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18-LB-4646-ASTMH

INTRODUCTION

We present the Case Study of Duran, Ecuador, a coastal city of 235.000 inhabitants which are exposed to annual flooding events that increase the risk of vector-borne and other infectious diseases. Duran is an industrial satellite city of Guayaquil, the largest city of Ecuador, with a rapid population growth that lead to a large area of informal settlements on the city. Applying an integrated climate risk management and urban health focus, we assess the Duran strategies for reducing vulnerability to flooding, landslides and heat waves through a collaborative inter-sectoral approach among the health, urban, and scientific actors. Stakeholder engagement between municipality and researchers are providing evidence and building knowledge to implement “low regret” adaptation strategies and community active participation.

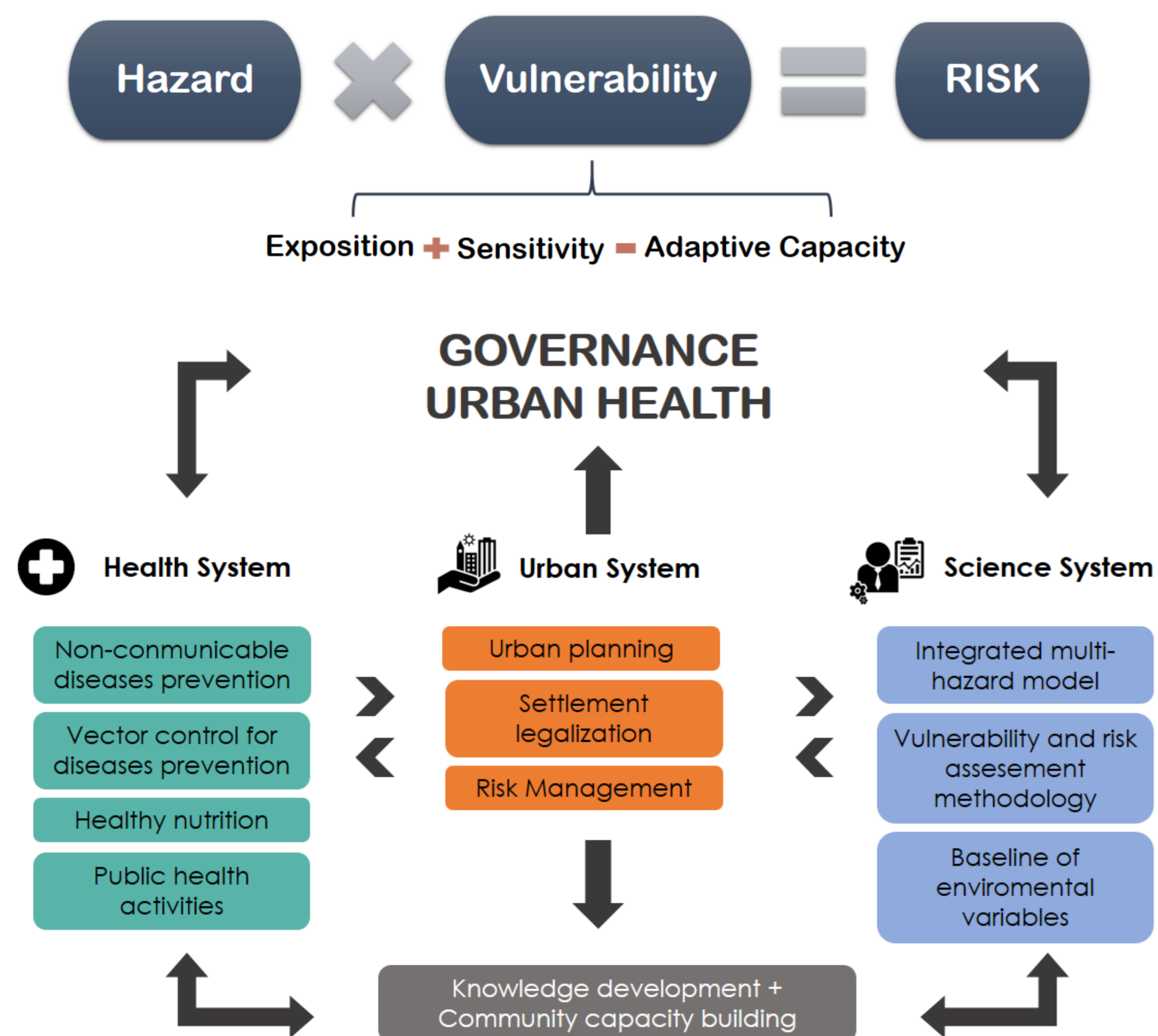
Population	Urban (hab, %)	Rural (hab, %)
Male	116,485 (49.4%)	
Female	119,314 (50.6%)	
Total	235,800	4716 (2%)

Population density : 4000 hab/Km²



METHODOLOGY

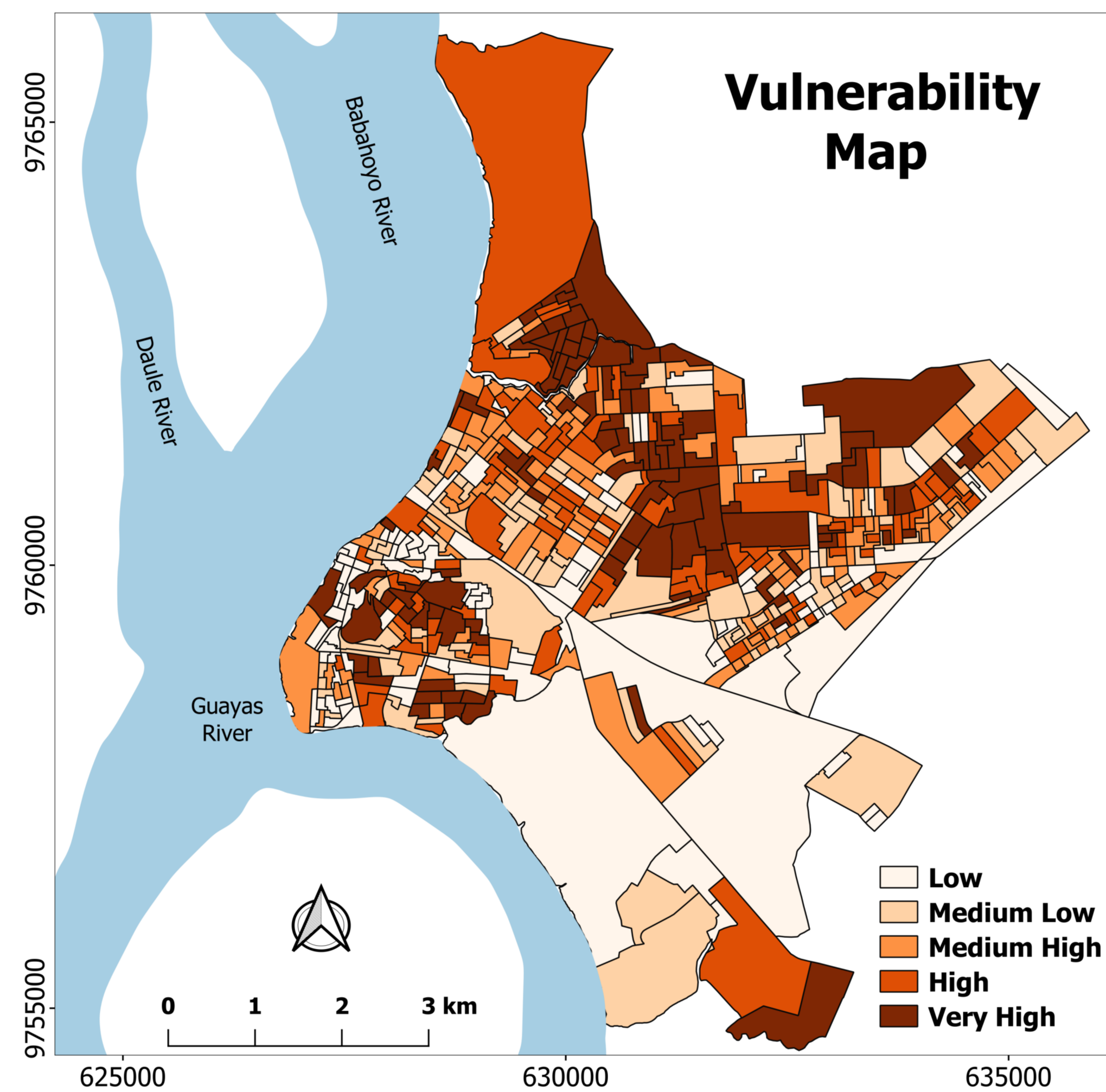
Different phases involve this study; 1) Mapping hazards of flooding and urban heat island, 2) Assessing the socio-ecological vulnerability of Duran, 3) Identifying strategies through “low regret” for urban government and community participation. Applying a framework of governance for urban health among three systems: health, urban, and science system. A cross cutting process of capacity building and knowledge development is bringing the evidences for enhancing the urban health and the community practices for the resilience of the city stakeholders.



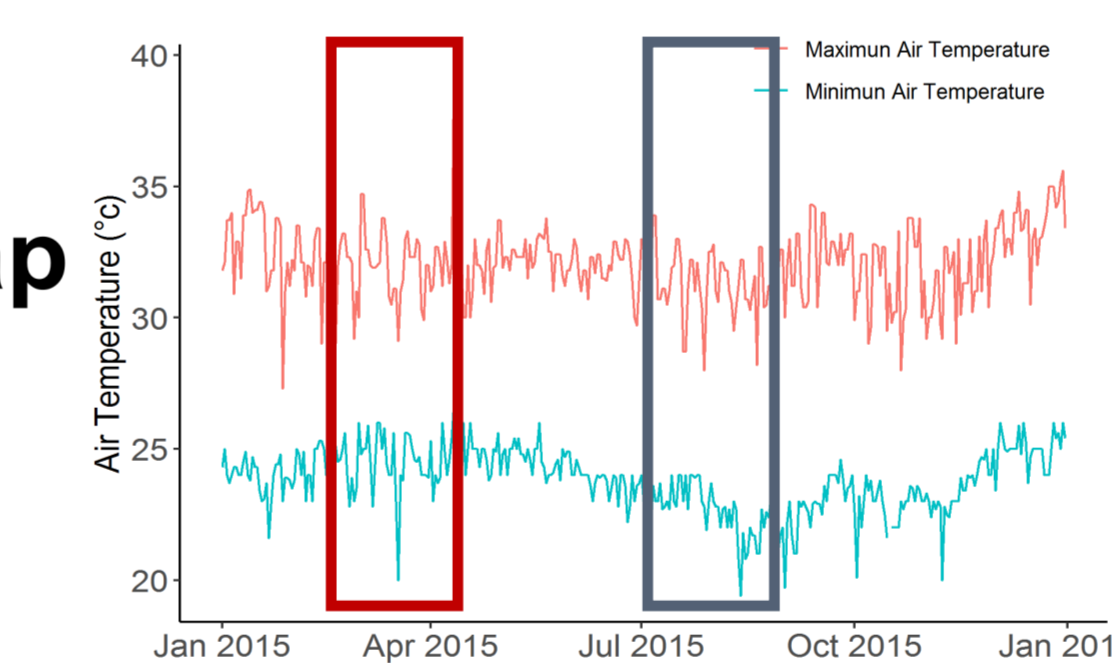
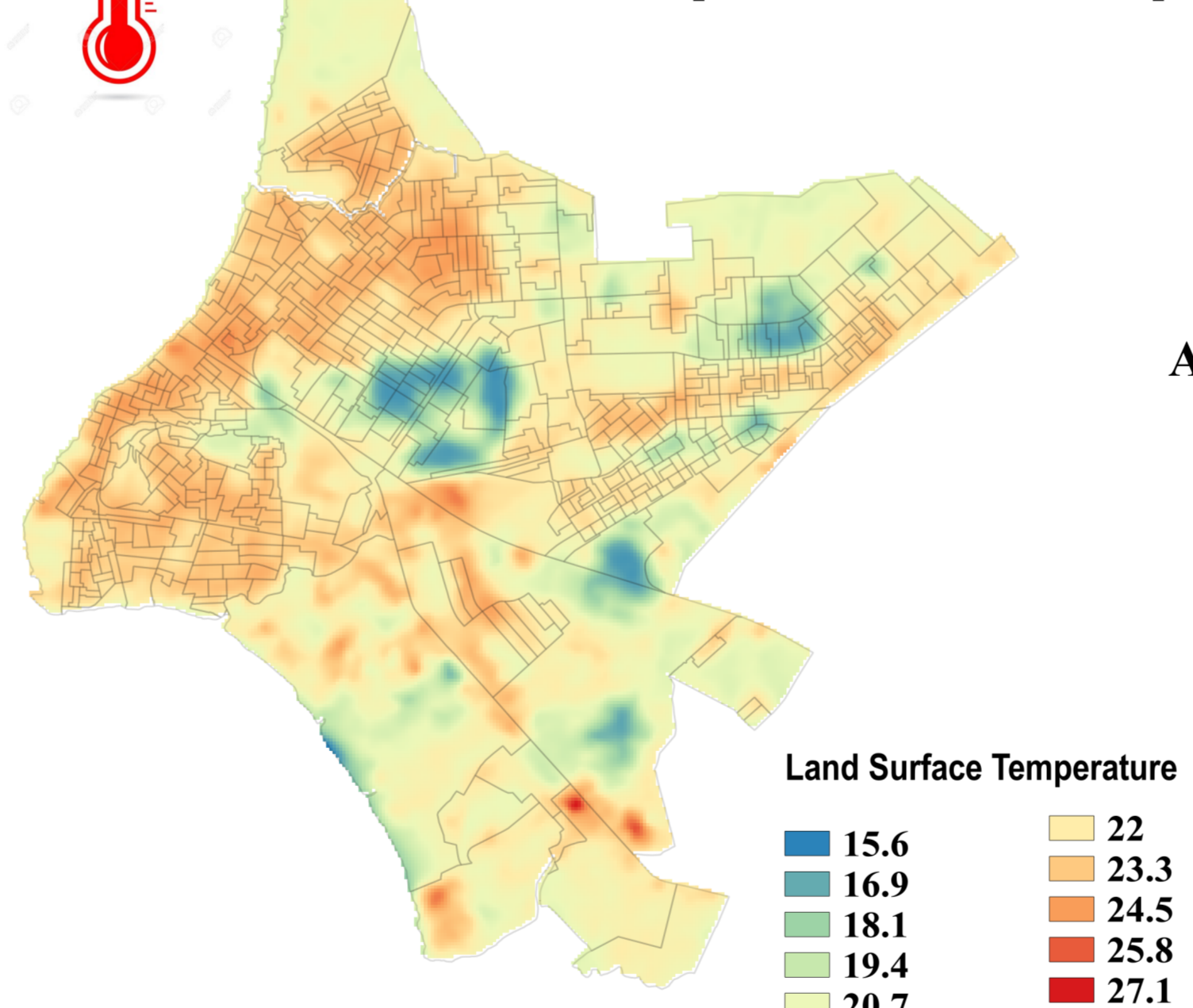
RESULTS

Urban governance among 3 sectors developing “low regret” strategies to reduce the vulnerability and impacts on human health:

- Duran Resilience, a **Municipal Project**, targeting informal settlements to legalized slums and improve basic infrastructure.
- Health Promotion and Community engagement, a **Ministry of Health Project**, to manage vector-borne diseases, healthy nutrition, and Non Transmissible Diseases.
- Climate resilience, a **University Research project**, integrating urban data, health information, vulnerability, hydro climatic risks in a technological– visualization platform transferred to urban and health decision makers.

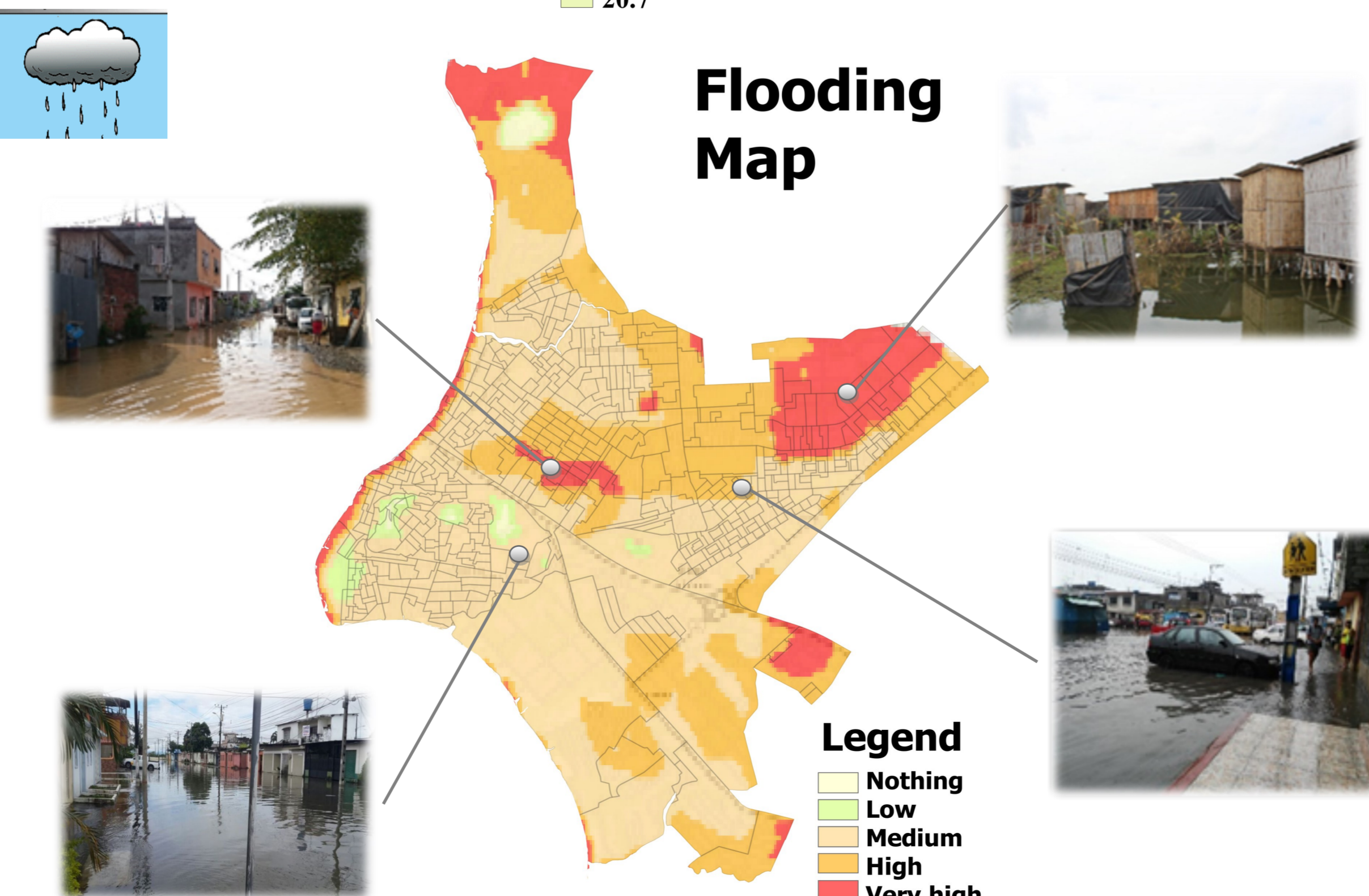


Land Surface Temperature Map



- Mapping the sensitivity of the city to urban heat Island
- Mapping flood hazard, vulnerability and risk, allows to determine where, when, why, and who are affected.

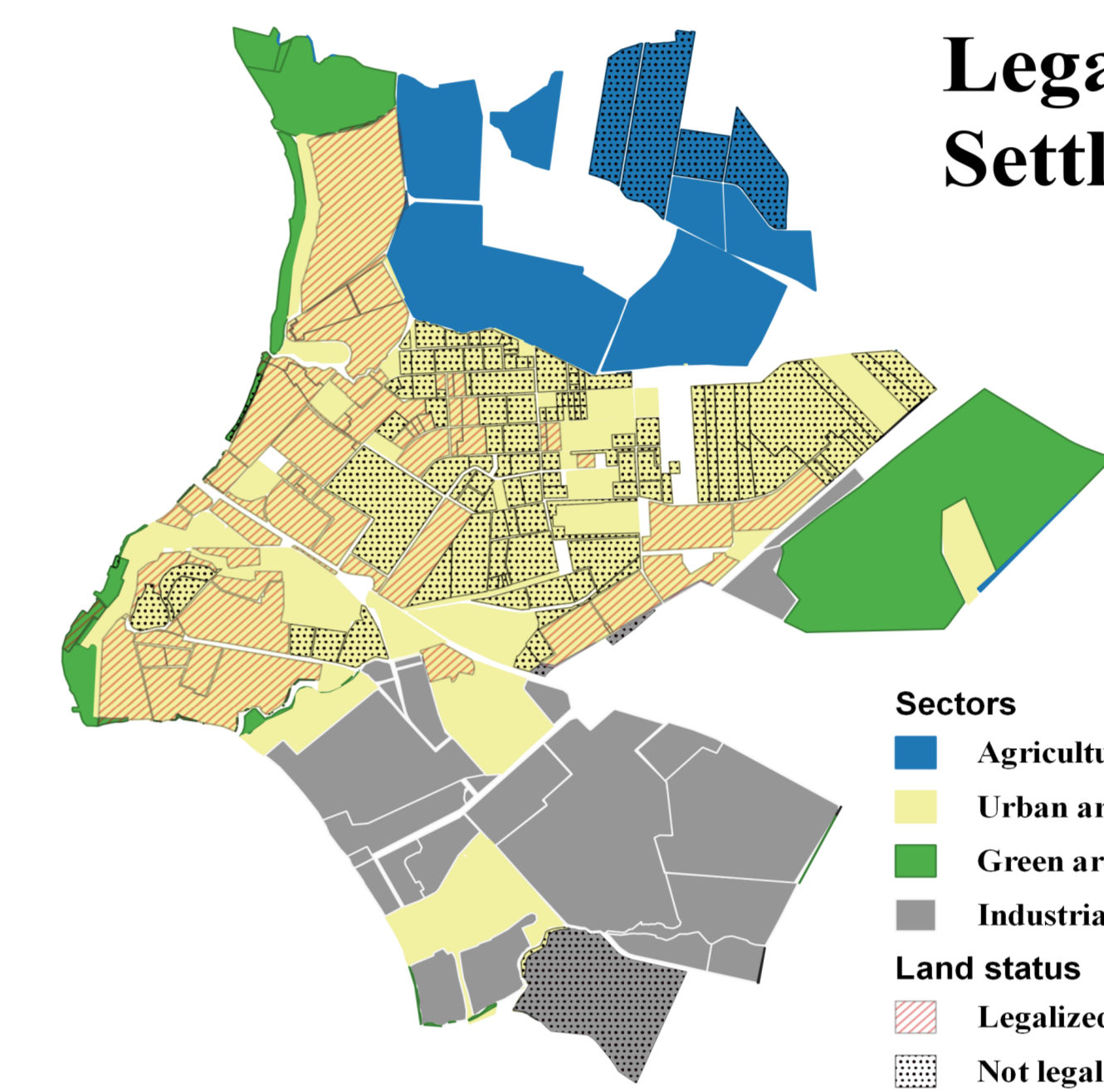
Flooding Map



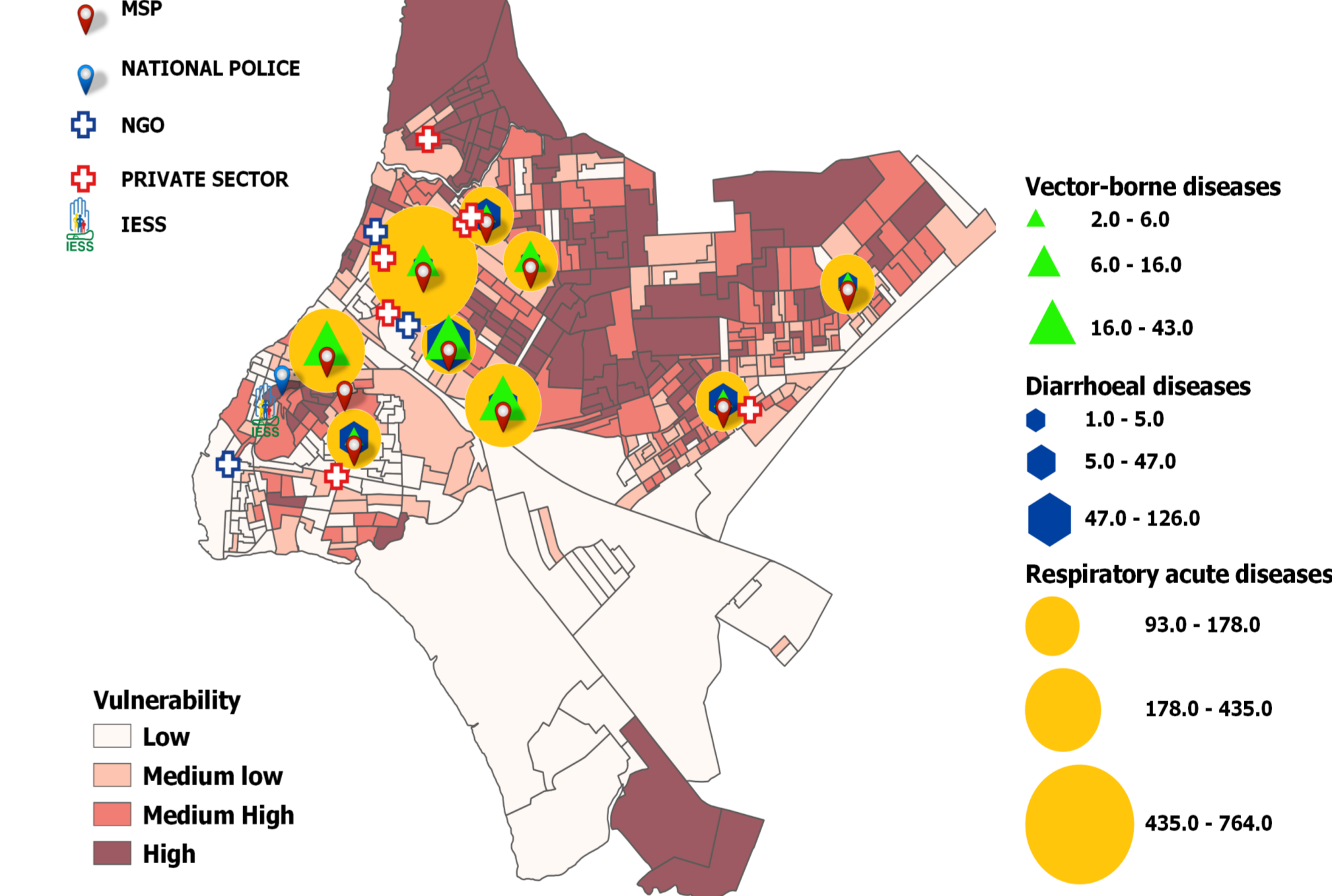
KEY MESSAGES

- Cities can be leaders in assuming political responsibilities for *no regret* reasures.
- Disaster Management and Adaptation to Climate Change can determine synergistic measures that improve Urban Health.
- Spatial Planning and Climate Services for Urban Health are processes that need to build in scientific knowledge and community engagement.

URBAN STRATEGIES



Number of Diseases cases on 2015



CONCLUSIONS

- Duran Municipality (local government) make the decision to legalized informal settlements as measure to increase resilience of the community facing hydroclimatic risks.
- Ministry of Health (national government) investing in health promotion to prevent climate sensitive diseases.
- Escuela Superior Politecnica del Litoral (local university) is translating scientific knowledge to enhance urban resilience to different

ACKNOWLEDGEMENTS

This work would not have been possible without the financial support of Municipality of Duran and ESPOL Polytechnic University for the research Project “Climate Resilience of Duran: Designing Adaptation Strategies for hydroclimatic risks” and a committed interdisciplinary research team and international scientific advisers.

REFERENCES

- Caiaffa, W., Friche, A., Dias, M., & Meireles, A. (2013). Developing a Conceptual Framework of Urban Health Observatories toward Integrating Research and Evidence into Urban Policy for Health and Health Equity, 91(1), 1–16.
- Valle, F. (2017). Flood vulnerability analysis in Durán Canton, Ecuador: Case study of the urban area. Politecnico di Torino & University of Turin.
- Weber, S., Sadoff, N., Zell, E., & de Sherbinin, A. (2015). Policy-relevant indicators for mapping the vulnerability of urban populations to extreme heat events: A case study of Philadelphia. Applied Geography, 63, 231–243.