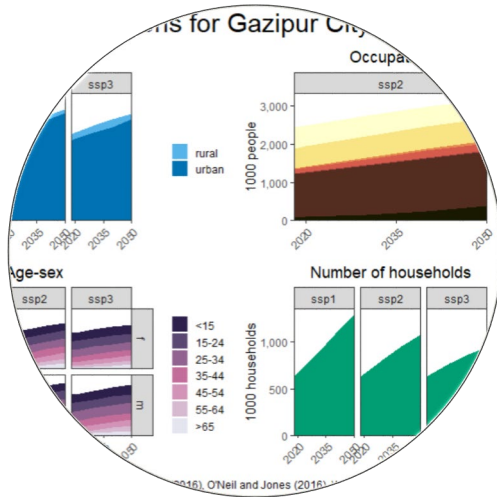


# Mapping of subnational poverty and food security to support national and local food system transformation

Presentation prepared for the Ethiopia mapping workshop, 20-06-2023 in Wageningen

Michiel van Dijk

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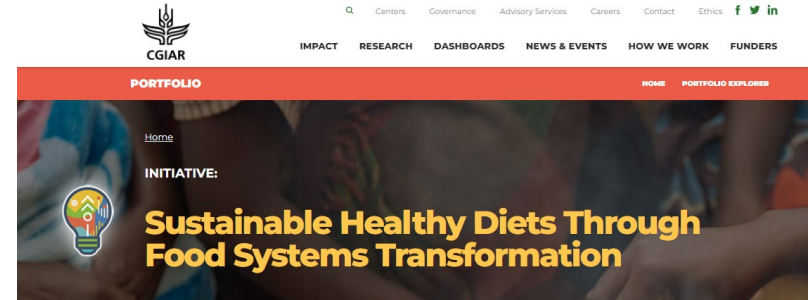
# Introduction

- Many countries are in the process of developing national food security, SDG and climate (NDCs) action plans and strategies.
- National decision makers supported by international donors increasingly approach Wageningen Economic Research (WEcR) for support in developing these plans by means of **ex-ante policy analysis** using simulation models.
- Examples:
  - CGIAR SHIFT (with IFPRI & ABC)
  - FOSTr (with Oxford University)

PRESS RELEASE

## More than 100 countries sign up to develop national strategies for transforming food systems

*Ahead of September's Food Systems Summit, more than half of the UN's Member States have pledged to host Dialogue events to begin conversations about improving food systems.*



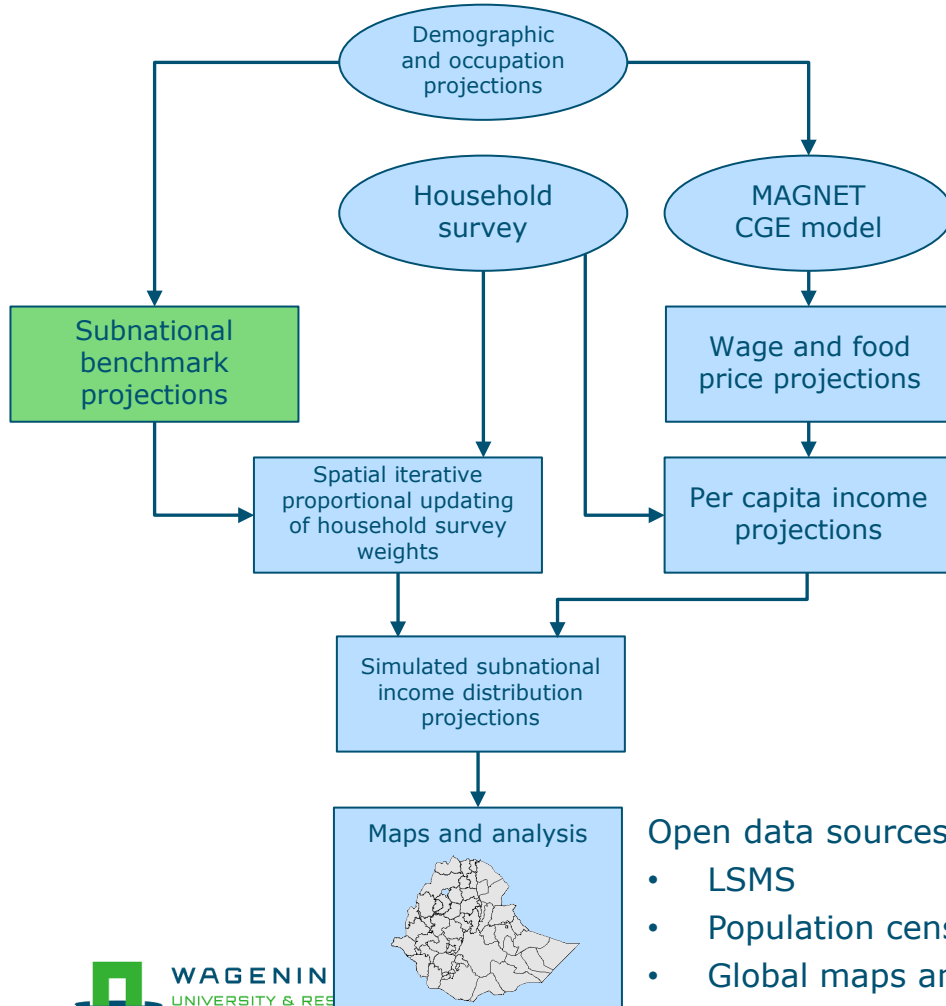
The screenshot shows the CGIAR website interface. At the top, there is a navigation bar with the CGIAR logo on the left and search, centers, governance, advisory services, careers, contact, ethics, and social media icons on the right. Below the navigation bar is a red banner with the word "PORTFOLIO" on the left and "HOME" and "PORTFOLIO EXPLORER" on the right. The main content area features a large image of people's hands holding a lightbulb with a green leaf inside, symbolizing innovation and sustainability. To the right of the image, the text reads "INITIATIVE: Sustainable Healthy Diets Through Food Systems Transformation".

# Aim

To develop a **modelling approach** that takes into account global, national and local drivers **to simulate income distribution, poverty, food consumption and food security at subnational scale**, answering questions such as:

- Which districts are most likely to achieve SDG1, SDG2 and SDG10?
- What is the impact of decreasing economic growth (e.g. caused by COVID-19) on the spatial distribution of poverty and food security?
- Are there overlaps between climate, poverty and food insecurity hotspots?

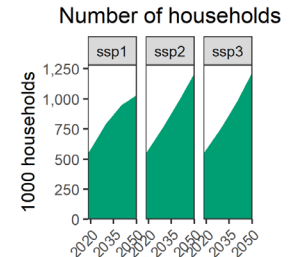
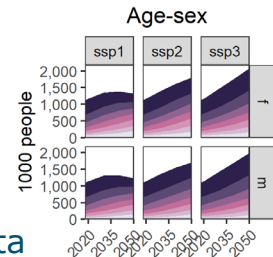
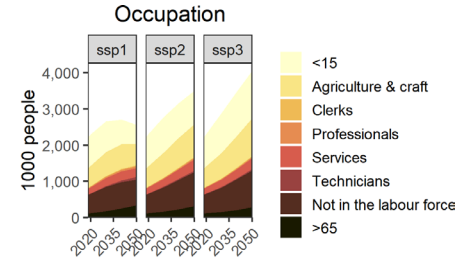
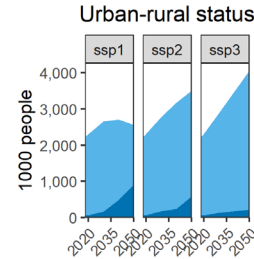
# Spatial Simulation of Income Dynamics (SSID) model



- Key drivers:
  - Urbanization
  - Occupation change
  - Sex-age distribution
  - Number of households



North Shewa



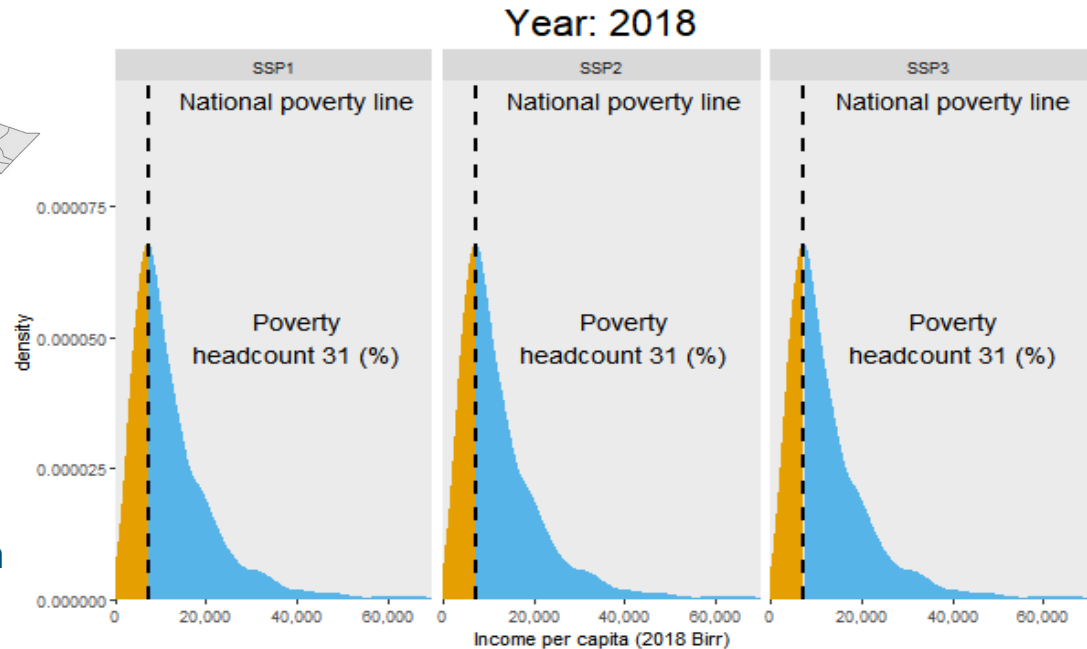
- Open data sources:
- LSMS
  - Population census
  - Global maps and data

# North Shewa: Income distribution by SSP scenario: 2018-2050

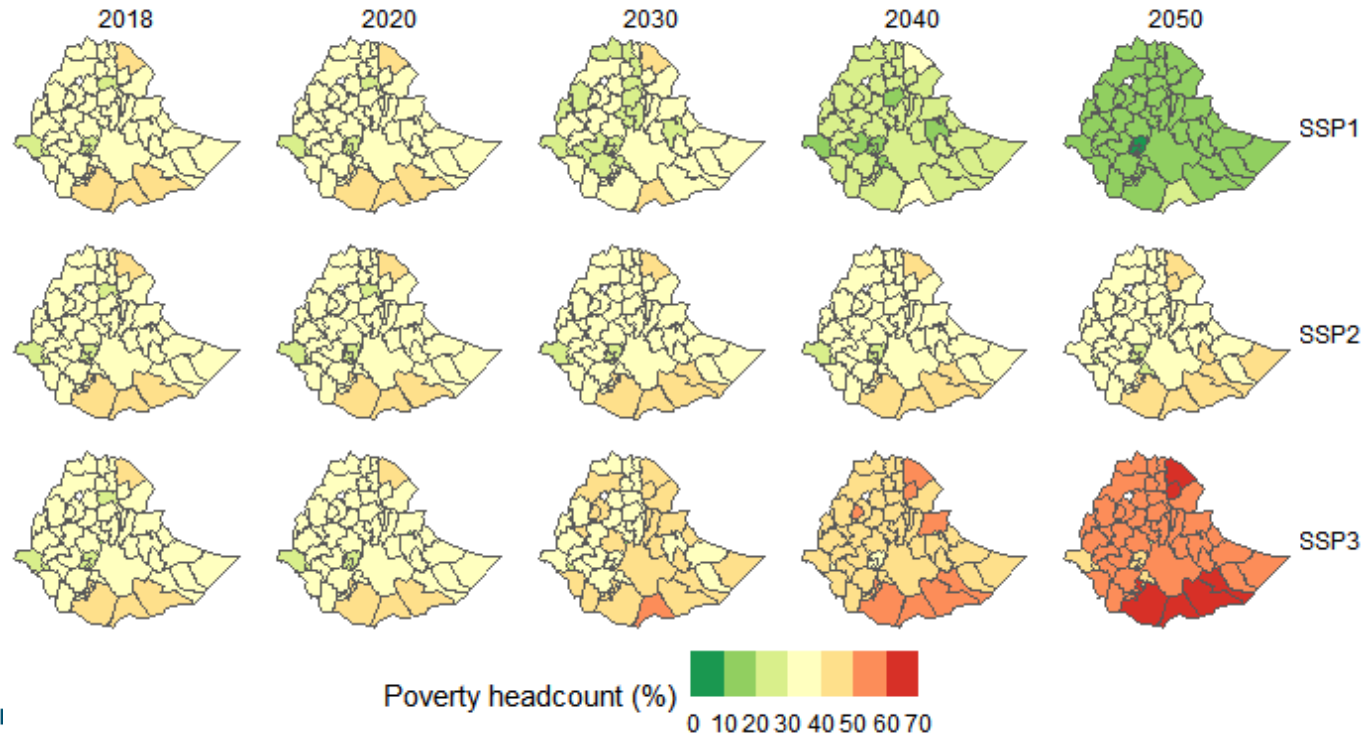
Regional distributional patterns determined by the combined effect of:



- Demographic change
- Urbanization
- Structural economic change
- Change in wages per occupation

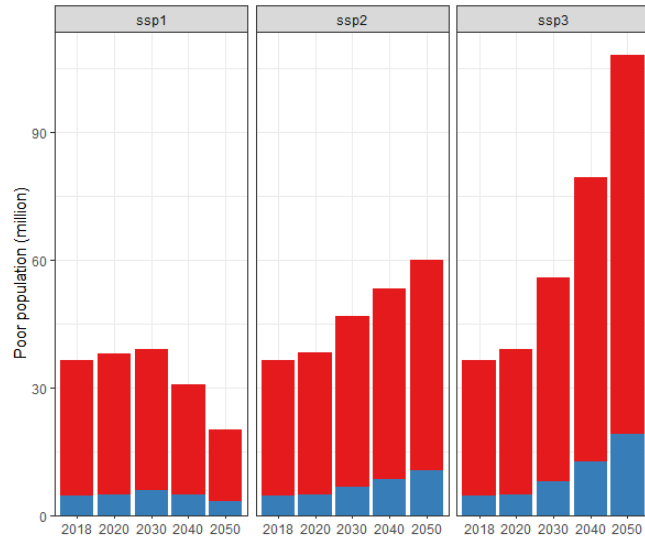


# Spatial distribution of poverty headcount over time and space by SSP scenario: 2018-2050

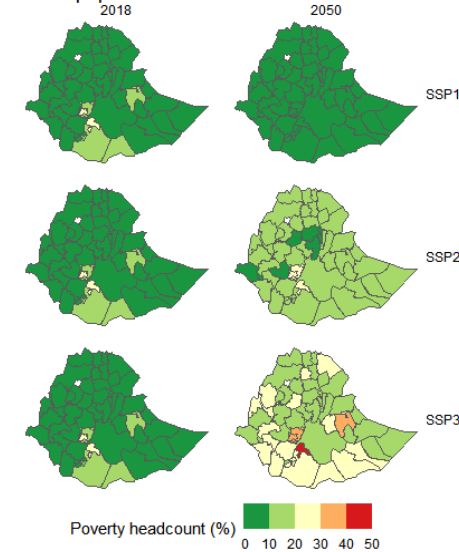


# Spatial distribution of poverty headcount over time and space by SSP scenario and urban rural status: 2018-2050

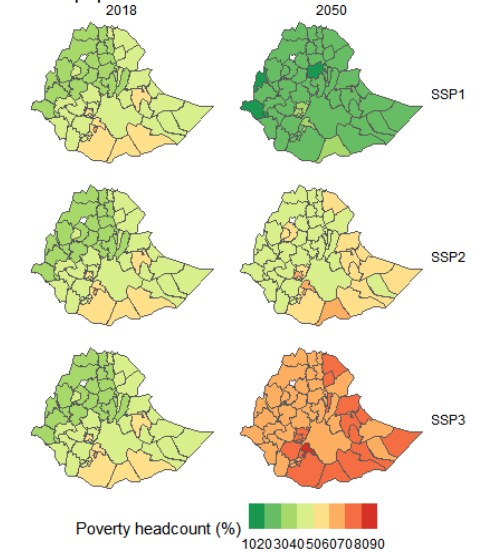
Poor population



Urban population

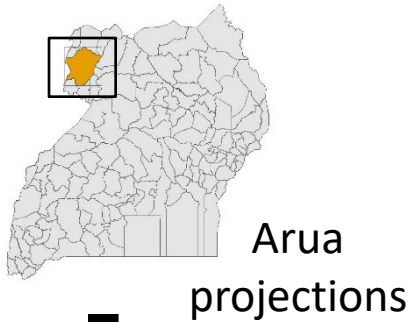


Rural population

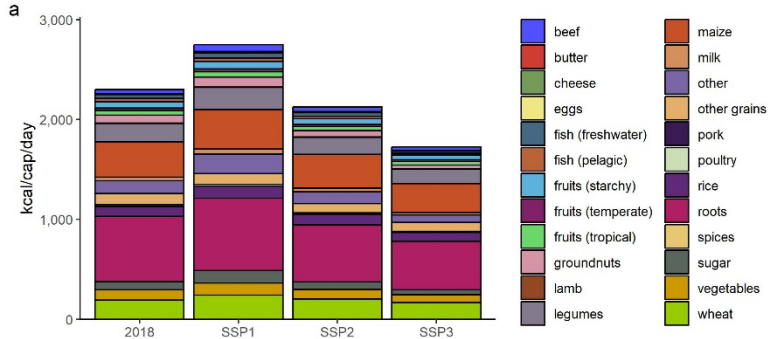


Additional maps and figures for poverty headcount by occupation, age group and sex

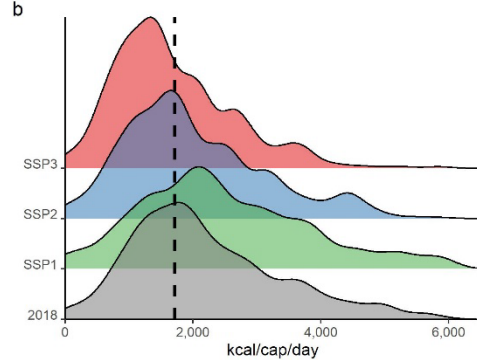
# Subnational diet and food security projections: Uganda case-study



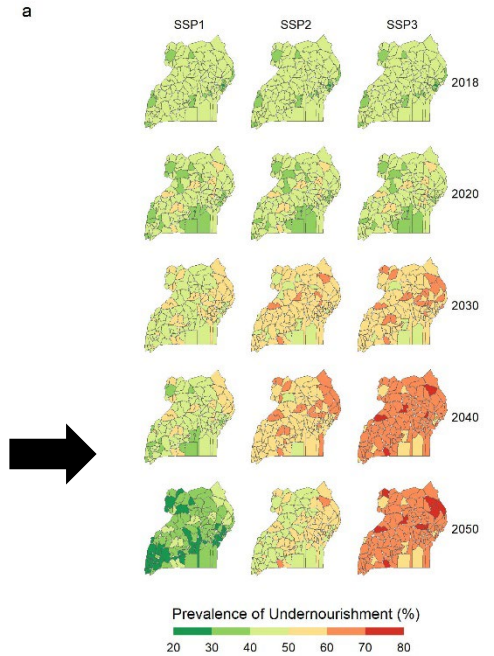
## Diet projections



## kcal/cap/day distribution



## Spatial distribution of undernourishment over space under different scenarios





# Interactive dashboard with key scenario results

Dhaka food systems dashboard version 0.0001 — juni 08, 2022 Baseline DMA baseline Waste scenario COVID vulnerability assessment Land use change Methods

Drivers

Average Income per household per year

Indicator

Average income per household

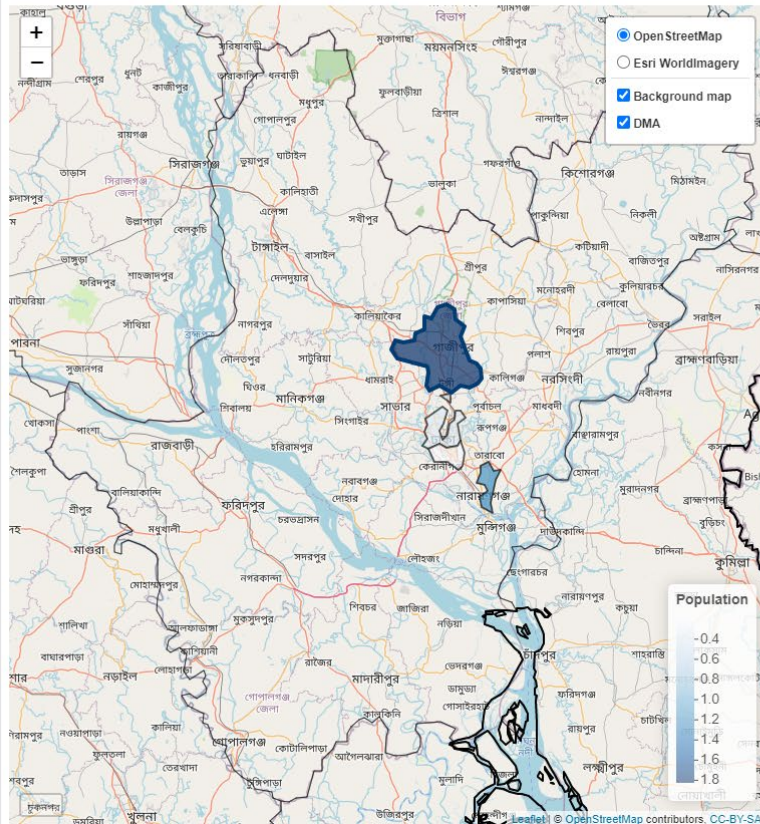
The contextual baseline is downscaled to the division level in Bangladesh, with Dhaka division is split further into the four city corporations. We currently use publicly available data, but when the data at DAM level becomes available in the project the model will be calibrated accordingly. For this reason, and for the showcasing the DMA baseline is only developed using the contextual level of influence and not the level of the specific scenarios for this region. The specific micro baseline scenario and data are now being developed in other work packages of this study and will be implemented later in the model and the dashboard.

Indicators are used to monitor changes in a limited set of food security variables and show where they are headed. Upon the collection of more (survey) data this set will be extended to include the main food system indicators in DMA. In this dashboard we endogenize individual and composite indicators within an appropriately specified MAGNET modelling framework and downscaling methodology for Bangladesh.

Please see the [Methods](#) section for additional information on the baseline and calculation of indicators.

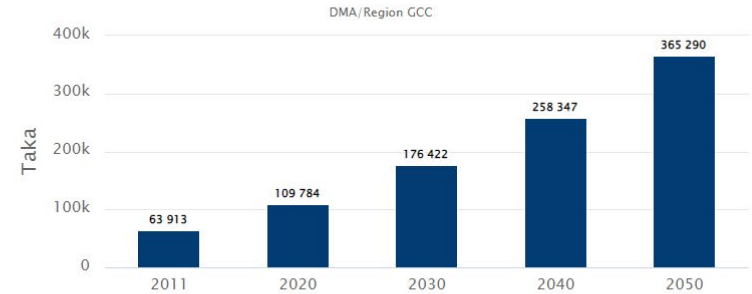
You can choose a 'driver' or 'indicator' from the above drop-down list and then click on the region of interests (divisions of city corps) on the map. The projections of the 'drivers' and 'indicators' are then shown in the right hand side on the top (Figure a) and bottom (Figure B) respectively.

Dhaka Metropolitan Area



Drivers

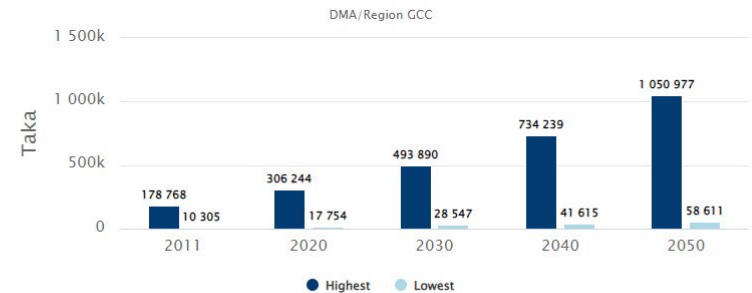
(a) Average Income per household per year (Taka)



Source: SSP database

DMA Projections

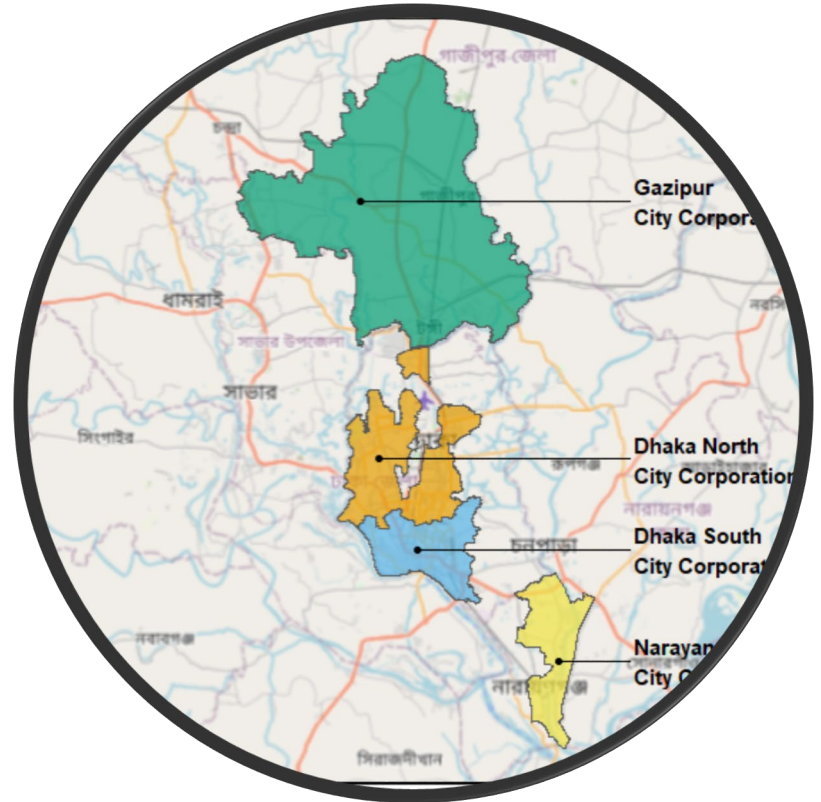
(b) Average income per household (Taka)



Source: MAGNET model

# Thank you! Questions?

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The authors would like to acknowledge funding for project KB35-103-002 from the Wageningen University & Research "Food and Water Security programme" that is supported by the Dutch Ministry of Agriculture, Nature and Food Security"