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PRAC – Policy Research & Consultancy

Marina Kobzeva, Karlheinz Knickel

KarlheinzK@prac.de

Snapshot: Expressions of Urban – Peri-Urban – Rural Relationships

Land use trends and pressures on open space

FrankfurtRheinMain, Germany

1. Brief Description

The territory of the *Regionalverband* (Regional Authority) FrankfurtRheinMain comprises 75 municipalities with around 2.3 million inhabitants. The territory of the Regional Authority forms the core of the FrankfurtRheinMain metropolitan region (see **Figure 1** in Appendix).

Given the scarcity and intensive use of space, the Regional Authority stresses that land use should be planned and regulated even more carefully than ever before. The areas for the protection and development of connected open spaces are represented in the Regional Land Use Plan as ecologically significant land use, priority and reserve areas for nature and landscape, and regional green spaces. Integrating and securing spaces that have ecological value, linking them and maintaining them for future generations are the concerns of the so-called regional *Biotopverbundsystem* (biotope network system).

Another increasingly important challenge is climate change and its impact on densely built-up areas in cities. The Environment Department, in cooperation with other partners, is generating and updating the *Klimaplanatlas* (see Climate plan and map, 2016; **Figure 2** in Appendix). It integrates urban climatic factors and town planning considerations (e.g. by mapping existing and potential heat islands, fresh air production areas, fresh air corridors). It provides an information platform for making more informed land use planning decisions.

In this appraisal, we particularly focus on *the biotope network system* prepared by the Regional Authority in 2011, and the Climate plan and map for the city of Frankfurt prepared by the Institute of Climate and Energy Concepts in 2016. We illustrate key trends, challenges and the perceptions of key actors, and we explore the connections between these three spheres, paying particular attention to the question of urban, peri-urban and rural dimensions.

Since this appraisal is based on various sources, we use different spatial references in this report: the area administered by the city of Frankfurt, the territory of the Regional Authority FrankfurtRheinMain, and the larger metropolitan region FrankfurtRheinMain.

2. Questions and/or Challenges

The limited space available for urban development makes the redevelopment of under-used sites, such as former industrial areas, as well as harbour and railway brownfields, a major political issue and objective.

- > The intensive use of space, and fragmentation due to infrastructure, business and housing developments, have led to a significant decline in biodiversity in the past decades.

Recognising this, the Regional Authority established a biotope network integrated it in the Regional Land Use Plan system to provide a common structure for nature conservation for the region.

- > The success of this depends on the participation of all regional actors. Only when owners, tenants, farmers, nature conservationists, politicians and public authorities take responsibility and actively engage, it is possible to achieve its objectives.

With this participatory regional nature conservation strategy, the Regional Authority wants to counteract increasing land sealing and fragmentation of the unique landscape.

Manifestations of climate change in the region are particularly expressed as more severe urban heat waves affecting citizens.

- > How can urban planners, architects and building owners can adjust to this, and what are the implications for land use planning?

The Climate plan and map 2016 provides important clues for such forward-looking planning. It is characterised by up-to-date and refined input data and with an improved methodology. The selected viewing scale corresponds to the land use plan.

Vidal (2014) argued that *"current and common challenges such as climate change and efficient use of natural resources can be tackled more easily if cooperation exists between urban, peri-urban and rural areas"*.¹ Such cooperation is possible and encouraged in the particular context of FrankfurtRheinMain.²

- > Against this background: How to better understand the demand for space and to assess trends and challenges in open space development? How can the biotope network goals and the aims presented in the Climate plan and map inform environmental and/or land use planning and decision-making?

¹ European Parliamentary Research Service Blog <https://epthinktank.eu/2014/02/13/from-urban-rural-linkages-to-urban-rural-relationships-in-the-eu/>

² At the same time, the Regional Authority emphasises that a *"dichotomy between urban and rural areas does not really exist as only two municipalities out of 75 in the area of Regional Authority are formally classified as rural areas, while all others up to the urban core have mixed characteristics, including elements of rural space, and are called 'peri-urban'"*.

3. Main Insights

The examined studies showed that decision-makers understand and prioritise the need for better regulated land use and for environmental sustainability in the region.

Multiple programmes and initiatives, and regulatory frameworks, have been put in place to better align land use with environmental goals. The planning of settlement areas for example needs to be complemented by a certain proportion of unsealed land as well as the preservation and development of ecologically valuable areas. Related good practices were identified but should be upscaled and multiplied across the region.

3.1. Indications of the application of the new concept of 'New Localities'

- > Ensuring environmental sustainability and a high quality of life (space)

In priority areas for nature and landscape, any spatially significant uses, plans and measures that conflict with the nature conservation objective are excluded. Interventions in these areas are therefore to be omitted. Already existing impairments should be reduced. In nature conservation areas, ecological goals must be given a higher weight than competing usage claims. In conservation areas the focus is on the maintenance and further development of valuable habitats.³

Environmental professionals from Hessen are known for their expertise and wanted for related projects in various countries, e.g. for the projects promoted under the auspices of the European Neighbourhood Policy (ENP).⁴

- > Generating new recreational areas and enhancing existing ones

Green areas, such as public parks, can successfully address urban climatic challenges as well as improve citizens' quality of life. Frankfurt am Main has plenty of them. However, some existing green zones are already being intensively used, and in some cases, overused. The main demands increasingly placed on parks and open space are expanding residential districts and changing patterns of leisure activities. Considering these, a top priority is placed to not only the protection of existing parks, but also to generating new recreational areas and enhancing existing ones (Stadtplanungsamt, 2012, Urban Development Report for Frankfurt).

3.2. Insights related to the broad area of 'Smart Development'

- > When examining existing studies on land use trends and open space, we adopted a more encompassing understanding of 'smart development' that also comprised the

³ Das Biotopverbundsystem – Freiraumakzente für den Naturschutz https://www.region-frankfurt.de/media/custom/2005_160_1.PDF?1440753533

⁴ The Government of Hessen <https://english.hessen.de/citizens/environment-nature/sustainable-development-and-international-cooperation>

connectedness and embeddedness of activities, the valorisation of local cultural, natural and social resources, and the more conventional understanding of smart specialisation as (technological) innovation.

Under the slogan "*Sustainability in Hessen – Training and Action for our Future*", the government of Hessen developed a sustainability strategy that involved all social groups. The aim of the strategy is to provide a long-term perspective for Land Hessen and to build a future characterised by a strong economic performance, protection of the natural environment and social justice.⁵

- > Connecting different developments, creating synergies

The regional authorities actively promote sustainable tourism, which is one of the manifold expressions of urban-rural interactions. It can encourage both sustainable land use and the demand for quality regional products, and further advance economic development in the region. With the help of the *Umweltallianz* (environmental alliance) *Hessen*, Hessian businesses and key organisations promote sustainable regional economic policies and make a joint effort to strengthen Hessen as a business location while maintaining a high environmental quality.

3.3. Other insights that could be relevant for further work

The potential for more beneficial relations across the rural-peri-urban-urban interface plays a major role

Related to climate adaptation strategies, both urban and rural areas are developing integrated open space and environmental planning concepts.

- > One example in an urban setting is the recently elaborated "*Spokes and Rays Concept*", linking the city centre to the surrounding Frankfurt Green Belt⁶ by fresh air corridors, green connections, alternative mobility (especially cycling) and more social space development (First International Capacity Building Workshop, 2016).

Frankfurt am Main has a unique green area, the Frankfurt Green Belt, which was declared a nature reserve in 1994.

- > Since 1998, the Green Belt is the heart of the larger "Rhein-Main Regional Park" that connects and is connected with an even wider network of green and open spaces far beyond the city limits. Some typical parts and landscapes within the Green Belt include: the river Nidda, the Nidda valley for nature protection and as a corridor for fresh air, the *Stadtwald* (city forest) which is Frankfurt's 'green lung', areas of allotment gardens

⁵ The Government of Hessen <https://english.hessen.de/citizens/environment-nature/sustainable-development-and-international-cooperation>

⁶ Please note that the Frankfurt Green Belt differs from the Metropolitan Green Belt in London. The fundamental difference is that the Frankfurt Green Belt lies within the city borders.

and communal gardening, leisure and recreation along the river Main, and more than 60 km of cycle tracks (First International Capacity Building Workshop, 2016).

Factors that limit and enable beneficial relations between rural, peri-urban and urban areas and smart (rural, territorial or regional) development

Protected core areas within the biotope network such as nature reserves and 'Natura 2000' areas are to be maintained in their high-quality condition. Most of the connection areas are currently being used intensively and should be upgraded ecologically, for which various subsidy programs can be used. Compensation measures for interventions in nature and landscape are particularly well-suited to establish a biotope network by spatially bundling the measures. This ensures at the same time that the remaining area is reserved for use by agriculture and forestry.

The culture of reviving buildings can facilitate socio-economic development and strengthen local identity in both cities and rural communes. While aesthetics of the built environment is central to the attractiveness of the cities, it should also be enhanced in rural areas which possess great potential of this kind. An important task of the planners at every level is to therefore raise citizen awareness of the quality of the built environment. Urban planning and architectural competitions can contribute to enhancements.⁷

- > In terms of challenges, there are important factors affecting land use development, such as relatively rigid land use regulations in cities and lack of sufficient investment in small towns. Discussions about the need to return to mixed use areas are important.

The demand for housing construction in metropolitan regions, like FrankfurtRheinMain, tends to be high or very high. Residential space creation has in the last years mainly been part of older development measures, and it is not expected that new, large development areas will be provided in the coming years.

- > As a result, the question of how to move into the FrankfurtRheinMain metropolitan region will increasingly depend on the availability of land in the surrounding area, which will then require considerable public investment in transport infrastructure.⁸

Maintaining open spaces: Challenges for key actors and institutions

In the last twenty years, many energy, climate and environmental protection related projects and policies were implemented in the region (e.g. the Energy and Climate Protection Concept, the Master Plan 100% Climate Protection, the Frankfurt Green City Platform etc.). By raising public awareness and encouraging more sustainable practices, environmental conditions could be improved, and CO₂ emissions reduced. The goal to maintain this green profile as well as providing an adequate amount of open spaces.

⁷ City in Focus | Perspectives of the National Urban Development Policy https://www.nationale-stadtentwicklungspolitik.de/NSP/SharedDocs/Publikationen/EN/stadt_im_fokus.pdf?__blob=publicationFile&v=1

⁸ City in Focus | Perspectives of the National Urban Development Policy https://www.nationale-stadtentwicklungspolitik.de/NSP/SharedDocs/Publikationen/EN/stadt_im_fokus.pdf?__blob=publicationFile&v=1

At the city level, the need for an *"Integrated City Development Concept"* that would define urban development until 2030 needs to be discussed. The main topics to be covered in a long-term development concept include residential life, work, retailing, transport and mobility, open space and green areas, environmental and climate protection, settlement and building structures, infrastructure provision and land use.

Impact of beneficial relations between rural, peri-urban and urban areas on the creation of value added and job growth

Frankfurt am Main features a dynamic and international population with a high percentage of young people. With alluring job offers in the market, the city population has been increasing. The spring report of 2017 on real estate indicates that Frankfurt am Main is one of the hot spots of the German housing market.

Since this growth is foreseen to continue as a trend, the municipality is challenged by a pressing demand for affordable housing to accommodate the growth and, at the same time, to address ecological and climatic requirements, as well as the need to preserve the limited open and green spaces (First International Capacity Building Workshop, 2016).

The interpretation of the spring report of 2017 in terms of urban – peri-urban – rural relations and dynamics is not straightforward. Although overall rural-to-urban migration has decreased, the pattern remains the same, but with a growing trend towards suburbanisation. One reason is an insufficient supply of housing and related high prices in the centres of larger cities.

- > To analyse such trends, the dynamics not only in the centres of the metropolitan regions but also in peri-urban and more distant areas should be examined. Factors such as employment dynamics determine the growth, stagnation or shrinkage of a city.⁹

Examples of good (and bad) practice in smart development and/or the contribution of rural-urban synergies to smart regional growth.

Multiple projects, programmes and initiatives related to land use, nature conservation, smart development and stakeholder engagement are being implemented in the territory of Regional Authority. We would like to illustrate only some exemplary practices.

- > *The Regional Park RheinMain* is a network of natural and green areas, along with a system of green routes in the metropolitan region FrankfurtRheinMain (see a dedicated rapid appraisal report). The park was created to safeguard open spaces, green areas, agricultural land as well as the woodlands between the cities and settlements of the agglomeration, to provide recreational facilities and to protect the regional biodiversity and climate. The regional park is a communal project of the towns and municipal authorities in the region (First International Capacity Building Workshop, 2016).

⁹ City in Focus | Perspectives of the National Urban Development Policy https://www.nationale-stadtentwicklungspolitik.de/NSP/SharedDocs/Publikationen/EN/stadt_im_fokus.pdf?__blob=publicationFile&v=1

- > The main value, output and capacity of the *Frankfurt Green Belt* relates not only to biotic (species and biotypes) and abiotic (climate, soil, water, air) values, but also to recreation and health potentials, to the generation of economic income (agriculture, forestry, catering industries) as well as to the very important role of environmental education. A central aspect is engaging people living along the urban-rural trajectory of the Green Belt (First International Capacity Building Workshop, 2016).
- > The administration in Hessen protects nature through agreements with landowners and users and the impact mitigation procedure, which is based on the '*polluters pay*' principle. One of the more ambitious goals is to prevent excessive use of large areas for the development of residential and other real estate projects and industrial areas. Over 20 percent of the land area of Hessen contributes to the network of European nature reserves Natura 2000. However, the proportion of nature reserves is much lower in the FrankfurtRheinMain region, which is densely populated and experiences very high transport loads.¹⁰
- > *The Riedberg Urban Extension District* was one of the largest urban development projects in Germany designed to meet the increasing housing demand of its population. The Riedberg district is about 8 kilometers distant from the city center, connected by efficient public transport. It was planned as a mixed-use urban district for multifunctional purposes aiming to provide a high quality of urban life as well as social diversity and integration. The district also features sustainable environmental practices, such as using biofuels for heating buildings and water and stormwater management. A great amount of green areas – parkland and recreational landscape zones – provide ventilation channels for the city climate (First Intern. Capacity Building Workshop, 2016).
- > The abandoned former *Helicopter Base Frankfurt-Bonames* of the U.S. Army was redeveloped into a park for recreation and environmental education purposes. The area became part of the green infrastructure network and the Frankfurt Green Belt, offering spaces for diverse leisure and recreational activities, but also including some landmarks and art sculptures.

4. Data Sources and Indicators

Table 1 Data / Indicators used

Data / Indicator	Source
Regional land use plan	Regional Authority (Regionalverband)
Biotope network	International conventions, EU directives and political declarations of intent (Habitats Directive, Birds Directive)
Climate plan and map	Klimaplanatlas Frankfurt am Main 2016
Ecologically significant land use	Regional land use plan

¹⁰ The Government of Hessen <https://english.hessen.de/citizens/environment-nature/nature-conservation-biodiversity>

Data / Indicator	Source
Green areas	Regional land use plan
Priority areas for nature and landscape	Regional land use plan
Reserved areas for nature and landscape	Regional land use plan
Natura 2000 areas	EU standards

5. Critical Appraisal of Data Use

By now, there are multiple ongoing and completed projects initiated by the Regional Authority and various municipalities in the region aimed at more innovative ways to manage land use and open space, including existing green areas. In terms of data availability, ample resources (e.g. reports, regional statistics, maps, figures etc.) on land use, land use trends etc. are publicly available. A large number of them are continuously updated by the Regional Authority.

The appraisal illustrates that in the areas within the jurisdiction of the Regional Authority, high priority is given to developing, preserving and managing open and green spaces, including the protected Green Belt. The particular role attributed to maintaining and managing open spaces is indicative of a highly developed integrated approach to urban, environmental and open space planning.

This Snapshot also reveals that it is possible to implement the biotope network and other innovative land use measures successfully with the help of relevant actors and existing subsidies or compensatory regulations. One great example is the support provided by the Regional Authority to the municipalities to initiate projects that can enhance the regional biotope network system.

Other key findings concern the importance of education and public participation. People are interested in having recreational and green spaces for leisure activities and can contribute to the related monitoring. A telling example are the complaints the Environment Department regularly gets from citizens about waste, illegal tree cutting, and car/motorbike disturbances.

6. References

Anonymous (2016) Proceedings of the First International Capacity Development Workshop, Frankfurt am Main and Heidelberg https://www.frankfurt-university.de/fileadmin/stand-ard/Brochure_of_the_1st_Capacity_Development_Workshop_in_Frankfurt.pdf (accessed 12.08.2018)

Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) (ed.): City in Focus | Perspectives of the National Urban Development Policy. Positions of the Policy Board. Bonn, 2017 https://www.nationale-stadtentwicklungspolitik.de/NSP/SharedDocs/Publikationen/EN/stadt_im_fokus.pdf?blob=publicationFile&v=1 (accessed 07.08.2018)

From Urban-Rural Linkages to Urban-Rural Relationships in the EU, European Parliamentary Research Service Blog <https://epthinktank.eu/2014/02/13/from-urban-rural-linkages-to-urban-rural-relationships-in-the-eu/> (accessed 31.08.2018)

Vidal I.M. in the European Parliamentary Research Service Blog, 2014. <https://epthinktank.eu/2014/02/13/from-urban-rural-linkages-to-urban-rural-relationships-in-the-eu/>

Katzschner et al. (2010) Umweltamt, Stadt Frankfurt am Main.

Klimaplanatlas. Frankfurt am Main. Klimafunktionskarte 2016. https://www.frankfurt.de/sixcms/media.php/738/Klimaplanatlas_Klimafunktionskarte_FFM_2016.pdf (accessed 16.08.2018)

Regionalverband FrankfurtRheinMain (2011) Das Biotopverbundsystem – Freiraumakzente für den Naturschutz. Ziele, Planung und Realisierung im Regionalen Flächennutzungsplan. https://www.region-frankfurt.de/media/custom/2005_160_1.PDF?1440753533

Stadtplanungsamt (2012) Frankfurt am Main Urban Development Report, 2012, Frankfurt am Main.

The Government of Hessen <https://english.hessen.de/citizens/environment-nature/hessen-wants-offer-its-citizens-and-visitors-greatest-quality-life> (accessed 02.08.2018)

The Government of Hessen <https://english.hessen.de/citizens/environment-nature/nature-conservation-biodiversity> (accessed 02.08.2018)

The Government of Hessen <https://english.hessen.de/citizens/environment-nature/sustainable-development-and-international-cooperation> (accessed 02.08.2018)

The Government of Hessen <https://english.hessen.de/citizens/environment-nature/forest-nature-experience> (accessed 02.08.2018)

Urban-Rural Relationships in Metropolitan Areas of Influence. Best Practice Examples of Metropolitan-Rural Cooperation.' METREX working group report, October 2011 https://www.metropolregionnuernberg.de/fileadmin/metropolregion_nuernberg_2011/07_service/03_publicationen_und_berichte/03_publication_themen/METREX_Broschuere_URMA_FINAL.pdf (accessed 19.08.2018)



Fig. 1: Territory of the *Regionalverband* (Regional Authority) *FrankfurtRheinMain* and *Metropolregion* (Metropolitan region)

Cat.	Name
1	Fresh air productions or air path
2	Fresh air productions on slopes
3	Mixed climates with local circulation pattern
4	Heat island potentials
5	Heat island
6	Heat island max

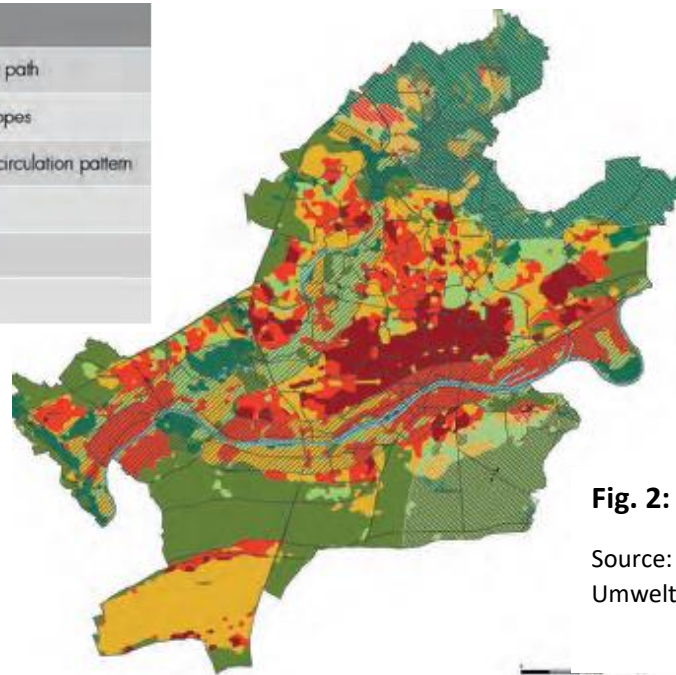


Fig. 2: Climate plan and map

Source: Katzschner et al. 2010. Umweltamt, Stadt Frankfurt am Main

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