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## Linking drivers of food insecurity and ecosystem services in Africa

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### Abstract

Food insecurity is a multidimensional and intricate problem, known to have significant implications for individuals, communities, and countries worldwide. Out of all the continents in the world, Africa has become the continent that is experiencing this uncertainty the most. Food Security (FS) encompasses several aspects such as availability, accessibility, nutrient use, and supply system stability with time and, more recently, other obliges to governance/agency and sustainability. Understanding the relationship and interactions between FS and Ecosystem Services (ES) is fundamental to developing policies that promote long-term sustainable and secure food systems. A conceptual framework is presented, that examines interactions between food insecurity drivers and ecosystem change drivers and the combined influence on ES. Our review further introduces existing trade-offs between ES on account of agricultural intensification. Some existing strategies to promote sustainable agricultural production are then discussed. These strategies include climate-smart agriculture, sustainably managed land, and effective handling of water resources. In the end, the potential of Payment for Ecosystem Services (PES), being a suitable approach to ensuring these strategies are adopted, especially in African countries where sustainable financial incentives are currently non-existent, is discussed. In resume, this review aims to make a conceptual contribution to understanding how drivers of food insecurity influence drivers of ecosystem change and the impact of these influences on the ecosystem, as well as the changes in ecosystem services that is delivered to humans. This contribution will ensure that more sustainable approaches will be explored by researchers and implemented by policy leaders to solve both existing problems.

**Keywords:** Climate change adaptation, food security, payment for ecosystem services, smallholder farmers, sustainable agriculture intensification