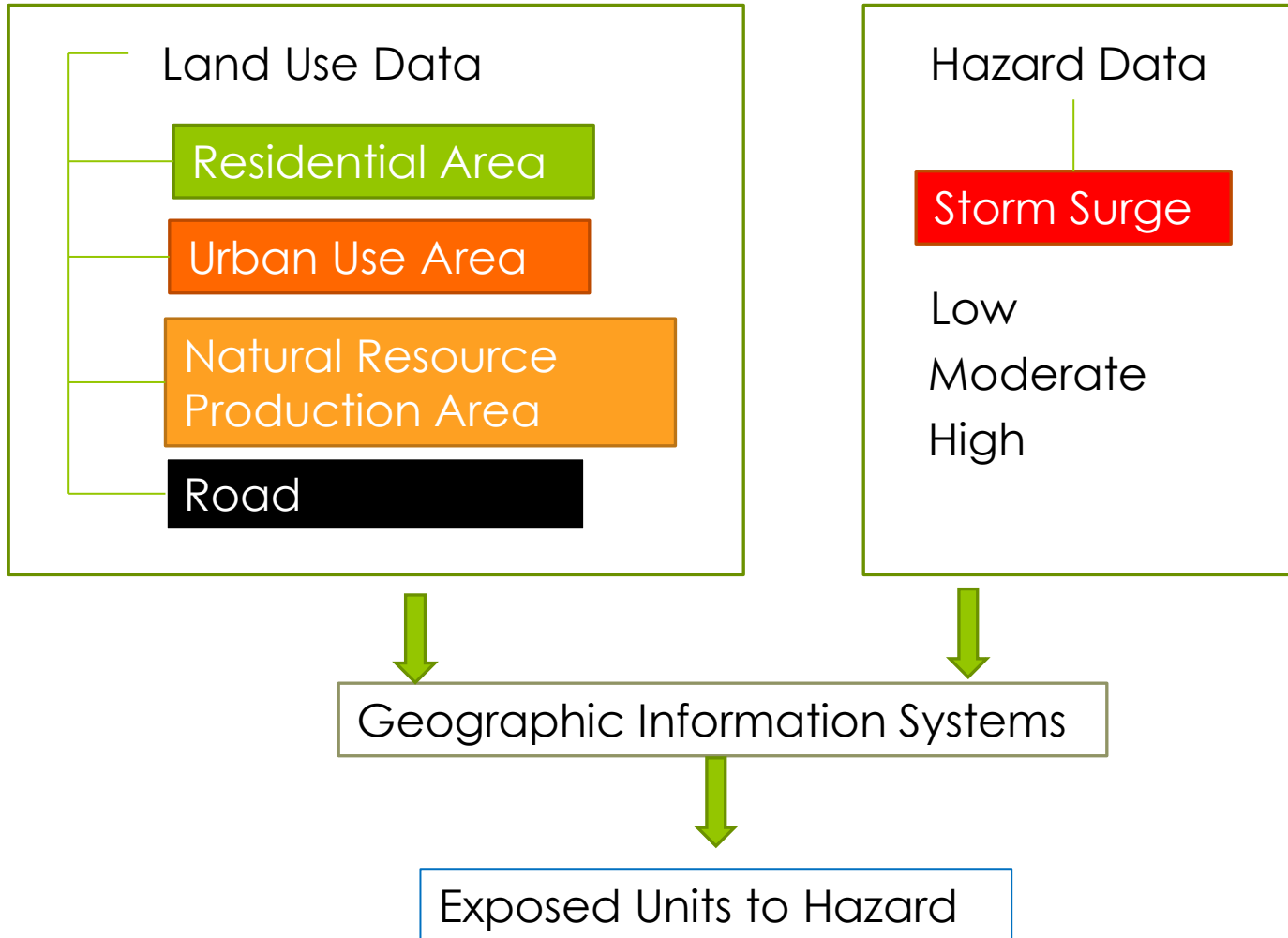
# Significance of the Study

- Climate Change Adaptation
  - Identifying exposed elements to a specific hazard
  - Information for Vulnerability Assessment
- Input to Land Use Planning
  - Spatial Policy Interventions
  - Zoning Ordinance

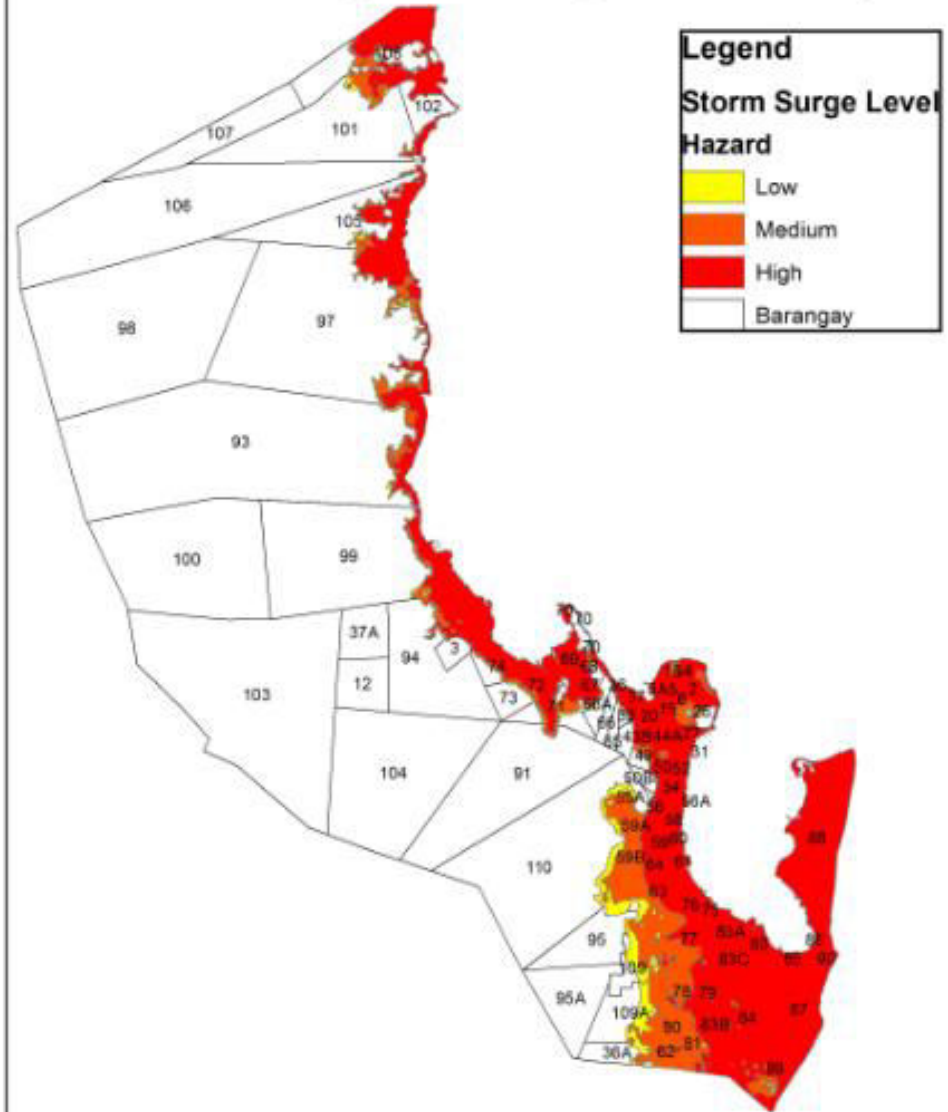
# Definitions

- Vulnerability is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity. (IPCC AR 4 Glossary)
- Exposure is the presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected. (IPCC AR 5 Glossary)
- Storm Surge is the temporary increase, at a particular locality, in the height of the sea due to extreme meteorological conditions (low atmospheric pressure and/or strong winds). The storm surge is defined as being the excess above the level expected from the tidal variation alone at that time and place. (IPCC AR 3 Glossary)

# Methodology



## Tacloban City Storm Surge Hazard Map



Source of Data

Barangay Boundary: Tacloban City Planning and Development Office (2015)

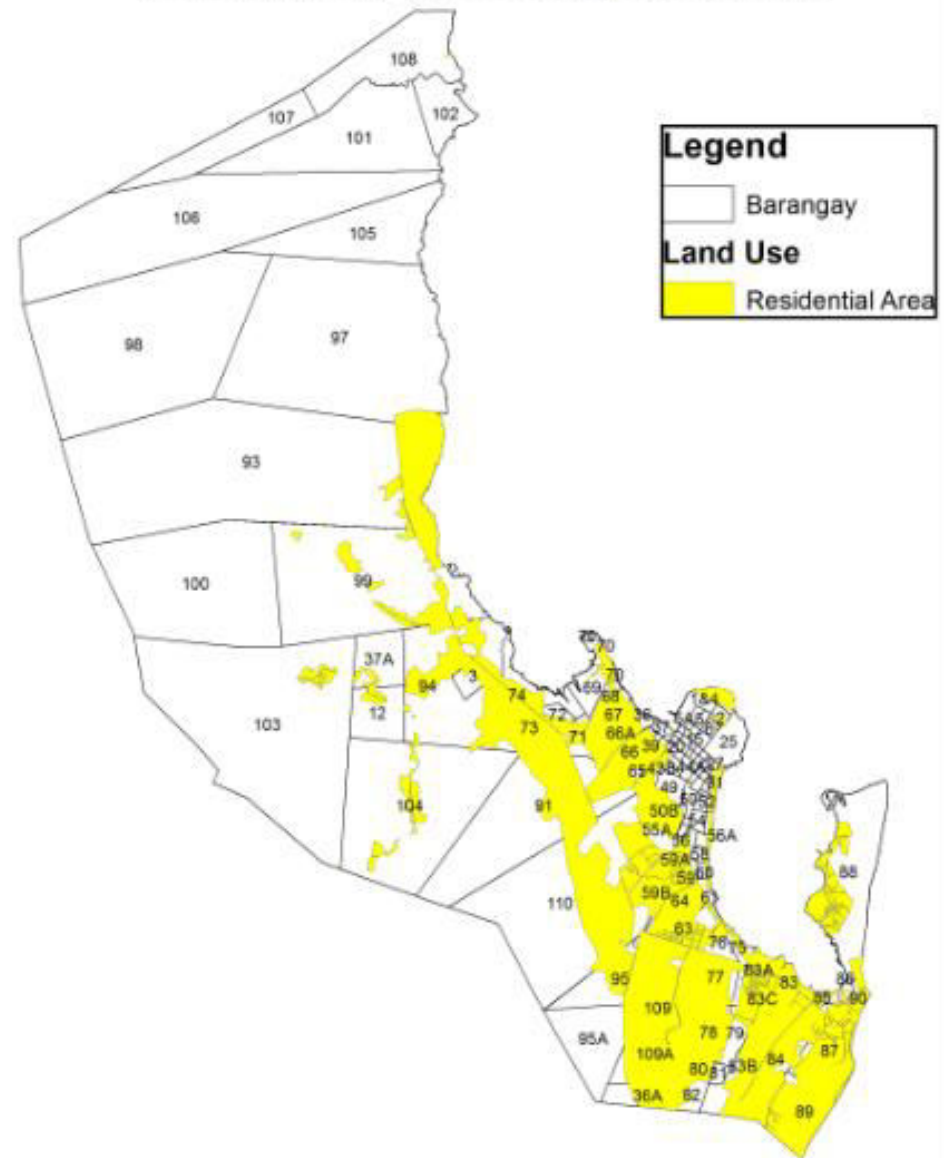
Hazard Data: DOST Project NOAH (2015)

Storm Surge	Hectares
Low	154.321
Medium	487.992
High	1654.99



- Residential Area
  - Indicates the spatial location of potentially affected persons
  - 2,046.67 Hectares

Tacloban City Residential Area Map

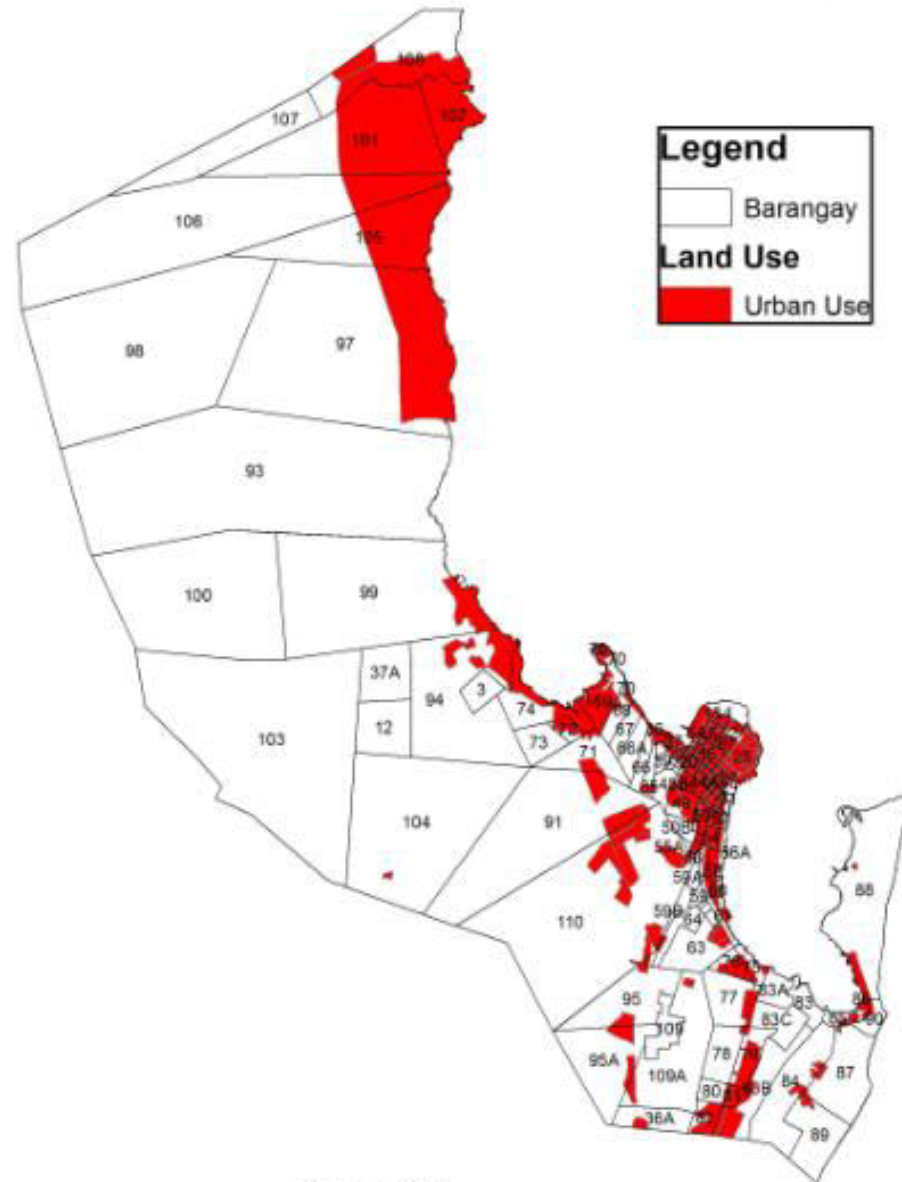


Source of Data  
 Barangay Boundary and Land Use Data:  
 Tacloban City Planning and Development Office (2015)



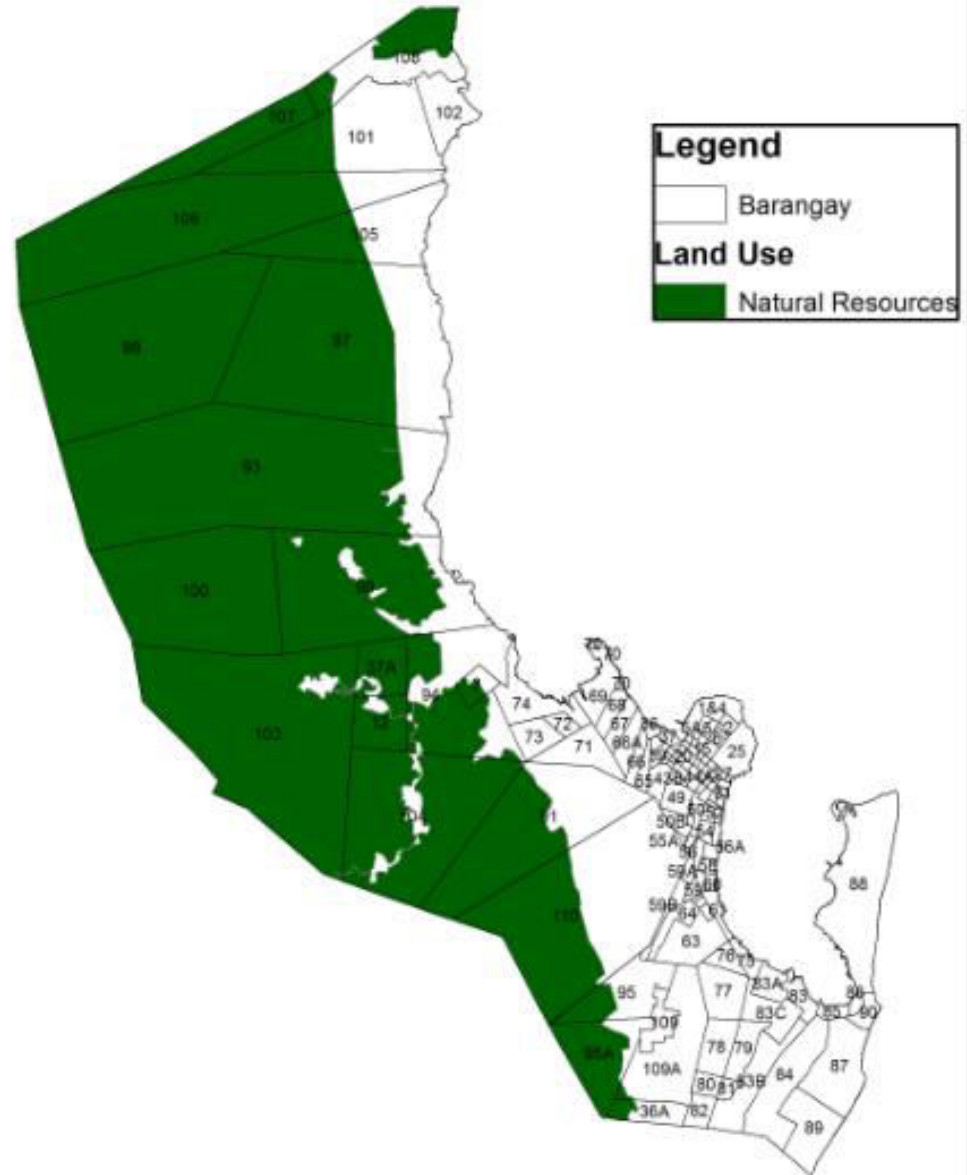
- **Urban Use Area**
  - Pertains to built environment used for
  - Commercial, industrial, tourism, institutional, and other land uses unique to the locality
  - 1,388.85 Hectares

Tacloban City Urban Use Area Map



Source of Data  
Barangay Boundary and Land Use Data:  
Tacloban City Planning and Development Office (2015)

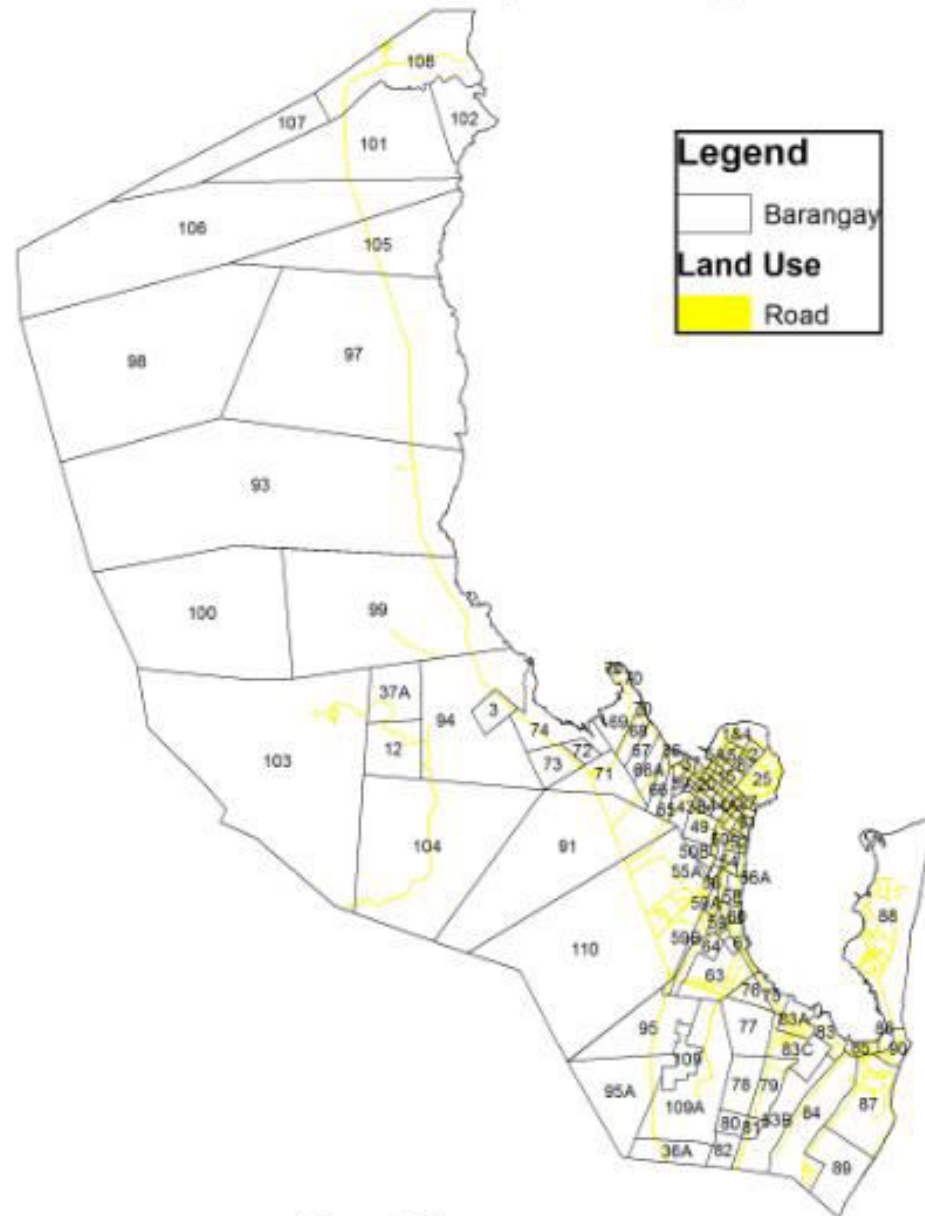
## Tacloban City Natural Resources Area Map



- **Natural Resources Production Area**
  - Pertains to areas utilized for crop, fisheries, and forest production
- 6,512.37 Hectares

- Roads
- 102.819 Hectares

## Tacloban City Road Map

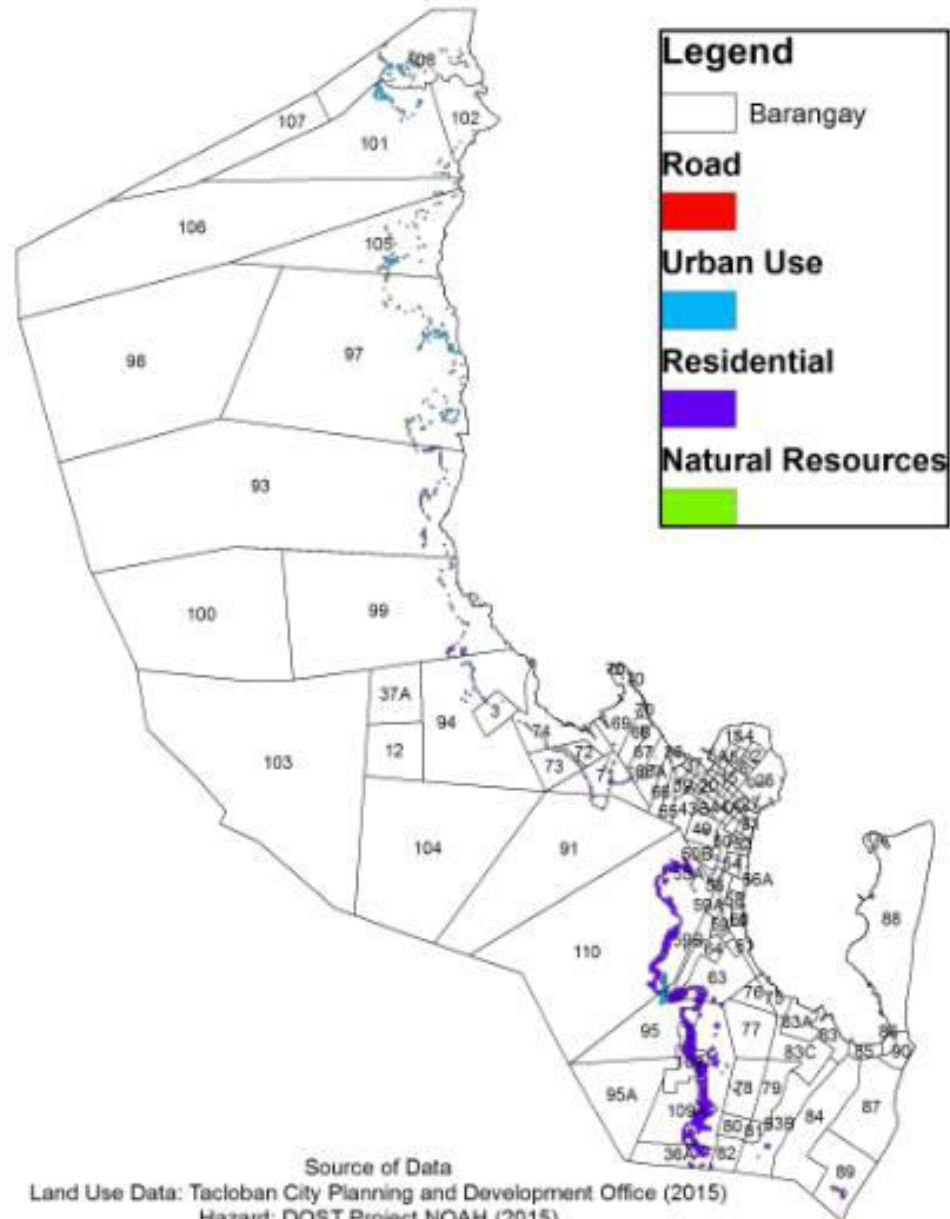


Source of Data

Barangay Boundary: Tacloban City Planning and Development Office (2015)

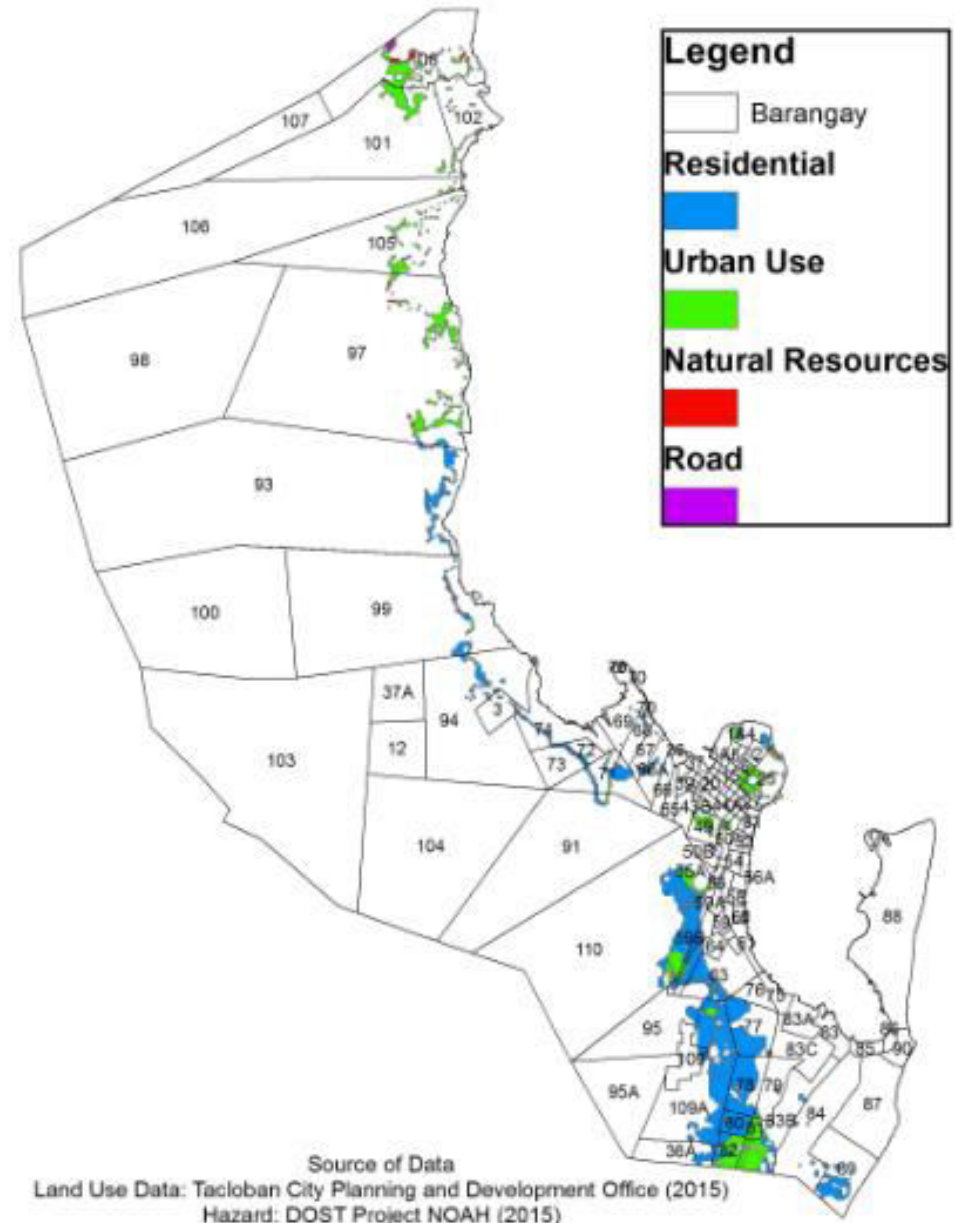
Roads: PhilGIS (2015)

## Tacloban City Exposure to Storm Surge (Low Level) Map



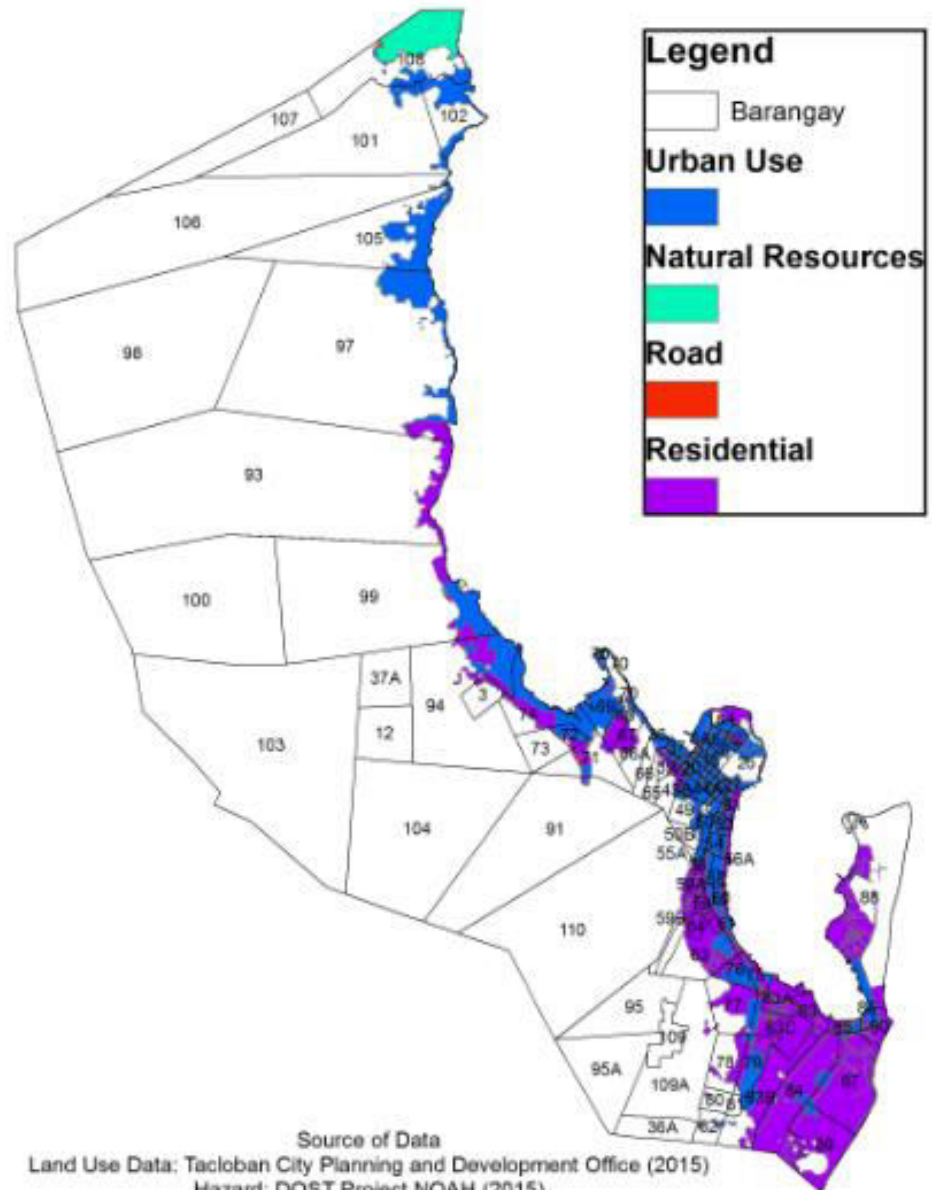
Exposure Unit	Affected Area (Hectares)
Natural Resources	3.987
Residential	109.755
Road	3.104
Urban Use	37.474

## Tacloban City Exposure to Storm Surge (Moderate Level) Map



Exposure Unit	Affected Area (Hectares)
Natural Resources	7.674
Residential	311.396
Road	14.680
Urban Use	154.187

## Tacloban City Exposure to Storm Surge (High Level) Map



Exposure Unit	Affected Area (Hectares)
Natural Resources	73.617
Residential	792.773
Road	58.456
Urban Use	583.788



# Summary

- Increase of affected units from low to high levels of storm surge
- Affected units in the high level of storm surge may be of concern due to their large sizes
- Residential Area with total highest percentage

<b>Storm Surge Level</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>Total</b>
	<b>Affected Area in %</b>			
<b>Natural Resources</b>	0.0612	0.118	1.13	<b>1.31</b>
<b>Residential</b>	5.36	15.21	38.73	<b>59.3</b>
<b>Road</b>	3.019	14.27	56.85	<b>74.14</b>
<b>Urban Use</b>	2.7	11.11	42.049	<b>55.86</b>



# Acknowledgements

- Dr. Jun Castro
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