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CHAPTER TWO

METROPOLITAN FOODSHEDS AS SPATIAL REFERENCES FOR A LANDSCAPE-BASED ASSESSMENT OF REGIONAL FOOD SUPPLY

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Abstract

The Food Planning and Innovation for Sustainable Metropolitan Regions (FOODMETRES) project strives to assess the environmental and socioeconomic impacts of food chains, with regard to the spatial, logistical, and resource dimensions of growing food as well as the questions of food safety and quality as key assets for food planning and governance. Recognizing that food production and consumption are not only linked via food chains in a physical–logistic way, but above all via value chains of social acceptance, FoodMetres is designed to combine quantitative and evidence-based research principles with qualitative and discursive methods, in order to address the wider dimensions of food chains in the context of metropolitan agro-systems. One of the research assets is to assess the location and amount of agriculturally productive land within reach of urban centers, to supply metropolitan populations with regionally grown food. For this purpose, we have developed an accessibility approach that is specifically designed to examine the potential of Metropolitan Agro-Food Systems (MAS) to feed urban populations. Taking into account data on transport infrastructure and land cover as well as the protection status of land, this paper highlights the results for the test cases of Ljubljana, Berlin, London, Milano, and Rotterdam.

Introduction

Based on the existing work by Wascher et al. (2010), the research on Metropolitan Footprint Analysis (MFA) and Tool (MFT) focuses largely on the spatial–quantitative dimensions of impact assessment. Research has shown that the ecological footprint, however, is being calculated using different methods, spatial scales, and reference systems, including land use (change) and anthropogenic impacts, energy, carbon or metabolic flows, and life cycle assessments (Lin et al. 2015; Virtanen et al. 2011; Wackernagel et al. 2006). The FoodMetres approach focuses on Metropolitan Agro-Food Systems (MAS) as supply networks for urban food consumption, with both global and local hectares as key references.

One of the most critical issues in the field of agricultural food systems is the difficulty of delineating the different sub-systems in terms of explicit spatial boundaries. The level of abstraction increases along with a system's geographic–functional space: while Local Agro-Food Systems (LAS) regions are still relatively easy to identify—though data availability at the European level is sometimes difficult—Global Agro-Food Systems (GAS) are the most challenging to define and are often limited to some spatial specifications for selected commodities. MAS regions, on the other hand, are often portrayed as Thünen-style concentric circles or boundary-less zones around urban agglomeration centers (Smeets, Harms, and van Steekelenburg 2004; Tress et al. 2004; van Steekelenburg, van Latesteijn, and TransForum 2012; von Thünen 1966). However, the functional distances between supply and demand can vary substantially due to the geography, and more importantly due to the transportation network surrounding an urban agglomeration. As such, distance expressed in travel time to a metropolitan center as a function of infrastructure and logistics must be considered as a proper variable when defining urban–rural relationships (van Eupen et al. 2012).

Logistics in the conventional food chain must be considered as offering a substantial contribution toward making the food system more sustainable. Logistics can become more effective by introducing new distribution centers and retailers in the chain, or can be changed by using new concepts. Opportunities for innovation range from citizen-driven approaches such as Community Supported Agriculture (CSA) (Renting, Schermer, and Rossi 2012; Schnell 2007), to the development of Metropolitan Food Clusters (MFC). MFCs use tightly knit networks and selected supplementary sources of preferred food items to link production with distribution and consumption.

Demands and resources will then be used in a different way, moving from a pushing to a pulling, demand-oriented network, providing more customer satisfaction, and resulting in less waste. Using new communication technologies and transport modalities, new approaches to small-scale production networks are possible.

Agro-Food Systems: An Overview

Agro-Food System (AFS) was defined by the Malassis School as the set of interdependent elements that work together toward the goal of satisfying food needs of a given population in a given space and time (Malassis 1979). This is one of the first widely accepted definitions, which were followed by many others. The actual complexity and real meaning of an AFS include aspects related to the geographical location of its components, the flows of goods, the relationships between the actors; it is not thus a stable system, but rather a dynamic entity subject to the changing of its components.

Global Agro-Food Systems (GAS)

Today's food consumption relies to a large degree on food imports from remote locations. This is the case for products such as exotic fruits, coffee, tea, chocolate, spices, and seafoods, as well as region-specific goods such as wines, olive oils, or cheeses. Besides these imported goods for direct consumption, meat production is largely based on the import of feedstuff such as soya. Being part of our daily diet, GAS products will continue to play a role and, given their substantial impacts on the ecological footprint, require special attention. The notion of GAS includes a number of aspects:

- Food production can include diverse commodities as well as monocultures/bulk food targeted as processed goods for large urban retailers (supermarkets) as well as for wholesale markets.

- Food chain components are spread across several countries, sometimes across the whole world.

- Food chain activities are characterized by large distances between the different operating units as well as by highly efficient transport and cooling systems.

- System innovation is geared toward resource efficiency with regard to transport volumes, energy, speed, and methods of keeping food fresh.

Metropolitan Agro-Food Systems (MAS)

According to a recent review by Sali et al. (2014), two criteria have been defined:

> MAS may be identified with reference to concepts used in the geographical and planning analyses, such the characterisation of urban sprawl (*Glaeser and Kahn, 2003; Deng et al., 2010*), central place theory (*Christaller*, 1933), accessibility (*Alonso, 1964; Litman, 2003; Halden, et al., 2005*), mobility and transports (*Wascher et al. 2010*), etc.;
>
> The dimension and the shape of MAS is defined on the basis of capability of agricultural land around the city to satisfy all, or part, of population's food demand. This capability varies according to several factors, such as food products, seasonality, convenience to produce one commodity over another one and agricultural productivity, this latter depending also on productive inputs and specific agro-climatic variables. The geographic dimension is variable with the balance of demand and supply within a specific context. Food demand and consumption are strictly related to the amount of population living in and being depending from the system, then, of course, a MAS big enough to satisfy all food needs of the city is equivalent to the 'foodprint'. (Sali et al. 2014, p. 9)

Expanding on the concept of agricultural supply, the Dutch think-tank TransForum specifies metropolitan agriculture as

> a deliberately designed system of intelligently connected [agricultural] production sites that uses the available resources, conditions and infrastructure in metropolitan areas to produce material and immaterial demands for the same metropolitan area. (van Latesteijn et al. 2008)

This definition goes beyond the mere biophysical potential in terms of soil quality, elevation, and climate of a region, and also considers matters such as technology, knowledge, infrastructure, and functional integration beyond single farm processes as essential components of MAS. MAS can be linked with both GAS and LAS. Comparisons between GAS, MAS, and LAS according to key food chain parameters are presented in Table 2-1.

The characteristics defining MAS are as follows:

- Food production can include diverse commodities as well as monocultures targeted at processed goods for large urban retailers (supermarkets) as well as for wholesale markets.
- Food chain components are spread across the whole metropolitan region surrounding one or a cluster of urban centers (polycentric urban structures).
- Food chain activities are characterized by a large degree of specialization, large distances between the different operating units, and centralized transport logistics.
- System innovation is geared toward increasing both resource efficiency and the value chain in the whole food system, in terms of higher productivity (quantity) and value creation (quality) with less resource input, applying principles of industrial ecology and decreasing the ecological footprint of urban food consumption.

Local Agro-Food Systems (LAS)

According to Sali et al. (2014), consumers associate local food with products grown, produced, and processed in the locality or region where they are marketed. Related concepts and definitions are alternative food initiatives (Allen et al. 2003), alternative food systems (Goodman 2003; Watts, Ilbery, and Maye 2005), Local Food Systems (LFS) (Hinrichs 2000), and Alternative Agro-Food Networks (AAFNs). AAFNs are defined by a spatial proximity between producer and consumer, promoting rural development objectives (Renting, Marsden, and Banks 2003), and are associated with a commitment to all the components of sustainability along the chain, from production to consumption, as examined in several studies on the sustainability potential of AAFNs (Iles 2005; Marsden 1999; Seyfang 2006).

The characteristics defining LAS are as follows:

- Food production includes diverse commodities as well as larger quantities of region-specific goods, targeting farmers markets, food cooperatives, and direct sales as well as “local food” marketing campaigns which are becoming increasingly popular among big operators such as supermarket chains; the latter, however, also focus strongly on "locality foods" which are of special origin, but not necessarily from the market region (Ilbery et al. 2006).

- Food chain components are located in spatially confined areas, such as individual farms or agglomerations of farms that are part of AAFNs. Because they frequently produce under strict ecological farming regimes, these networks are typically not linked up with farms and food chains that do not belong to the same or similar LAS farms.

- Food chains are typically rather short, with few elements or whose elements are controlled and managed by small numbers of actors (sometimes even only one). Though high-tech can be employed, these food chains rely more on non-technical production processes, and conventional or manual farming methods.

- System innovation is directed mainly at social and environmental issues at the farm level. The consumer's experience of understanding and even contributing to management of the food chain is key, as is the reduction of environmental impacts associated with conventional farming, such as the excess application of fertilizers, use of pesticides, soya feed, and irrigation measures (Elzen and Wieczorek 2005; Geels 2004; Kovacs 2013).

Table 2-1. Comparison of GAS, MAS, and LAS according to key food chain parameters.

	GAS	MAS	LAS
Leading Food Chain Type	Global long conventional chains.	Regional short / long conventional chains.	Alternative / short / local food chains.
Location & Market	No spatial or functional boundaries; Sites of food production, processing, retail sales, or consumption can be distributed across the whole world, though many food goods for long-distance export are packaged in the countries of origin.	Concepts used in geographical and urbanistic analyses, such as the characterization of urban sprawl, are functionally connected with metropolitan centers; Accessibility through road networks is key to defining the metropolitan region, urban fringe (peri-urban), and rural.	Inner-city, direct urban fringe, or rural with high market orientation to the city; Open lots, temporary sites, street markets, local marketplaces; Import role of functional connections, especially in peri-urban (and even easily accessible rural) regions.
Mission / Purpose	Largely commercial production, processing, and marketing of products; Focus on innovative, high-tech, efficient production systems; Logistics, communications, and infrastructure are key; Aim at large consumer groups, distributors.	Largely commercial production, processing, and marketing of products; Focus on innovative, high-tech, efficient production systems; Logistics, communications and infrastructure are key; Aim at large consumer groups, distributors.	Provide high-quality (fresh) food for affordable prices; Social responsibility and networking; Support and training for disadvantaged, disabled, or marginalized communities; Local and regional opportunities for linking rural with urban populations; Create added value; Create close ties with conscious, critical, and committed consumers.

	GAS	MAS	LAS
Food Chain Characteristics	Mainly large scale; Components are spread across several countries, sometimes across the whole world; Large distances between the different operating units; Highly efficient transport and cooling systems.	Mainly middle or large scale; Spread across the whole metropolitan region, surrounding one or a cluster or urban centers (polycentric urban structures); Relatively large degree of specialization; Large distances between the different operating units; Centralized transport logistics; Often part of the GAS, to a lesser extent part of LAS.	Mainly small scale; Food chain in single farms or agglomerations of farms that are part of AAFNs; Typically rather short with small numbers of elements or elements controlled by a few actors (sometimes only one) managing the food chain. Though high-tech can be employed, these food chains rely more on non-technical production processes, conventional and manual farming methods.
Type and Size of Farming	All sizes and intensities of farming.	Includes intensive conventional farming, including large-scale dairy farming (“megastallen”), glasshouse cultivation, vital clusters, or greenports; Labor extensive; Metropolitan context is not always clear (itinerant or indoor markets unclear).	Focus on small-scale farming; Changing production schemes; Small lots, small yields; Sometimes temporary (urban gardening); Labor intensive; Often organic, always support sustainability principles; Usually visible and accessible (backyard farming less so); If commercial, mostly small scale, niche rather than mass market production.

	GAS	MAS	LAS
Products	Include diverse commodities as well as monocultures or bulk food; Targeted at processed goods for large urban retailers (supermarkets) as well as for wholesale markets.	Wide range of agricultural products, including all supermarket products for which demand exists; Highly diverse in terms of product, specialization, and niche function.	Direct consumption; Vegetable & fruit production dominates (high diversity); Season- and region-dependent, but functioning throughout most of the year.
Actors	Depend strongly on countries of origin, can hence differ widely; Large-scale, vertically integrated agribusinesses dominate many commodity markets; At the end of the food chain, MAS-style actor groups prevail; Non-food sector is also increasingly involved (financial speculation).	Small but highly specialized (trained) workforce; Entrepreneurs, engineers, horticulturists, managers; Farming lobbies and associations; Governments or landscape protection agencies.	Urban dwellers, neighborhood initiatives; Cooperatives; Interest groups (NGOs) and social initiatives; Farming animators; Environmentalists; Governments: municipal, state, and/or national; Health agencies and local authorities.
Business Dimension	Sometimes associated or linked with MAS business structures; International trade organizations.	Generally driven by profit maximization and international competition, or seeking cooperation with equally large commercial partners (e.g. supermarket chains, energy companies); Experimental, science-oriented.	Generally seek to develop sustainable business models rather than focusing purely on profit maximization (often subsistence); Links between restaurants and farming—new networks, business opportunities; Farmers markets are a trendy urban phenomenon.

	GAS	MAS	LAS
Land Use and Landscapes	All kinds of land use sectors are involved; At the global level, monoculture land use dominates GAS; All levels of intensities (crop, grassland), including moveable production systems.	Open agricultural landscapes around and within peri-urban surroundings and rural areas; All levels of intensities (crop, grassland), including moveable production systems; Cultural landscapes that are managed to serve urban needs; Multi-functional peri-urban or quasi-rural landscapes.	Agricultural land in urban and peri-urban fringe; Also lots and vacant sites inside city boundaries.
Sustainability	Current status very heterogeneous; Most GAS production regimes are related to conventional farming and hence not very sustainable (high use of resources in both production and transport); Exceptions exist: small ecological footprints of highly efficient export farming systems, or bio-regional conditions provide natural resource efficiency (for example, through availability of sunlight and water).	Energy landscapes (biofuels, wind- and sun energy installations); Many assets and potentials (resource efficiency, industrial ecology, bio-based economy; Current status very heterogeneous.	Multi-functional urban land use (thereby addressing public-private partnership aspects); Focus on regional products, direct consumption; Support for habitat and biodiversity; “Greening” of the city.

	GAS	MAS	LAS
Innovation Domains	Mainly process and product innovation, with emphasis on optimizing transport volumes, energy, speed, and devices to preserve freshness.	Geared toward process and product innovation at farm, transport, and retail level, aiming at higher productivity (quantity) and value creation (quality) with less resource input; Trends toward system innovation appear likely; MAS are very heterogeneous, the closeness to the urban food market is the main driver of land prices and demand orientation.	Target mainly social and product innovation at farm level, with strong environmental assets; Key is the consumer's experience of understanding and even contributing to the food chain management; Reduction of environmental impacts.
Institutional Dimension	International organizations such as FAO and OECD, and policies such as CAP are drivers; Oil prices; Free Trade Agreements.	National (spatial) planning agencies; Financial sector (banks, investment funds); Regional stakeholders from private enterprise and governance.	In Europe, only occasional governmental support; Tradition of allotment gardens built into some national legislations, such as Germany's "Kleingartengesetz".

Methodology

Global hectares comprise the spatial impact that derives from all stages of the food chain, from farm to fork, including energy, water, land, and material input resources such as fertilizers, machinery, and packaging materials. The "ecological footprint" measures how much biologically productive land and water area is required to provide the resources consumed and to absorb the wastes generated by a human population, taking into account prevailing technology. The annual production of biologically provided resources, called bio-capacity, is also measured as part of the methodology.

The ecological footprint and bio-capacity are each measured in "global hectares", a standardized unit of measurement equal to one hectare with a global average production (Best et al. 2008). Using global hectares as a normalized unit allows ecological footprints to be expressed in comparable area terms, despite differences in bio-productivity among land types, regions, and countries. The ecological footprint is applied to the use of six categories of productive areas: cropland, grazing land, fishing grounds, forest area, built-up land, and also the carbon demand on land. The areas of these six land types are translated into global hectares using yield and equivalence factors, which relate the bio-productivity of each land type to global average bio-productivity. Because the bio-productivity of land types varies by country, yield factors are used to compare national yields in each category of land to global averages. Equivalence factors adjust for the relative productivity of the six categories of land and water area. The annual production of biologically provided resources, called bio-capacity, is also measured as part of the ecological footprint methodology, and is also accounted for in terms of global hectares (GFN 2006). Because these resource requirements are translated into spatial land occupation projections, global hectares should be considered as spatially virtual though politically valid indications of total human food consumption (or at least simulators thereof).

The FoodMetres project, however, has invested major research efforts in identifying the local hectares of food supply and demand at the level of the spatially explicit metropolitan regions in the case studies. As mentioned in the introduction to this report, defining the spatial boundaries of a MAS or metropolitan foodshed is critical, and introducing the variable of travel time from city center to agricultural areas is a key feature in the FoodMetres research approach.

Based on the contributions to the study on food demand, supply, and governance in Sali et al. (2014), and taking the food demand of a city (as identified in FoodMetres) into consideration, the required number and locations of "local hectares" of agricultural areas meeting these demands are identified by geographic information system (GIS)-based assessment; this becomes the starting point for illustrating the challenge of feeding the urban population at the heart of the metropolitan region on the basis of the potential supply from the metropolitan food basket.

The assessment was targeted at:

- Identifying existing agricultural areas that already have a clear function for producing food or where food chain innovation approaches are likely to be effective (potentials);
- Making the aspect of accessibility more tangible in terms of travel time to and from agricultural areas (arable and pasture) with regard to their protection status; and
- Expanding the notion of the existing and potential metropolitan agro-food region offering food for the cities by releasing it from administrative boundaries.

Drawing upon this important background information, our approach then contrasts the food demand with the regional supply as a function of the specific site and farming conditions, showing the food provision capability that exists inside the metropolitan system.

The procedure that we applied is as follows:

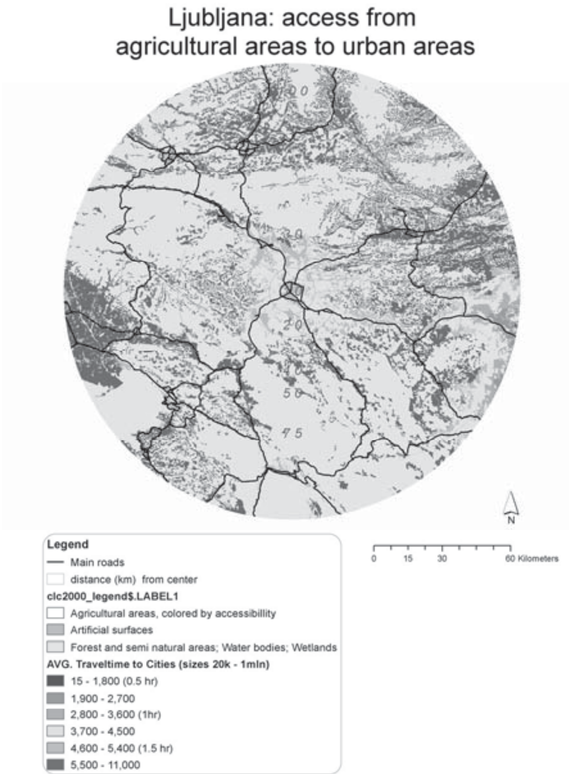
1. The starting point for measuring transport distances is the central point of the urban capital of the metropolitan region, thus the very centers of the cities of Ljubljana, Berlin, London, Milano, and Rotterdam.
2. We then used the European data on the traffic network (EuroGraphics 2011), which differentiates hierarchies of road systems. For our assessment we used the primary (highway) and secondary (provincial roads) as references for the accessibility of regions. Rather than using Euclidian distances, we opted for real travel time distances, taking into account the different spatial extension of these cities. This led us to the establishment of six accessibility levels at half-hour intervals.
3. These accessibility parameters allowed us to identify four types of agricultural areas: arable lands, permanent crops, pastures, and heterogeneous agricultural lands.
4. Protected areas, forests, settlement areas, and water bodies were excluded from this search.

5. We introduced the European Landscape Classification (LANMAP) (Mücher et al. 2010) as a reference that allows simultaneous taking into account of parameters such as soils, topography, and land use.

Applying the above approach enabled us to identify the metropolitan potential for land-based food supply as one of the criteria for developing sustainable food chain strategies at the regional level.

Preliminary Results

Figures 2-1 through 2-5 illustrate the results of projecting the population-based food demand assessment for the cities of Ljubljana, Berlin, London, Milano, and Rotterdam onto the metropolitan food supply potential, differentiated according to infrastructural accessibility. The maps allow planners, land users, agricultural enterprises, and retail services to identify those areas of arable land, heterogeneous agricultural areas, pastures, and permanent cropland that allow for regional food production but which are not yet geared to focus on the direct centers of demand.



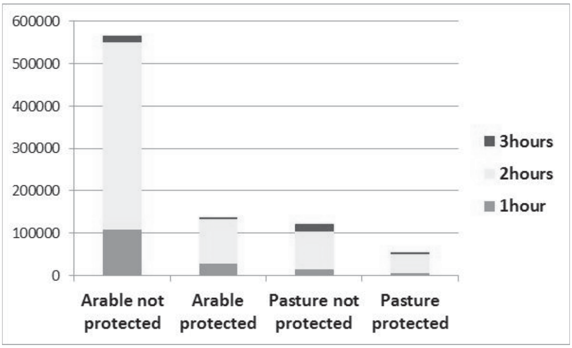


Fig. 2-1. Travel distance (hours) to agricultural land (hectares) around Ljubljana.

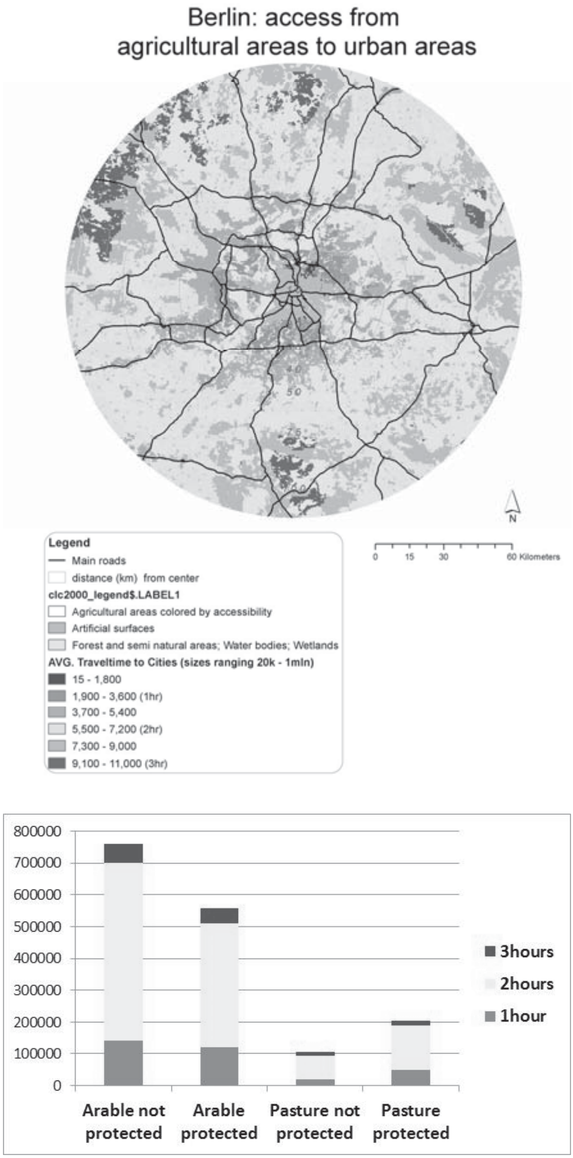


Fig. 2-2. Travel distance (hours) to agricultural land (hectares) around Berlin.

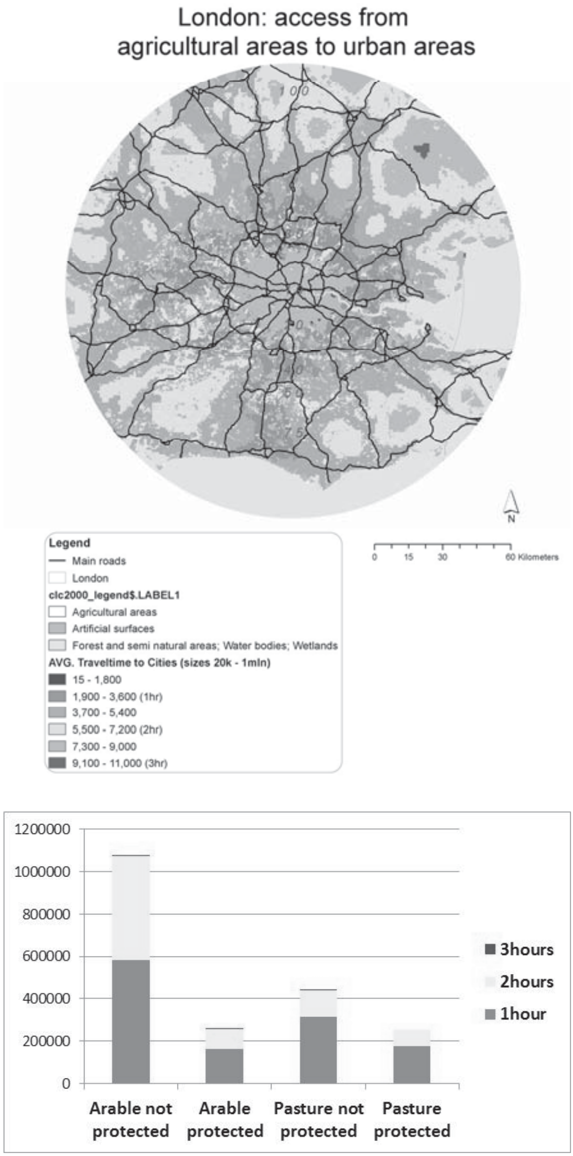


Fig. 2-3. Travel distance (hours) to agricultural land (hectares) around London.

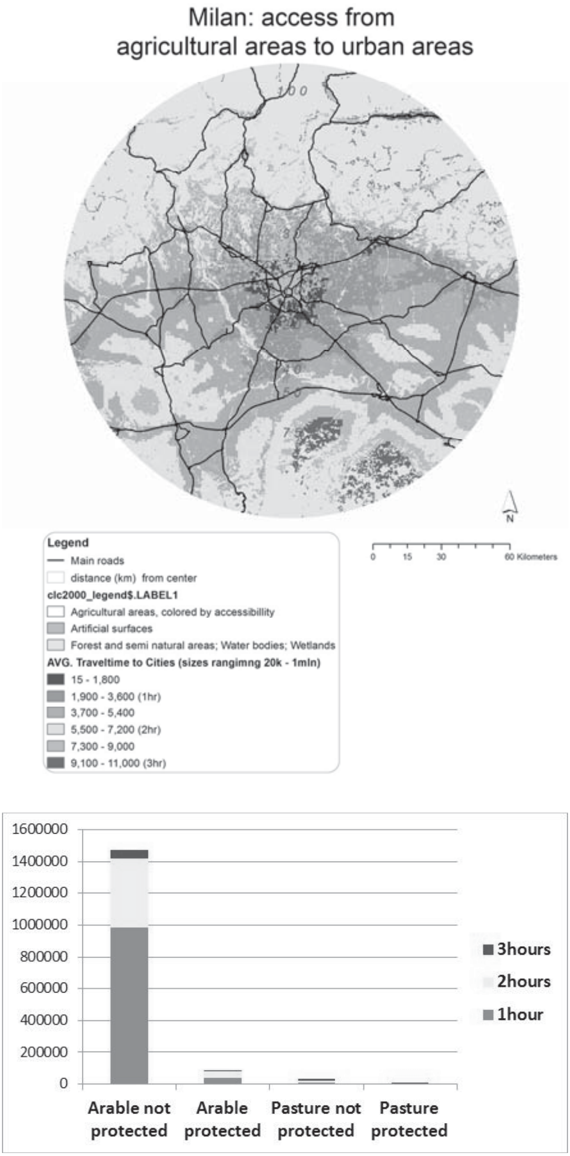


Fig. 2-4. Travel distance (hours) to agricultural land (hectares) around Milano.

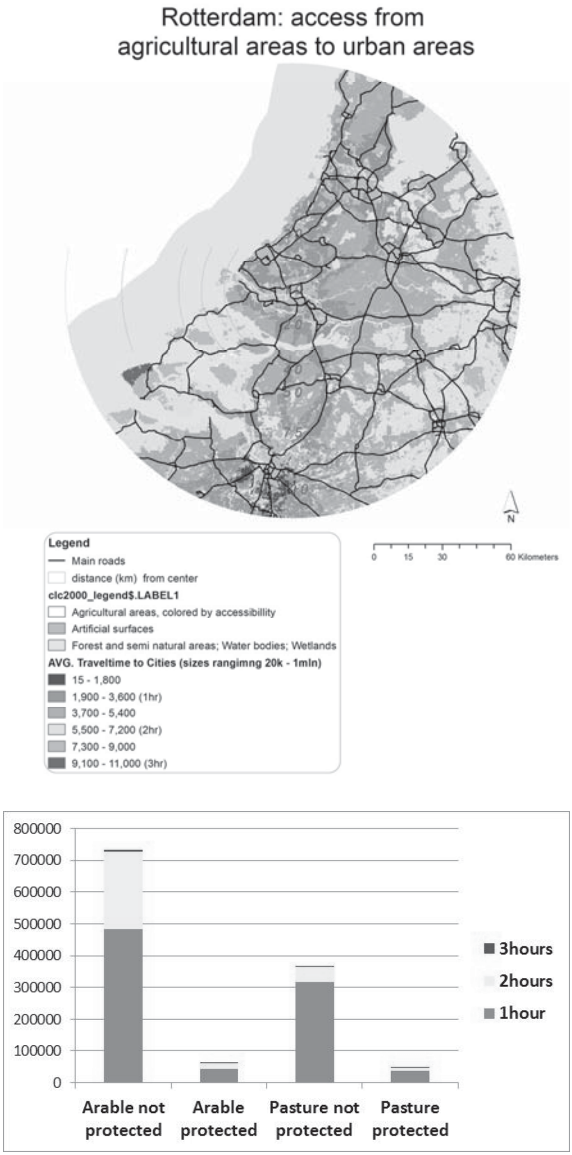


Fig. 2-5. Travel distance (hours) to agricultural land (hectares) around Rotterdam.

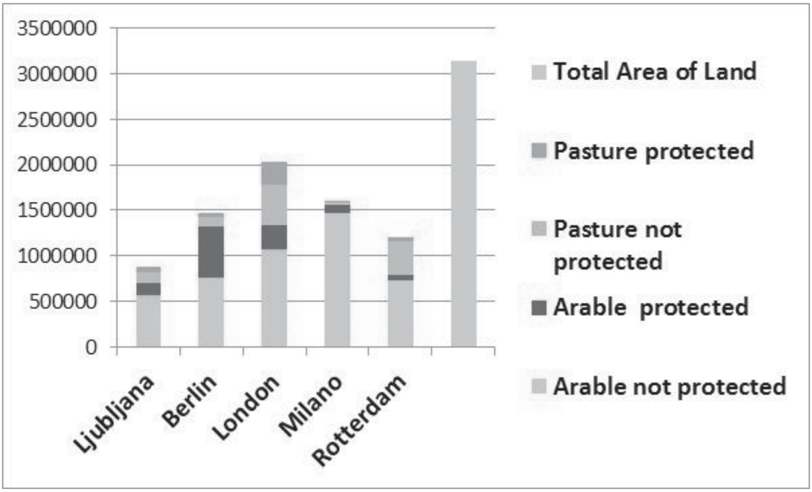


Fig. 2-6. Comparison of the total land accessibility (dependent on travel time) within 100 kilometers, according to protected/non-protected status of arable and pasture land against total land availability.

Discussion

The analysis of accessibility to agricultural lands outward from the urban centers of the five case studies shows substantial differences in terms of relationship between pasture and agriculture, as well as in terms of total hectares that can be accessed (see Fig. 2-6). To begin with the latter, we see that London peaks with the largest accessible area, more than 2 million hectares, followed by Milano (1.6 million hectares), and Berlin (almost 1.5 million hectares). Rotterdam takes a middle range with 1.2 million hectares and Ljubljana has the least amount of agricultural area to access, less than 900,000 hectares. Understanding these substantial differences—at first sight surprising, given the standard approach of using a 100-kilometer zone as the common reference—requires a look at both the infrastructural as well as land cover characteristics of each individual metropolitan region. Here we see that London, even though the urban surface area of the city is extremely large (around 160,000 hectares), relies on an extremely dense traffic network that allows access to virtually all available crop- and grasslands in the surroundings.

London's other territorial advantage is the small number of forests and bodies of water within its 100-kilometer radius. Berlin, on the other hand, has large amounts of forest area in the surroundings while lacking London's type of road density. In addition, a large share of Berlin's arable land is designated under landscape or nature conservation schemes, the highest proportion among all of the case study areas. Another interesting example is Ljubljana, with the lowest amount of accessible agricultural grounds. In this case, it is the extremely high share of forested land (71 percent of the total surface area of Slovenia is covered by trees) in combination with a rather limited transport network that results in the low accessibility of agricultural land. In the case of Rotterdam, it should be taken into account that a large proportion of the 100-kilometer radius falls into the sea, while Milano's position close to the Alps substantially limits the amount of available agricultural area.

In the following paragraphs, we will briefly review the results for the individual case studies, with special attention to the relationship between travel distance and accessible agricultural lands.

For **Ljubljana**, the map (Fig. 2-1) shows that existing agricultural lands are extremely fragmented and nested between forested lands, contributing to the accessibility problem. The corresponding bar chart of Fig. 2-1 shows that hardly any agricultural land is accessible in the three-hour travel-distance zone, indicating that such areas are situated well beyond the 100-kilometer radius. The largest share of not-protected agricultural land (more than 400,000 hectares) is located within two hours' travel distance. Given the size of Ljubljana, with a population of about 270,000, the food regions accessible within one hour's distance must be considered as rather limited, but still sufficient to feed the local population: assuming an average need of 0.25 hectares per person, 67,500 hectares of land are needed.

In the case of **Berlin**, we already mentioned the large proportion of protected landscape and nature areas that compromise the accessibility of agricultural land. The Berlin situation, by the way, reflects the overall national statistics: for the whole of Germany, more than 30 percent of the land is under one protection status or another. However, most of this is cultural landscape (nature and landscape parks with mainly recreational attributes) and there is no strict legislation when it comes to agricultural land use.

Nevertheless, the chart of Fig. 2-2 illustrates that only a small fraction of Berlin's local hectares for food supply are available within one hour's travel distance. Most of the arable land is within two hours' distance.

Given the notoriously large proportion of the livestock sector as part of the required local hectares, Berlin's population of 3.5 million lacks sufficient land resources for grassland and fodder.

In comparison to Berlin, **London** (Fig. 2-3) appears to be rather well equipped with accessible agricultural areas within one hour's travel distance. We mentioned the extremely dense road network, but also the lack of large forested areas. Though there is a relatively large amount of pastureland within one hour's distance, the overall land requirement for dairy and feed is likely to be twice as high as is reachable within three hours. There is enough arable land available within two hours' travel distance.

The most striking attribute of the **Milano** metropolitan region (Fig. 2-4) is the small amount of accessible pastureland within the 100-kilometer zone around the center. From the total of about 90,000 hectares of permanent grasslands, only one-third is accessible with three hours' travel distance within the 100-kilometer radius. At the same time, there are 1.4 million hectares of arable land accessible within two hours' travel distance, with the largest share of about 1 million hectares even within one hour. This means that in principle, Milano can be self-reliant on agricultural land within one hour's travel distance from the centre.

Due to **Rotterdam's** dense infrastructural network and agricultural surroundings (Fig. 2-5), there is access to sufficient local hectares of both pastures and arable lands within one hour's travel distance to feed the local population of 1.2 million people living in the so-called city-region of Rotterdam. However, since it is a high-agglomeration zone, these agricultural lands have to be shared with another 4.4 million people living in the wider metropolitan region. In the case of such agglomeration zones, the supply of agricultural land must therefore be considered as rather hypothetical.

Summary

This project fills gaps in relating accessibility calculations for agricultural lands in metropolitan regions to basic ecological footprint calculations at the level of local hectares (0.25 hectares per person). The assessments illustrate large variations between the different case studies due to different types of land cover and infrastructural networks.

The societal challenge was to elaborate on one of the key emerging themes in spatial planning: the link between access to land and urban food supply. The primary aim was to provide national and regional authorities as well as stakeholders with insights for decision making in the field of food planning at the regional level; the secondary aim was to provide methodological feedback to European institutions' strategic policy goals on sustainable development.

Food planning is a young branch at the very interface between social and environmental sciences. The project makes a contribution to both the substantive and the procedural bodies of knowledge, thus strengthening the scientific foundations of the emerging discipline. It also provides building blocks for interdisciplinary research, crossing boundaries with the humanities (local identity, cultural landscape) and natural sciences (environmental impact, food technology).

Producing spatially explicit results on the accessibility and amount of regionally available agricultural lands as part of the ecological footprint assessment for urban food consumption allows planners, agricultural experts, policy makers, farmers, and retailers alike to engage in a fact-finding debate on how to practically design the metropolitan foodsheds of the future.

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