

Understanding multilevel trade-offs in the sustainable transition of local food systems

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Problem statement: Urban and metropolitan food systems are primarily responsible for pollution, resource depletion and biodiversity degradation. However, they are also an important source of income and employment. A sustainable transition of urban and metropolitan food systems should contain their environmental impact while supporting income and employment. Due to the length and complexity of the supply chains, any change in food consumption patterns within a metropolitan region can produce environmental and socioeconomic effects in other sectors, regions and countries. **Research question/aim:** This paper introduces a new theoretical and methodological approach to investigate the sustainable transition of urban and metropolitan food systems. Any change in private consumption patterns and public procurement policies within these system causes substitution effects between products of different types and origin. To evaluate the actual sustainability of these choices, the environmental and socio-economic impact produced along these different supply chains must be considered. **Theoretical approach:** The theoretical framework builds on the input-output and food systems literature to incorporate the role of the main actors of urban and metropolitan systems in the analysis of the environmental and socioeconomic impact of food supply chains. Their preferences and choices are attributed a central role to incorporate substitution effects between different food products and related multilevel environmental and socioeconomic effects. **Methods/inquiry approach:** A systemic and actor-centred perspective is applied to investigate how the preferences and choices of private households and metropolitan governments drive a change in production patterns along the entire food supply chain. The analysis focuses on the existence of substitution effects underlying consumption choices to identify potential trade-offs. **Findings:** The approach proposed identify the existence of potential implicit trade-offs between local and global, environmental and socio-economic effects that occur along different food supply chains. These complex and multilevel trade-offs impose the adoption of a systemic perspective and the use of modelling and simulation techniques which attribute a central role to demand and preferences. **Conclusions:** In conclusion, a comprehensive analysis of the sustainable transition of urban and metropolitan food systems must attribute a central role to the choices of the main actors within these systems and consider the existence of potential complex and multilevel trade-offs between environmental and socioeconomic effects at the local and global level. **Practical and scientific implications:** Consumers and governments in urban and metropolitan centres have a fundamental role in driving the sustainable transition of food systems. Any change in their preferences and consumption choices can alter production patterns and transform food supply chains. To understand the full extent of this transformation, the direct and indirect effects at the local and global levels need to be considered.