Aalto University
School of Engineering

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# Resilience in food systems combines local production and international trade

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| **Title of the dissertation** | Resilience perspectives in global food systems: Exploring variability, localness and diversity |
| **Contents of the dissertation** | Despite the increase in food production capacity after the Green Revolution, food system's resilience is still challenged by numerous systemic and environmental disruptions. Building understanding of the different dimensions of food system resilience is essential for providing resilient food supply.<br><br>This dissertation showed that anthropogenic factors such as Human Development Index and fertiliser application rates explain 40 to 60% of the variation in lower-than-average crop yields. The results suggest that improving human capital and access to agricultural inputs such as fertiliser can help mitigate yield variability, thus supporting a more stable food system.<br><br>Overall, this dissertation found that food system resilience in terms of diversity and connectivity has increased for the majority of the global population during the recent decades. Much of these gains have been generated by increasing international trade, but worryingly at the same time production diversity has decreased especially for the major food producing countries. These trends introduce challenges for global food security as the food system becomes more vulnerable to large scale shocks. Yet, reducing trade dependency may be challenging without substantial changes to current production and consumption patterns. As demonstrated by this dissertation, local production is unable to fulfil the food crop demand for over two-thirds of the global population. Furthermore, increasing local production requires agricultural inputs such as fertilisers, creating additional level of dependencies. This dissertation revealed that these often-neglected hidden dependencies differ substantial from those related to food trade, contributing additional levels of complexity towards food system resilience.<br><br>As food systems are threatened by many global scale disruptions, future food system narratives should not be reduced to overly simplistic views. Uncovering the complex interactions is integral for building pathways and strategies to increase resilience and supporting food security globally. |
| **Field of the dissertation** | Water and Environmental Engineering |
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