

Transitions towards more sustainable agri-food chains

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The most fundamental factors of human well-being are water, food, clean air and shelter. Stresses on one of these factors such as freshwater sources or food production systems due to climate change, globalization, price volatility and scarcity of natural resources can affect well-being and cause adverse health effects. Therefore, a transition towards more sustainable production of the agri-food chain is indispensable. To facilitate this transition, we developed and applied a new conceptual framework that follows an integrated chain approach.

The conceptual framework combines the framework of global chain value analysis (GCVA) developed by Gereffi (2005) and a second framework, originating from ecological economics. The framework of GCVA identifies five governance types, i.e. market, modular, relational, captive and hierarchy and has its roots in institutional economics. The second framework extends the set of traditional economic resources to various forms of capital (e.g. natural, social, human, manufactured) in a production system. The developed conceptual framework enables the analysis of all aspects of sustainability (e.g. ecological, social and economic) in an integrated chain approach. However, how to identify and measure stocks and flows of the various forms of capital and how to implement this framework in a global context still remain important challenges. To cope with these challenges, this paper presents an empiric study of the agri-food chain based on Flanders, Belgium embedded in an European and global context.

An integrated system analysis of the Flemish agri-food chain is applied within the conceptual framework. The governance structures and the boundary conditions of the various forms of capital are identified and analysed. Data is collected from national (e.g. Belfirst, BE.stat) and European (e.g. Eurostat) statistical databases, secondary data resources, and depth interviews with the various supply chain actors. This analysis helps to formulate wide-ranging transition pathways towards more sustainable production systems.

The results identify the driving forces that initiate transitions and describe the impact of the pressure on the current state of the agri-food chain in a European and global context. This allows to analyse various transition pathways to deal with future challenges such as scarcity of resources by selecting useful indicators and by defining maximal sustainable use of the different forms of capital taken the current stocks into account. By implementing this framework in a tangible case-study lessons can be

learned for future research about transition towards sustainability such as the difficulty of accounting natural stocks or human capital.