

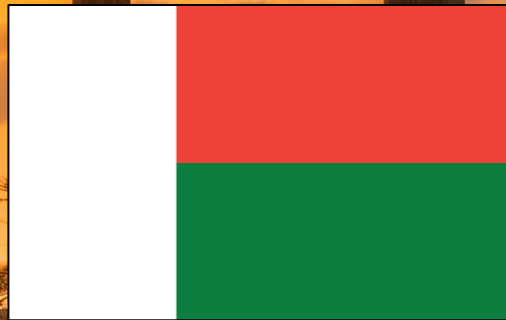
# Climate Resilience on Islands

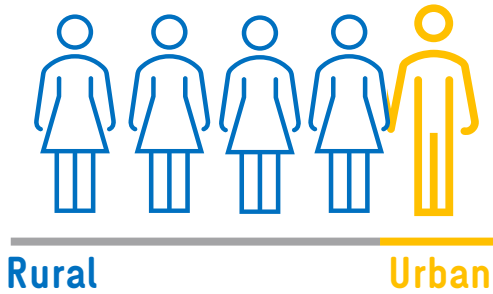
The case of Antananarivo,  
Madagascar

PhD Anais De Keijser, Climate Adaptation Expert, Sweco  
[anais-marie.dekeijser@swecobelgium.be](mailto:anais-marie.dekeijser@swecobelgium.be)

05/07/2023

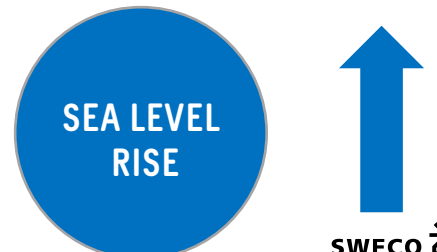
# Madagascar





Antananarivo

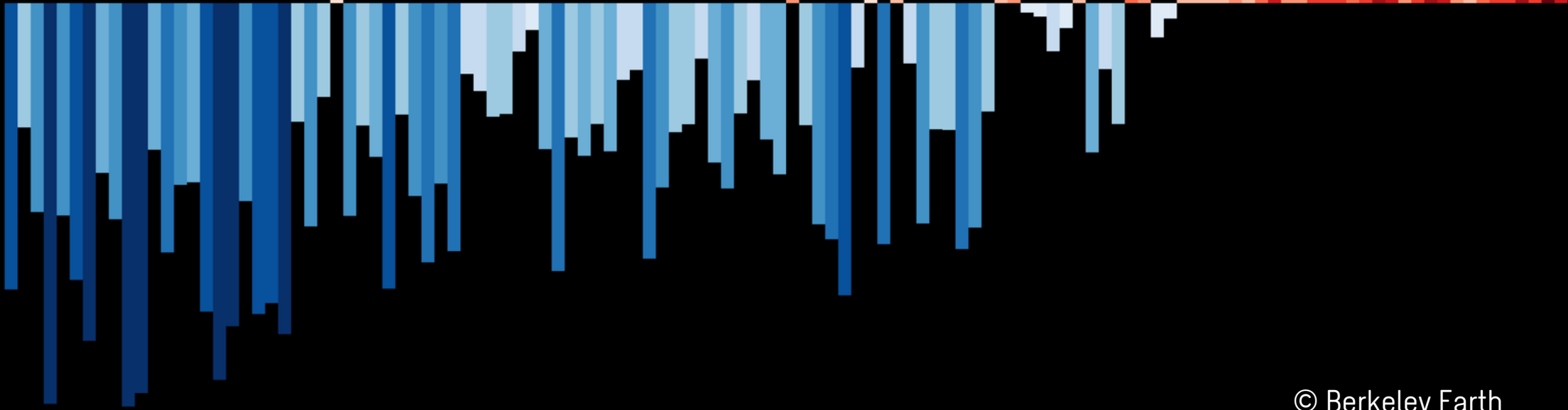
CLIMATE CHANGE



# Temperature change in Madagascar



1901 2020





2050

2100



-13%

-16%

# Average yearly precipitation

(National Adaptation Plan, 2021)

FLOODS &  
STORMS

MADAGASCAR



© Nasa Earth



and regional sea level rise, relative to a 1995-2014 baseline.

[About the data](#)

**Data**

Scenario (i)

Warming Level

**Process**

Total Sea Level ⬆️⬇️⬆️

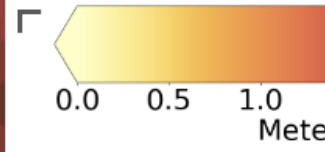
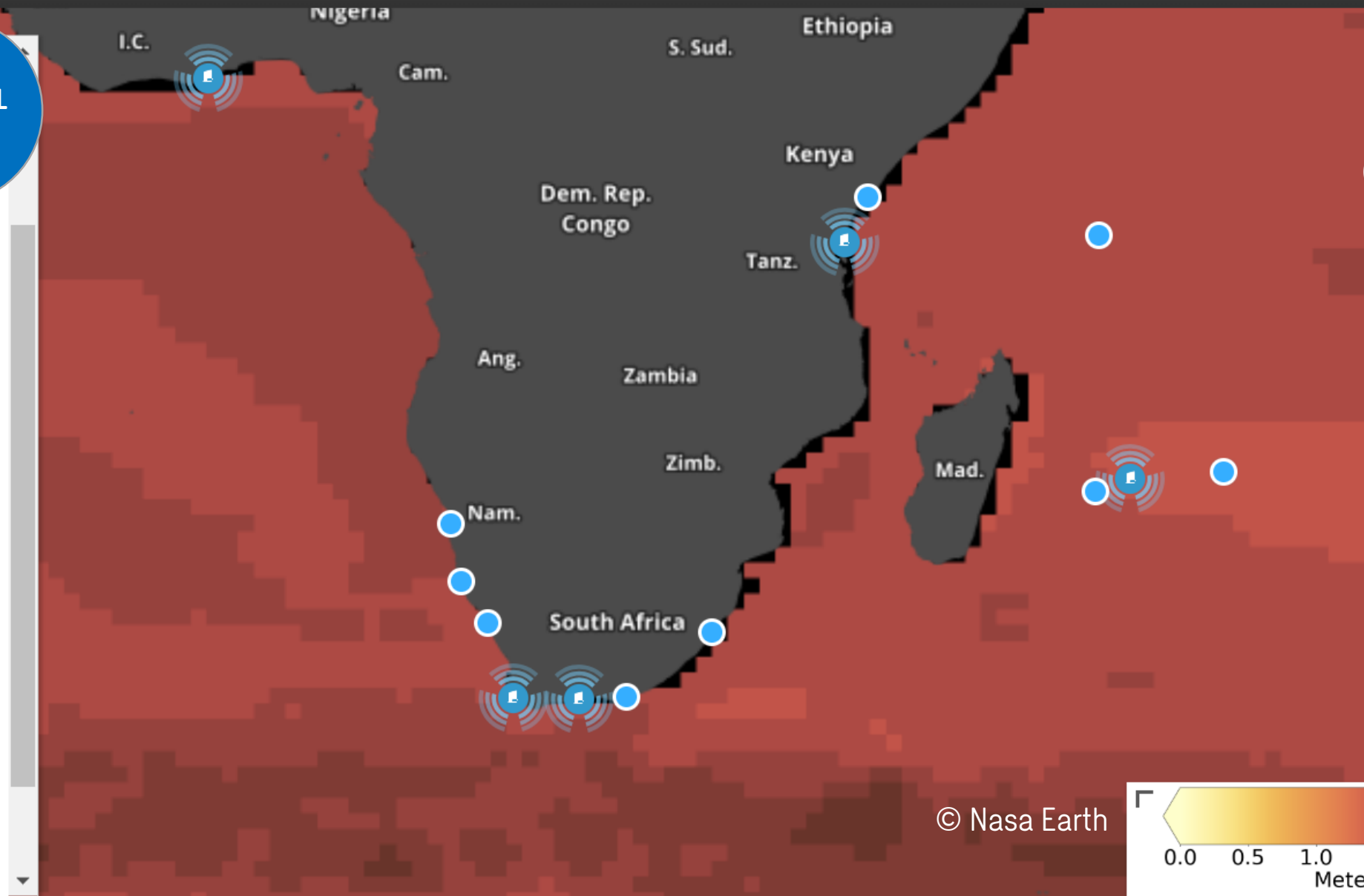
**Decades**

2100 ⬆️⬇️⬆️

**Scenario**

SSP5-8.5 (i)

UPDATE MAP



# Antananarivo, Madagascar, sea level rise -135 - 65 m

Press Esc to exit full screen

SEA LEVEL RISE





# Key Climate Risks



Social



Environment



Economic

Displacement and loss of lives

Food insecurity

Damage to buildings and infrastructures

Negative health impact

Climate migration

Floods & Storms

Drought

Floods & Storms

Heat

Floods & Storms

Heat

Floods & Storms

Drought

Floods & Storms



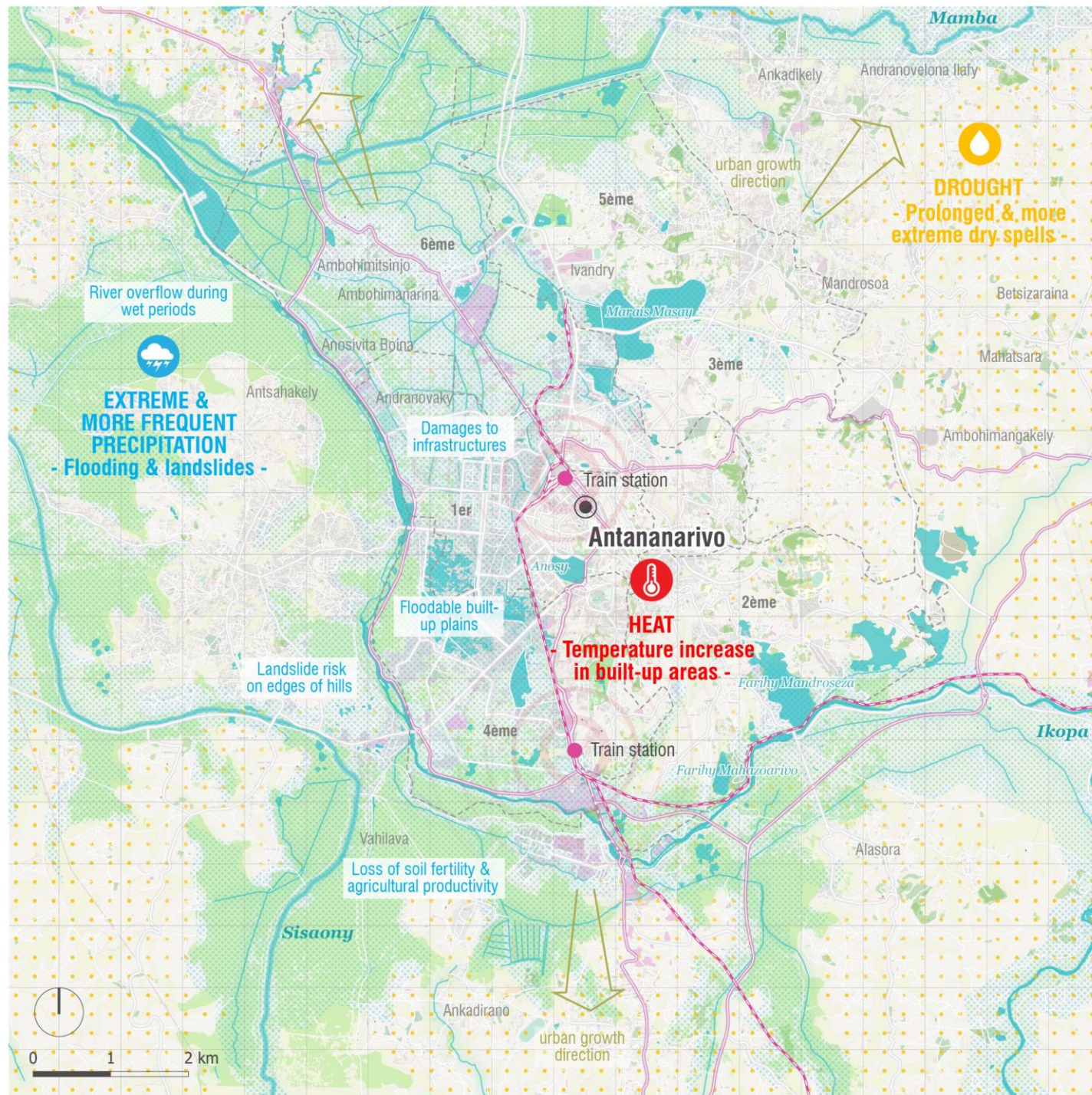
**Antananarivo**

# Antananarivo

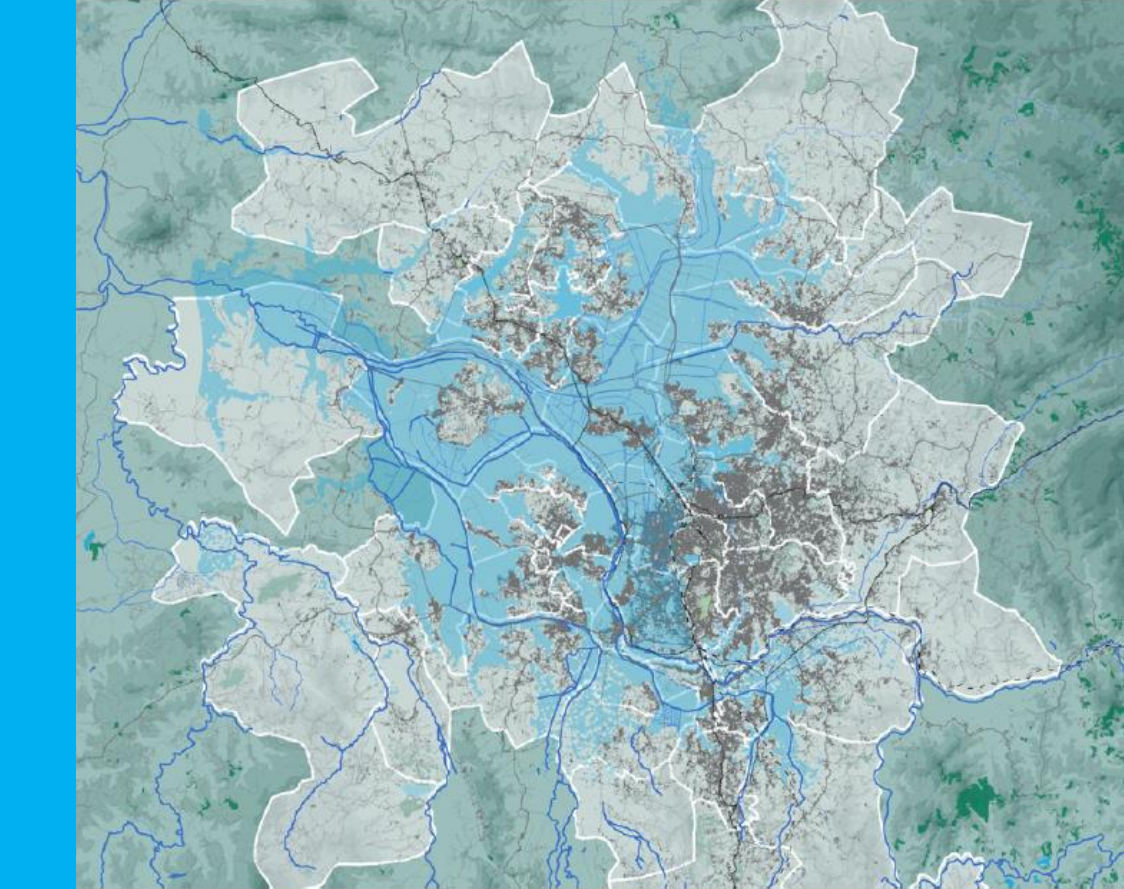
## Spatial Diagnostic

This map shows the climate hazards in the CUA. (Sweco, 2022)

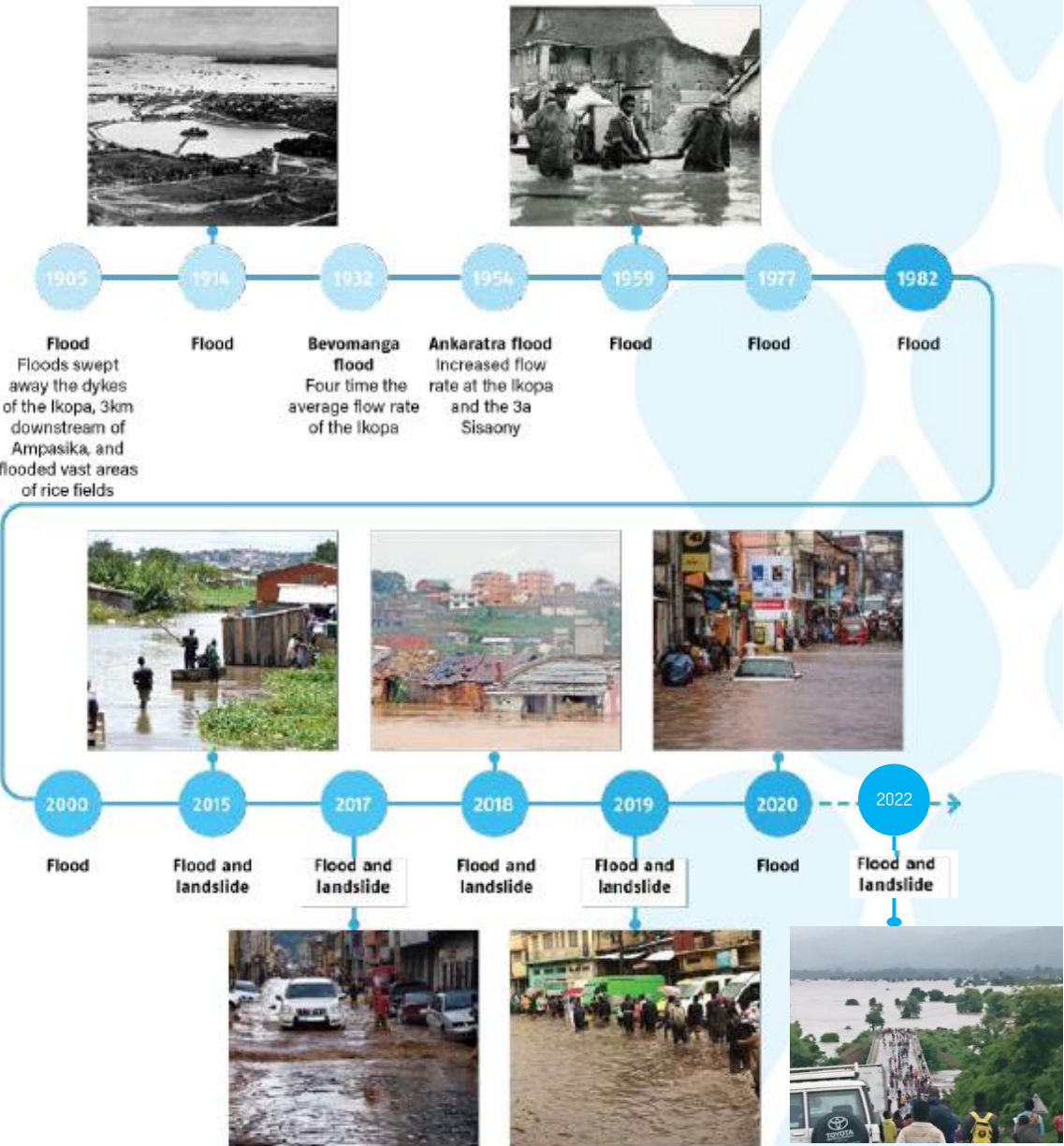
-  Train station
-  Rail line
-  Main road
-  Secondary road
-  Airport
-  City centre
-  Administrative boundary
-  Floodable area
-  Green areas
-  Lake
-  River
-  Informal settlements
-  Built up areas
-  Economic zone
-  Drought
-  Deforestation
-  Urban growth direction



# More frequent and extreme rainfall events



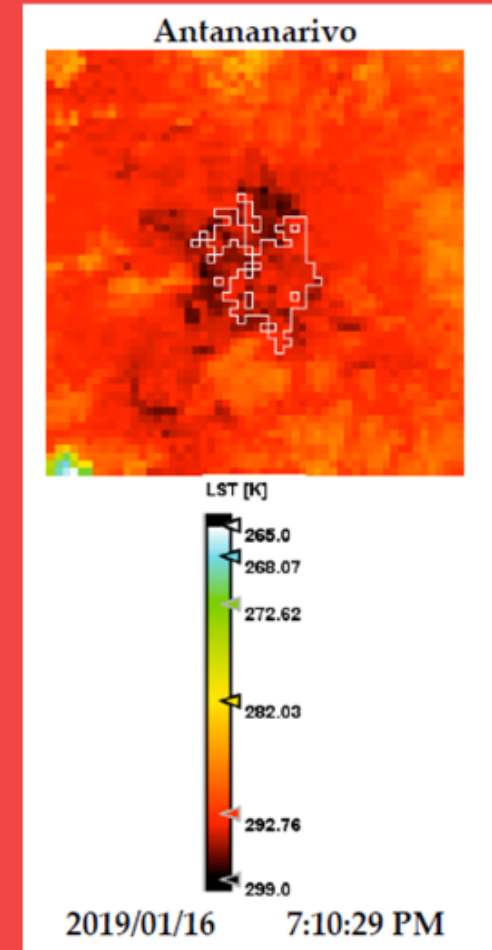
Map of flood risk zones in Antananarivo(City Diagnostic,2021)



Overview of floods over the last century (based on Urban Diagnostic, 2021)

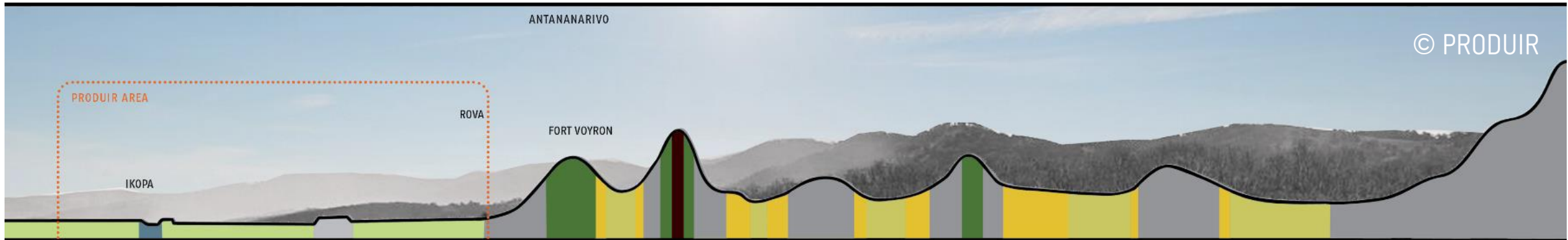
# Urban Heat Island

(Sobrino & Irakolis, 2020 – Surface temperature)



# Antananarivo

Topography as a basis for socio-economic segregation



2022

2040

A polycentric,  
inclusive and  
resilient city



*City's Action Plan 2025-2040  
(Citylinks & MADexpertise)*