

Name of project:

The water, land and carbon footprint of urban agriculture

**Project number:** 25.17**Internal/external:**

Internal

Thesis supervisor:

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Daily supervisor:

Charlotte Verburg

Names of involved institutions:

TBD

Start of project:

Flexible

Short project description

Cities are growing rapidly. Consequently, it is expected that the demand for food in cities will increase in the coming future. Simultaneously, there is a growing concern on the limited availability of natural resources, worldwide. Water and land resources together with specific climate conditions are essential for crop production. To meet the increasing demand for food in the cities there is a growing interest in urban agriculture. Urban agriculture is being promoted as being water and land efficient. However, urban agriculture still requires inputs of water, nutrients, and energy to provide the required conditions for crops to grow. However, to date, little is known about the amount of inputs needed and the relative efficiency or inefficiency of urban agriculture compared to rural agriculture in terms of use of natural resources and emission of greenhouse gas. Knowing how much water and land resources are required and how much greenhouse gasses are emitted by urban agriculture can increase the understanding on the possible added value of urban agriculture. This information can support policy makers in making decisions on investing in urban agriculture or not.

Research objective

The research aims to estimate the water, land and carbon footprints of urban agriculture of a selected city or case study (tbd) and compare them with the footprints of regular rural agriculture.

Approach

The work will consist of the following steps:

- Select and formulate the types of urban agriculture to be studied (e.g. vertical farming, roof farming);
- Select methods and collect datasets for assessing water, land and carbon footprints of urban agricultural crop production or of food categories;
- Assess the water, land and carbon footprint of urban agriculture based on the selected case study;
- Compare with footprints of rural agriculture based on data already available for the latter.

Background material

Al-Chalabi, M. (2015). Vertical farming: Skyscraper sustainability? *Sustainable Cities and Society*, 18, 74-77. doi:<http://dx.doi.org/10.1016/j.scs.2015.06.003>

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