

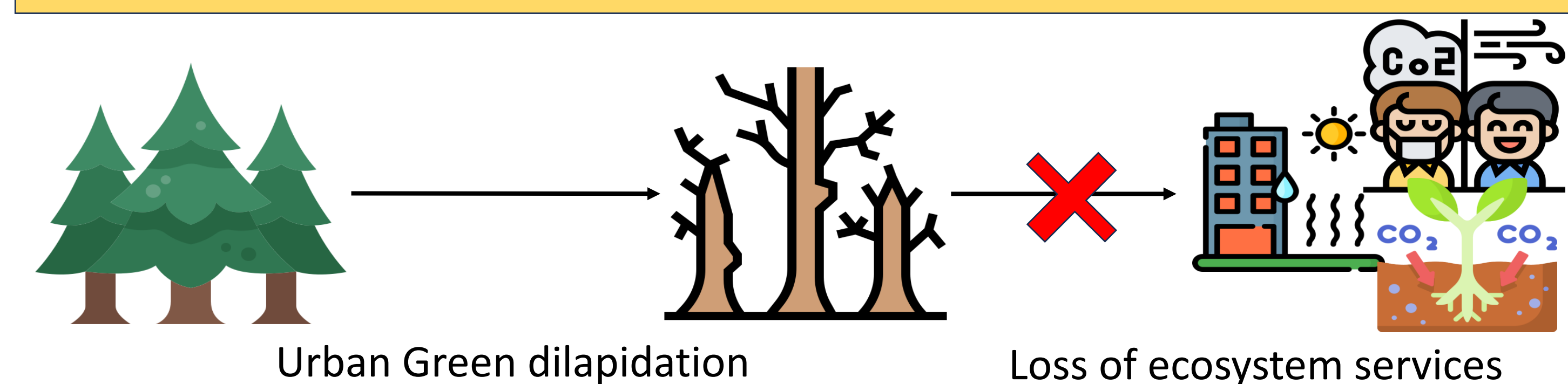


## Research objective

### Drivers of environmental Challenge



### Urban Green as essential living component



### Research Objective

To create a **Planning Support System** that provides **climate adaptive**, long term planning of **Nature-based Rainwater Harvesting** for sustaining **Urban Green**

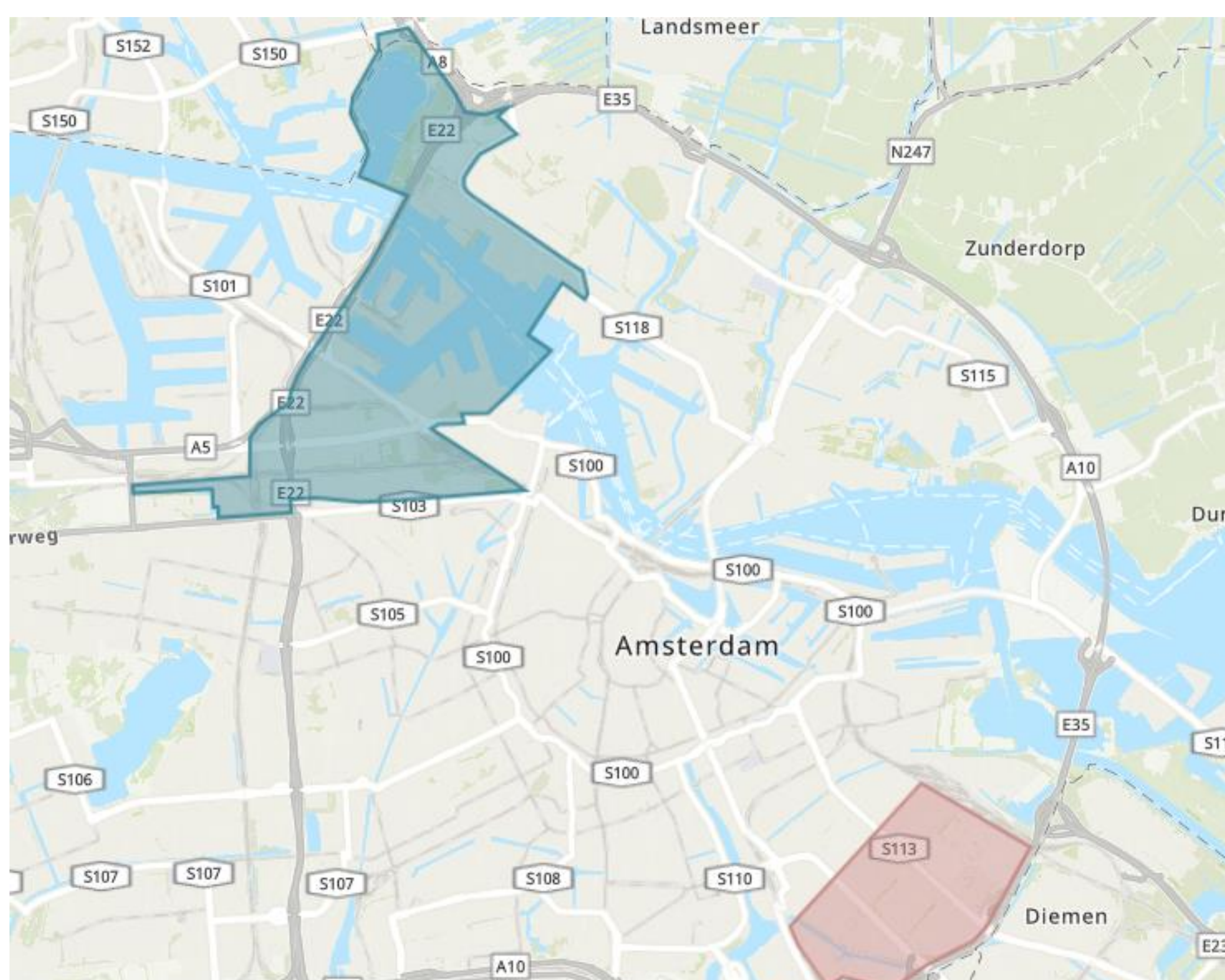
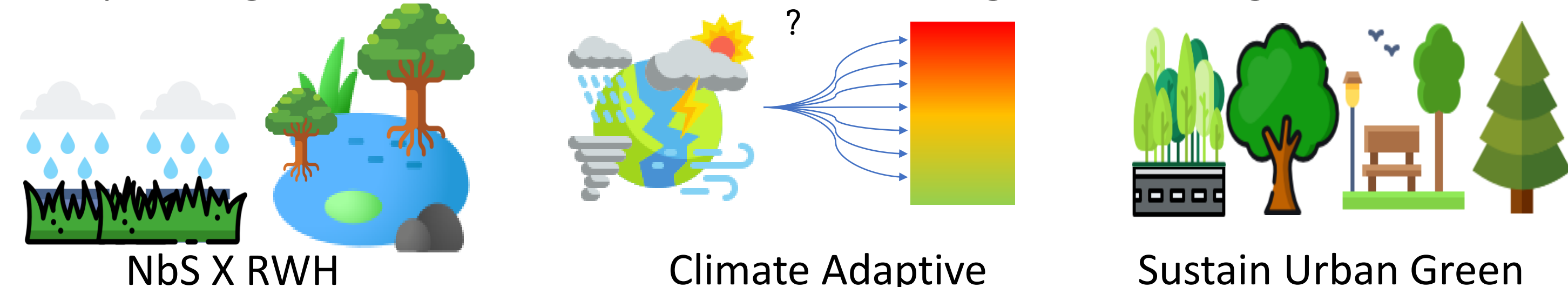


Figure 1. Proposed Case Areas. Red = Bijlmer-JaapEden Neighbourhood, Blue = Havenstad.

## Methodology

The Planning Support System will be created with open-access software. As of now, **qGIS** will be used for the visualisations and spatial data processing. The integrated **Python** application is used for the water balance modelling (scenario-based) and the Multi-Criteria Decision Analysis approach for the allocation of the Nb-RWH. The research can be split up into two sub-objectives:

### I. Scenario-based Water Balance Determination

**KNMI'14 Climate Scenarios** will be used as a benchmark for a low, medium, and high scenario for a year-through prediction of both **droughts** as well as **precipitation**.

With UG as the water demand, their species-specific water demand is used to create a **normalised classification scheme** to represent the diverse UG types (e.g., parks, sport fields, tree lanes, tree clusters, etc.). As a start, the CUGIC-classification scheme of Morpugo et al. (2023) is consulted.

### II. Suitability Framework for Nb-RWH allocation

This sub-objective consists of the following steps:

- I. Set up a database of function-specific Nb-RWH.
- II. Provide a qualitative and quantitative performance assessment on the Nb-RWH based on technical criteria:
  - Storage capacity, area occupation, requires infra.
- III. Assess the case area on spatial criteria:
  - area availability, connectivity (collection and demand areas), zoning (public/private).

Together, the spatial and technical aspect provide an overview form the structure of a **multi-criteria Decision-analysis** where the scores on both criteria provide the highest potential Nb-RWH for a certain area.

### Case Area

The PSS will be working with two case areas within Amsterdam. One to **validate the model components**, and one to **test its functionality** on a proposed area. The figure on the left shows the proposed locations, but stakeholder communication will determine the final locations.

## Future plans

- Follow (in-depth) MSc and PhD Courses related to knowledge and skills concerning GIS-software and Python modelling.
- Setup Data Management Plan
- Start with the classification scheme of Urban Green
- Start with analysing and selecting long-term climate scenarios for the water balance determination

Due to time constraints in this 2 year project, inclusion of a **cost-benefit** analysis and the **social aspect** might be done in co-collaboration with stakeholders and/or BSc/MSc Students

## Take-home message

As I am in the data collection and stakeholder connection phase, any input and feedback regarding:

- (Open-Access) Data on infrastructure, UG, other;
  - Helpful Python/qGIS courses;
  - Contact Persons within KNMI, Mun. Amsterdam;
  - Conceptual Framework
- Are appreciated and welcome