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## Nutrient and Virtual Water Flow Analysis for Tamale, Ghana and Ouagadougou, Burkina Faso.

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### Abstract

Nutrients and virtual water in the form of food and other organic goods are transported from the rural hinterland to urban centres. In particular in developing countries, poor waste management in growing cities and the potential to recover nutrients and water for agricultural production have raised interest in quantifying these flows. What are the quantities of organic materials that enter and leave a city? Which materials carry the most important nutrient and virtual water flows? Where does nutrient and water depletion take place?

This study has been conducted within the UrbanFood<sup>Plus</sup> project ([www.urbanfoodplus.org](http://www.urbanfoodplus.org)) to assess organic material flows and their quantitative nutrient and virtual water contribution for the cities of Tamale in Ghana and Ouagadougou in Burkina Faso. Matter flows (unprocessed foodstuff, firewood, fodder, non-timber forest products, etc.) from regional, national and international sources were systematically recorded at all roads leading to Tamale and Ouagadougou. Organic matter from urban sources and stocks were captured at major markets. The survey has been conducted within two years covering the peak (November) and lean season (April) for six days in a row.

The study maps the virtual water and nutrient transfers of different types of traded food products and other organic goods. The results will improve our understanding of the urban metabolism, and may support the development of standardised methodologies for assessing virtual water and nutrient flows.

**Keywords:** Food flows, GlobE, urban metabolism