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## Editorial

# Revival of Rural Development: the Urban-Rural Continuum or the Thuenen Model Revisited

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## ABSTRACT

Present trends towards urbanization are a challenge to rural development. However new opportunities in food markets, the use of renewable resources and the organization of ecosystem services, due to a.o. emerging developments in technology and logistics, may allow a (partial) reversal of the trend if supported by appropriate initiatives of research, policy and the business community.

*Keywords: Rural development; urbanization; urban rural continuum; Thuenen*

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## 1 Overview

Rural development is receiving increasing attention, both as development in its own right but also as development within the “urban-rural continuum” linked to city development and its relationship with adjacent rural communities.

Discussions of the urban-rural continuum as introduced by a.o. FAO (2011) goes back to the model developed by Thuenen (von Thuenen, 1826; Hall, 1966) and commonly referred to as the “Thuenen rings” (Wilson, 2000). Placing a city and its market at center point, it describes various rings of agricultural production where distance dependent increasing transportation costs lead to different agricultural production activities. Vegetable production is located close to markets while cereal production is further out.

This model has been applied (and found to be fitting) to different environments such as rivers and areas along them but also in describing the situation in countries such as the United States with the corn belt far away from the urban concentrations. Beyond the food related focus, the Thuenen model can also be linked to development issues such as technology diffusion, industry location, service density, housing density, etc. where it matches the views inherent in the urban-rural continuum approach.

The present trend towards urbanization affects the picture of the urban-rural continuum and the Thuenen rings with the expansion of population density around the urban markets at the expense of rural areas which are characterized by a decrease in business activities and jobs, a decrease in services and, consequently, a loss of rural attractiveness. This, in turn, accelerates the process.

However, there are new developments in technology and business processes that have the potential for reversing the trend and leading to a revival of rural areas. They include among others

- a) changes in food markets,
- b) utilization of renewable resources (bio-economy), and
- c) emerging needs for ecosystem services.

## 2 Changes in food markets

Various issues including efforts to reduce CO<sub>2</sub> emissions from transport, food safety considerations, or environmental efforts towards reducing trade in virtual water favor the **organization of short chains** in food production and distribution (regional chains) with short distances between the sites of production and consumption. This supports the relevance of rural areas around city environments and provides the basis for new rural development initiatives and **rural revivals**.

Emerging opportunities in **digital technology** and **logistic services** provide the means for establishing close and efficient links between production and consumption. Various types of digital market places and ordering systems, organized by established stakeholders in the market (such as retail), new market entries, or by start-up initiatives facilitate online communication between production and consumption. New logistics opportunities that favor small and on-demand deliveries translate the communication efficiency into delivery efficiency. Utilizing these opportunities does not only support the organization of short chains and the realization of their comparative advantages in environmental and food safety concerns but may offer **efficiency gains** that make short chains an efficient alternative to traditional and more national or globally oriented industrialized chain organizations.

*In summary:* The developments in food markets favor the organization of **short chains** linking adjacent rural and urban areas.

## 3 Utilization of renewable resources (Bio-economy)

Bio-economy based on the sourcing of agricultural products (such as grass) or by-products (such as straw from cereal production) **reduces the dependency** on non-renewable resources and may contribute to a **reduction of CO<sub>2</sub>** in the atmosphere which is captured in the evolving bio-based products. Such products cover an increasingly broad range of alternatives including building material, insulation material, packaging and more.

The production of bio-based material builds on agricultural **bulk products** grown in rural areas. From an economic point of view, the utilization of bulk products favors the further processing at the site of bulk production avoiding high quantity transportation outside the production area. This in turn favors the organization of **site specific (short) bio-based production chains** in rural areas from where final products could be delivered to the destinations of use. A similar development characterizes the move to “white” bio-technology where bio-based materials are utilized for extracting substances (e.g. enzymes) for further use in chemical or medical industry.

*In summary:* The developments in the use of renewable resources favor **short location based chains** in rural areas independent of their proximity to urban areas.

#### 4 Need for ecosystem services

Ecosystem services may be found in all environments, urban and rural, but are primarily located at and focused on rural areas. They deal with environmental and recreational issues and provide services of relevance for society as a whole and the recreational needs of urban population. Examples include services related to landscape management including conservation and bio-diversity initiatives, water management, forest management, tourism, and others.

Ecosystem services have become a driving force for rural development due to the importance placed on them by society and the urban population. They contribute to living standards, the attractiveness of regions for people and business development, and assure a sustainable protection of the environment and the quality of living for the increasing population.

Ecosystem services may be provided as single focused services, as part of a service clusters where different services are interlinked, or as service chains where different partners contribute to the development of a final service product.

*In summary:* The increasing need for ecosystem services favor rural areas, especially (but not exclusively) those in closer proximity to urban areas.

#### 5 Challenges and Needs for Action

For realizing the potential effects of the various developments on the revival of rural areas and the establishment of more balanced urban-rural continuums one needs to overcome a number of challenges.

The organization of necessary business, chain, cluster, or service activities in rural areas needs to build on new concepts that have few (if any) examples they could build on. Any investment involves risks that reach beyond the risks associated with traditional business investments building on established models. This is a challenge for research and development groups who need to identify suitable models and test them in experimental or **living lab environments** before actual investment activities could be initiated.

Apart from understanding suitable business models, any developments in business or service activities need to rely on a suitable business environment providing appropriate infrastructure in logistics, transportation, buildings, communication technology, or administrative services etc. and assuring the availability of necessary personnel or services (incl. schooling etc.). However, rural areas usually lack in all or some of these elements of a suitable business environment as compared to urban areas which is a barrier for activating business or service investments. This is a challenge for research and policy groups who need to identify suitable regional development models, test them in living lab environments if at all possible, and translate them into **policy action plans** that can serve as blueprints for actual policy development decisions and initiatives.

Overcoming these challenges requires an interdisciplinary approach where issues of engineering, economics, finance, law, administration and others have to come together. This is a challenge in itself especially for research with its narrowly defined research disciplines. Rural development asks for overcoming the boundaries of traditional research disciplines and the integration of disciplines into comprehensive **project initiatives**.

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