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

### Mobility in FrankfurtRheinMain

FrankfurtRheinMain, Germany

#### 1. Brief Description

This appraisal of mobility in FrankfurtRheinMain is not based on a single study, instead it provides a general description and assessment of current situation and trends.

FrankfurtRheinMain Metropolitan Region is the fifth-most populous economic region in Germany and one of four (with Munich, Hamburg and Berlin) whose population continues to grow. Demographic projections forecast that the Metropolitan Region will continue to grow at 4.8%, second to Munich (8.3%), and in tandem with Stuttgart (4.2%) between 2008 to 2030, while the overall population of Germany will decline by 1.7% (and as much as 17% in some regions in central Germany,) over the same period (OECD, 2015).

The central location of Hessen in Germany has been used to build a transportation infrastructure that is unparalleled in Europe. FrankfurtRheinMain has become one of the most important transport hubs in Europe, occupying a top position for air, road and rail traffic. In 2014, Frankfurt Airport had a traffic volume of more than 60 million passengers per year, 490,000 flights, and handles about 2.1 million tons of air freight. The airport provides jobs for around 80,000 people. Other indications of the extreme traffic density in the FrankfurtRheinMain region are: Frankfurt's main railway station is used daily by around 450,000 rail passengers, and over 350,000 cars cross the *Frankfurter Kreuz*, where the busiest motorways meet, per day. The direct connection to the airport and the ICE train station created the first intermodal transport hub in Europe.<sup>1</sup>

Airport, motorways, railway lines and waterways - all these are also the lifelines of business for the region. However, all existing mobility types are reaching their capacity limits, and the very high traffic density leads to increased pollution emissions. The willingness of the population to tolerate traffic noise and pollution is increasingly becoming an issue.

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<sup>1</sup> ditto, p. 51

## 2. Questions and/or Challenges

For Hessen, and specifically for the area of the Regional Authority FrankfurtRheinMain region, it is important to carefully manage mobility, also because logistics and transport play a significant role for the prosperity of the larger region.<sup>2</sup>

It is therefore not surprising that the relevant actors in the region have a unique know-how in traffic management. Future scenarios for sustainable mobility of people and goods are a key issue, including in regional land use planning.

A particular interest is how to use innovative strategies for economic, ecological and sustainable mobility. "*Mobiles Hessen 2020*" aims at climate-neutral mobility by 2050, which means that emissions should be reduced by at least 90% compared to 1990.

### *Sustainability in mobility and logistics*

Generally, sustainability in mobility and logistics play a very important role in the FrankfurtRheinMain agglomeration (see for example PERFORM, 2018). The currently very good position of the logistics cluster RheinMain within the German logistics market is documented by a series of studies and reports.

Prognos AG's Future Atlas, for example, makes the Rhine-Main region one of the top 3 logistics clusters in Germany. A study by the Hessen agency assigns the highest cluster potential of all industries to logistics at the state level as well as for southern Hessen (Regierungsbezirk Darmstadt).<sup>3</sup>

- > How important are related initiatives and how can they impact the relations between urban, peri-urban and rural areas?

Logistics must also face societal challenges. This includes demographic change as well as climate, noise and emission protection and the question of the energy used in the future for logistics and mobility. At present, the transport and logistics industry is facing a serious shift towards decentralized, individual, flexible and adaptive solutions.<sup>4</sup>

The future initiative "*Stau-freies Hessen*" 2015 pursues primarily the goal to develop innovative solutions for an optimized use of the transport infrastructure under co-operation and interlinking of the modes of transport and to apply them sustainably.<sup>5</sup>

Frankfurt city seeks to accommodate bicycle travel, with many streets in the centre designated "bicycle streets," where bikes have priority over motor vehicles. The city is developing the bike

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<sup>2</sup> Hessische Landesregierung (2013) Hessische Innovationsstrategie 2020. <http://www.hessische-innovationsstrategie-2020.de/>, p. 74

<sup>3</sup> ditto, p. 123

<sup>4</sup> ditto, p. 76

<sup>5</sup> ditto, p. 75

network by improving cycle lanes and creating new cycle routes. Many city departments and city-owned companies were provided in 2010 with e-bikes for official use.<sup>6</sup>

In the following we will focus on two main issues that are important in respect of connecting urban, peri-urban and rural areas and the creation of more mutually beneficial relations. The two issues are mobility and commuting, and the new opportunities at the interface between energy, transport and information and communication technology (i.e. smart cities, smart development).

### 3. Main Insights

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

Hessen is an economically strong state. Generally, the composition of the population in the FrankfurtRheinMain is very international. More than a quarter of employment is tied to high-value, knowledge-based services such as logistics and transport (gateway function), health services, consulting, finance, information technology, as well as cultural and creative activities. Around 63,000 people work in the finance sector in approximately 200 financial institutions. With the European Central Bank, the centre of European monetary policy, and with Deutsche Börse AG and the Frankfurt Stock Exchange, Frankfurt is one of the world's most important financial centres. The FrankfurtRheinMain region has distinguished itself as an attractive location for foreign direct investment. No other German state and region receives as much foreign investment relative to the number of jobs.

- > How important is commuting in connecting urban, peri-urban and rural areas?

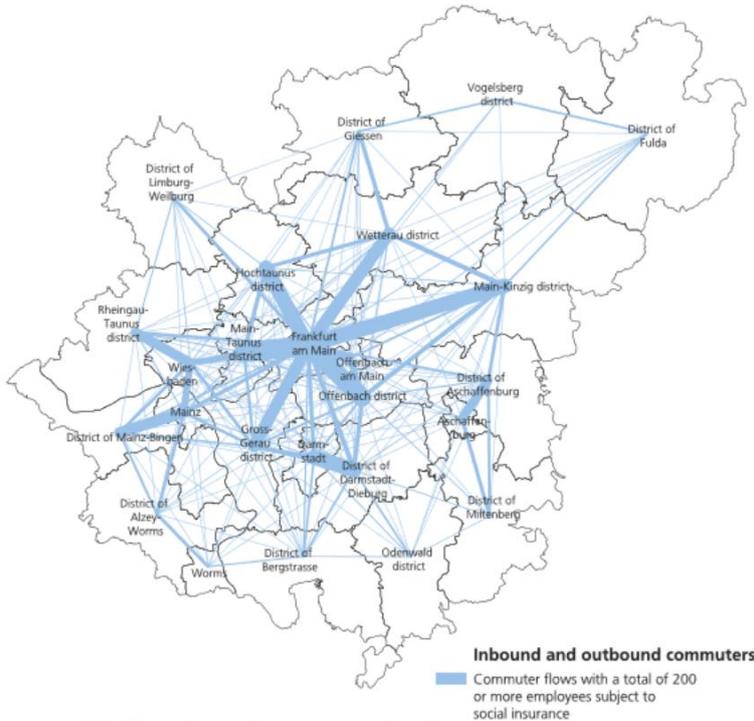
The efficient integration of public transport around Frankfurt contributes to the region's economic buoyancy (OECD, 2015). Workers in Hessen and the FrankfurtRheinMain region are highly mobile. This is clear when looking at the commuter flows in 2014 from rural Vogelsberg in the north, to peri-urban/rural Bergstrasse in the south, and from Mainz-Bingen in the west, to rural Fulda in the east (**Figure 1**). Thick bars representing larger commuter flows, in particular connect surrounding districts with Frankfurt, the dominant centre of the region. Some 47,465 people commute daily just between the Main-Taunus district and the metropolis on the Main River alone, and similarly considerable figures are registered for the route between Frankfurt and the Offenbach district (42,705), or the Main-Kinzig district (34,953), or rural Hochtaunus (34,530) and peri-urban/rural Wetterau (29,565).

However, there are also heavily frequented commuter links in existence in the more distant areas of the region. These are usually found between the cities with readily

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<sup>6</sup> <http://civitas.eu/content/frankfurt>

available jobs and their neighbouring districts, such as between Darmstadt and Darmstadt-Dieburg, Mainz and Mainz-Bingen, Wiesbaden and the Rheingau-Taunus district or the city and district of Aschaffenburg. In comparison, the commuter activity between the more rural districts at the edge of the region is much less significant.



**Fig. 1:** Inbound and out-bound commuter flows

(Regionalverband FrankfurtRheinMain, 2015, p. 17)

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

In the Rhine-Main region, logistics and mobility have developed as important economic and employment factors: four of the five largest employers in the region are logistics. Logistics is one of Hessen's future industries. With around 200,000 employees, it is one of the most employment-intensive industries in the country, ahead of the financial or construction sectors, for example. The region is one of the three leading logistics clusters in Germany and, according to the innovation indicators of Fraunhofer ISI, has a particularly high potential for innovation.

> What kind of new concepts and innovations are referred to?

Innovations in the field of "smart cities" are located at the interface between the energy, transport and information and communication technologies sectors. Cooperative systems play a major role in this: Road operators, infrastructure, vehicles, their drivers and other road users should cooperate to ensure the most efficient, safe and enjoyable journey possible. Car-to-car and car-to-infrastructure technologies<sup>7</sup>, which cooperate

<sup>7</sup> Communication technologies that facilitate the passing of information from a vehicle to any entity that may affect the vehicle, and vice versa. Specific types of communication are Car-to-Infrastructure and Car-to-Car.

between vehicles and infrastructure, will help to achieve this goal beyond the capabilities of isolated systems. Related work is being done with industry in the framework of European and national innovation projects such as "Safe Mobility - Test Field Germany" to lay the foundation for shaping tomorrow's transport.

The Federal Ministry of Transport has initiated the Model Electric Mobility Project, in which the FrankfurtRheinMain region also participates as one of eight regions. In the FrankfurtRheinMain model region, a sustainable, electro-mobile lifestyle will be introduced and an integrated mobility concept implemented, whereby e-vehicles are integrated into existing mobility chains, thus integrating private transport, public transport, city logistics and special transport.<sup>8</sup>

- > How are the different interests related to mobility reconciled in the region, and how does this affect the connections between urban, peri-urban and rural areas?

The *Rhein-Main Verkehrsverbund* (RMV, Rhine-Main Transport Association, created in 1995) is the single authority over public transport in the larger area of Frankfurt / Rhein-Main that covers around 5 million inhabitants. The RMV functions as a single gatekeeper for metropolitan transport coordination. The RMV operates as an independent public company with a considerable amount of inter-agency and inter-municipal co-operation. Its creation therefore required buy-in from all levels of government as well as private operators. The RMV defines metropolitan transport policy and is in charge of planning, investment decisions, price setting and coordinating 153 public and private operators (subway, bus, suburban railway, trains). It integrates regional and local transport under uniform and needs-based rules for the entire Metropolitan Region. The RMV brings together three levels of government: 11 municipalities, 15 districts, and Land Hessen. The RMV is led by a Board where all member governments are represented. Its geographic coverage includes about two-thirds of Land Hessen and the city of Mainz (outside of Hessen). The creation of the RMV has facilitated fare integration and expansion of the public transport supply. The RMV area comprises 42 railway connections with 390 stations and 943 bus routes with 11,900 stops. On average, it handles some 2.5 million passengers per workday, with an average length of travel of 10 kilometres. The RMV covers its costs at 57%, with the remainder coming from Federal regionalisation funds passed through the state budget, and from municipalities via state financial equalisation (OECD, 2015).

Given that most regions in other OECD countries still lack integrated and user-friendly mass transport systems for regional economic development, examining the case of the RMV may well be worth considering (OECD, 2015).

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<sup>8</sup> Hessische Landesregierung (2013) Hessische Innovationsstrategie 2020. <http://www.hessische-innovationsstrategie-2020.de/>, p. 50

### 3.3. Other insights that could be relevant for further work

#### *Differences in geographical location and connections with population development*

In no other German metropolitan area is the number of incoming commuters as high as in FrankfurtRheinMain – two-thirds of the employees live outside the city limits. This simply underscores how close the links are between the city of Frankfurt and other cities and districts in the region (Stadtplanungsamt, 2012).

In addition to the very high incidence of commuting, there are notable differences in population development across the region. While the balances in the cities of Frankfurt, Wiesbaden, Mainz, Darmstadt and the Main-Taunus districts were positive during the 2006-11 period, both in terms of natural growth and net migration, they were negative at the fringes in the north, in Hessen (rural Vogelsberg and Fulda districts) and near Bavaria and Rhineland-Palatinate. For the cities and districts close to Frankfurt – in particular, all of the municipalities in the *Regionalverband* – population growth was positive even where natural growth was negative. This signals a general attractiveness of the region for immigrants. Population gains were particularly important close to the cities and along commuter corridors (OECD, 2015).

#### *Polycentric development, and the interests of the smaller municipalities of the region*

The region has a long history of polycentric development, which is still reflected in today's political culture. Mainz, Wiesbaden and Darmstadt were all state capitals at different points in time. Thus, local identities are strong and distinct from that of Frankfurt, which can complicate regional governance (OECD, 2015). The smaller municipalities of the region too tend to emphasise their local autonomy as guaranteed by the Constitution, often divided along partisan lines and engaged in major local tax competition. Regional perspectives at the communal level are weak, and where local interests were affected by state decisions bearing on the region (e.g. expansion of Frankfurt's airport), political clashes were passionate. More recently, a new breed of politicians appears to be more supportive of regional economic integration, and there are encouraging signs of increasing cross-municipal co-operation (OECD, 2015).

OECD data are supported by more recent analyses presented in PERFORM (2018)<sup>9</sup>: Frankfurt is the commuter capital of Germany. In no other German city, the proportion of commuters to employees is as large as here. But the other districts of the Metropolitan Region are also strongly networked. A related problem is that the rail network was historically monocentric and does not fit in with the polycentric structure of the region.

Employment development in recent years has not only taken place in the core cities of the Metropolitan Region, but primarily in the regions. Between 2000 and 2017, the number of

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<sup>9</sup> The aim of the "Perform - Zukunftsregion FrankfurtRheinMain" initiative is to bundle all ideas and forces on the topic of the future region under a common roof and to promote the development of the region together with all stakeholders strategically and transnationally. URL: <https://www.perform-frankfurtrheinmain.de/>

employees in the districts of Alzey-Worms rose by 36 percent, Mainz-Bingen by just under 30 percent, and in the Hochtaunus district by 28 percent.

### *Connections with other metropolitan regions*

The European dimension is particularly relevant for linking the various metropolitan areas via trans-European networks, fostering regional connectivity by rail, road, air and water for people and goods, as well as energy corridors.

### *The interplay between different governance bodies*

The organisation of public transport in the greater Frankfurt/ FrankfurtRheinMain area represents a successful example of inter-jurisdictional and inter-agency co-ordination (OECD, 2015).

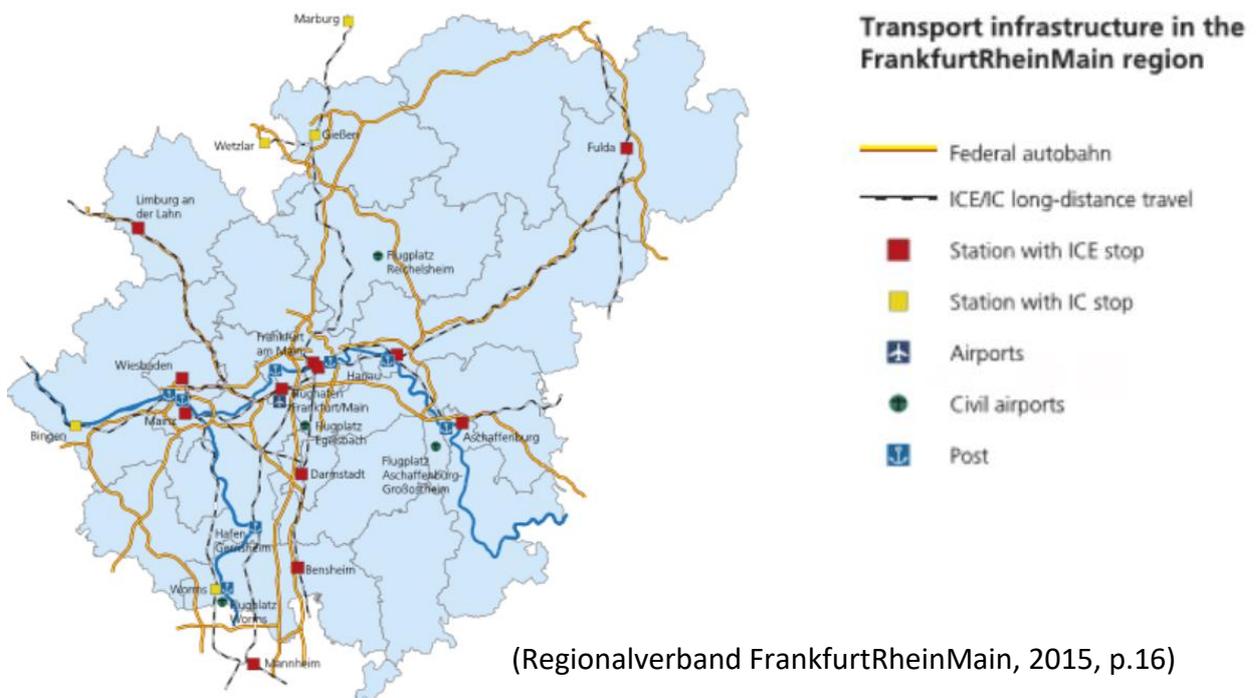
Forming the core of the FrankfurtRheinMain agglomeration (*Ballungsraum*), the regional association of municipalities (*Regionalverband FrankfurtRheinMain*) is responsible for the economic development of the region along with land-use and landscape planning, strategic management and coordination tasks. In addition, the *Regionalverband* assumes responsibilities for the establishment, maintenance and operation of sports/leisure, recreation and cultural facilities with more than local significance, as well as the marketing of the region. The planning of regional transport and traffic management are also among the functions of the association.

There are also dedicated inter-municipal associations (*Zweckverbände*), which exist for some standard local services such as waste management, sewage, water or transport. An important special purpose inter-agency for the region is the RMV referred to earlier. Land Hessen plays a coordinating role not only for infrastructure development and relevant public services, such as the airport, integration, regional planning, construction, environmental protection, nature conservation and consumer protection, but also for creating the legal framework for inter-jurisdictional cooperation at the local level (*Regionalverband*) and for fostering local initiatives bearing on the wider region like the Regionalpark initiative (see the Governance profile dedicated to Regionalpark; G-FR2).

## 4. Data Sources and Indicators

Table 1 Data / Indicators used

Data / Indicator	Source
Population development	Official statistics
Employment statistics	Official statistics
Commuting (in-/outbound, numbers, distances, flows)	Regional data
Mobility data by mode	Regional data
Transport volumes by mode	Regional data



## 5. Critical Appraisal of Data Use

Mobility and the related infrastructure and governance arrangements are highly relevant in respect of connecting urban, peri-urban and rural areas. A common assumption is that enhanced connectivity can contribute significantly to more mutually beneficial relations between territories. The related data available from official statistical sources will not be sufficient to do the kinds of analyses that are required to address this and the related questions.

## 6. References

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