

MOPINO

March 2021, County of Northeim



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1 GENERAL IDEA

The pilot project "MOPINO" (MOVE-PIlot-NORtheim) aims to make sharing services available to residents of rural areas in the future. So far, such services have mainly been limited to larger cities and the surrounding areas. The MOPINO project plans to establish a sharing service in the City of Northeim, a medium-sized centre in the region of southern Lower Saxony.

As part of the pilot project, an e-car sharing system with several stations and vehicles will initially be operated for a period of 14 months in the City of Northeim. As the vehicles have an electric drive, they are particularly environmentally friendly in terms of emissions (air and noise). All in all, this not only creates an additional mobility offer for the inhabitants of the region, but in combination with the other means of transport of the environmental network (walking, cycling and buses or trains), a real alternative to using one's own car is created. This simplifies and promotes multi-modal and inter-modal mobility.

An e-bike sharing system planned at the beginning proved to be unfeasible. A survey conducted by the University of Göttingen at the beginning of the MOVE project among students living in the City of Northeim showed that their willingness to pay for the use of an e-bike sharing was not sufficient to operate the system profitably. For this reason, a change from the e-bike sharing system to a conventional bike sharing system was made (major change) and brought to a tender. Unfortunately, no operator for the conventional bike sharing system was found in this tender. Due to the advanced time in the project, it was decided to abandon this part of the pilot project MOPINO.

2 CONTEXT

2.1 Geography

The County of Northeim is located in the middle of Germany. The capital of Lower Saxony, Hanover, is about 90 kilometres away in a northern direction. The university City of Göttingen, the main centre of the southern Lower Saxony region, lies to the south in the neighbouring County of Göttingen. Eleven towns and municipalities belong to the county area.

Around 133,000 people live on approx. 1,266 km² (as of 31 December 2019). This results in a population density of about 104 inhabitants per km². Therefore, a large part of the county can be described as rural. To the east is the Harz Mountains, northern Germany's highest mountain range and a popular excursion and holiday area with the Harz National Park.

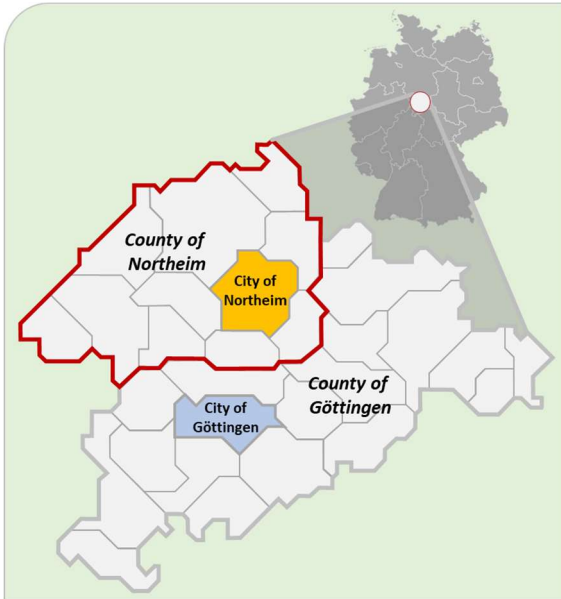


Fig. 01: Location and structure County of Northeim and Göttingen. Source: M. Menge, 2020.



Fig. 02: NSG Altendorfer Berg, County of Northeim. Source: County of Northeim.

The centre of the Northeim district is formed by the City of Northeim, which assumes the functions and tasks of a medium-sized centre. The urban area extends over 145.67 km². The city area is bordered by the railway tracks and a federal road in the west and by the Wieter in the east. North of the centre, the Rhume Aue divides the core city into two parts. The main administrative seat of the County of Northeim is located in the old town.

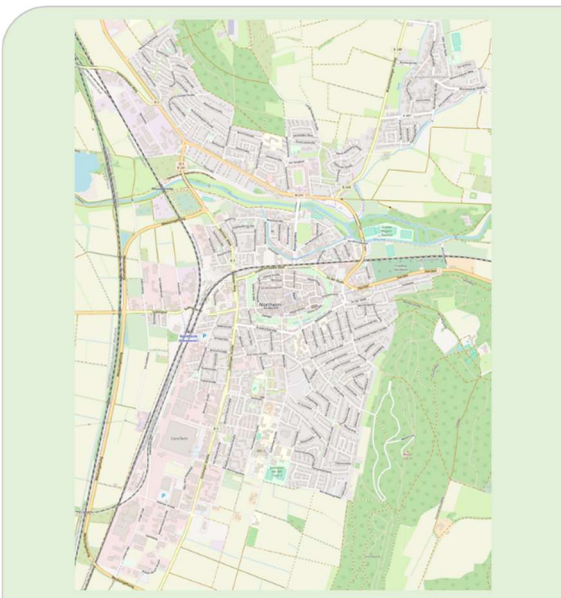


Fig. 03: Map City of Northeim. Source: OpenStreetMap; 2020.

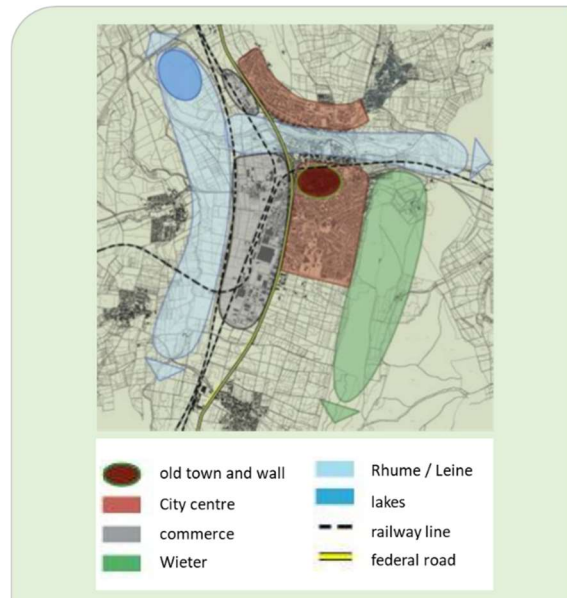


Fig. 04: Spatial structure. Source: ISEK City of Northeim, p. 15; 2020.



Fig. 05: Aerial view City of Northeim. Source: Department 44 - Regional Planning and Environmental Protection, City of Northeim.

2.2 General statistics

In the past few years, the number of inhabitants in the City of Northeim has been rising moderately, so that at the end of 2020, about 29,000 people were registered in the city. The City of Northeim includes another 15 villages spread around Northeim.



Fig. 06: Klosterstraße - City of Northeim. Source: A. Lustig.

Village	Population	Village	Population
Berwartshausen	84	Hollenstedt	643
Bühle	454	Imbshausen	420
Denkershausen	355	Lagershausen	255
Edesheim	776	Langenholtensen	1,850
Hammenstedt	905	Schnedinghausen	174
Hillerse	1,065	Stöckheim	344
Höckelheim	1,054	Sudheim	1,527
Hohnstedt	580		

as 05/2020

Tab. 01: Population villages City of Northeim. Source: City of Northeim online (11.03.2021).

About 50% of households in the City of Northeim have to get by on a low income (< 25,000 euros per year), while the rest have a medium to high income. Even though the population has risen slightly in recent years, forecasts predict a decline by 2030. As the population changes, so will the population structure. As in many rural areas, the population of children, adolescents and young adults will decrease in the City of Northeim, whereas the number of people over 45 years of age will increase, which is also known as the demographic change. To counteract this, the attractiveness of rural areas must be improved, which also affects the mobility of residents in such areas.

Indicators	Northeim (NOM)		
	2016	2017	2018
Population (in persons)	28,966	29,040	29,107
One-person households (%)	36.3	37.7	37.6
Households with children (%)	26.3	25.4	25.2
Living space per person (square metre)	49.4	49.5	49.7
Flats in One-/two-family houses (%)	51.7	51.6	51.7
Purchasing power (Euro/household)	45,662	45,366	45,365
Households with low income (%)	51.3	50.8	49.9
Middle-income households income (%)	31.3	31.5	32
Households with high income (%)	17.4	17.7	18.2

Tab. 02: Social situation City of Northeim. Source: wegweiser-kommune.de online (12.03.2021).

Indicators (in %)	Northeim		
	2012	2025	2030
Proportion of 0- to 2-year-olds	2.3	2.2	2.2
Proportion of 3- to 5-year-olds	2.3	2.3	2.3
Proportion of 6- to 9-year-olds	3.2	3.2	3.2
Proportion of 10- to 15-year-olds	6.0	5.0	5.0
Proportion of 16- to 18-year-olds	3.3	2.6	2.6
Proportion of 19- to 24-year-olds	6.6	5.3	5.2
Proportion of 25- to 44-year-olds	21.6	21.2	20.7
Proportion of 45- to 64-year-olds	30.8	28.6	26.3
Proportion of 65- to 79-year-olds	17.3	20.3	22.6
Proportion of 80+ year olds	6.5	9.3	9.9

Tab. 03: Population projection - proportions of age groups City of Northeim. Source: wegweiser-kommune.de online (12.03.2021).

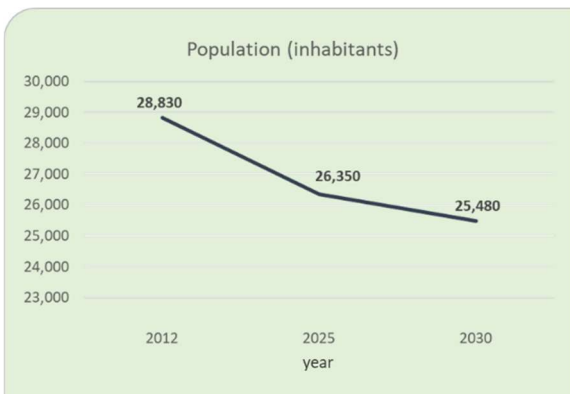


Fig. 07: Population projection - population structure City of Northeim. Source: wegweiser-kommune.de (12.03.2021).

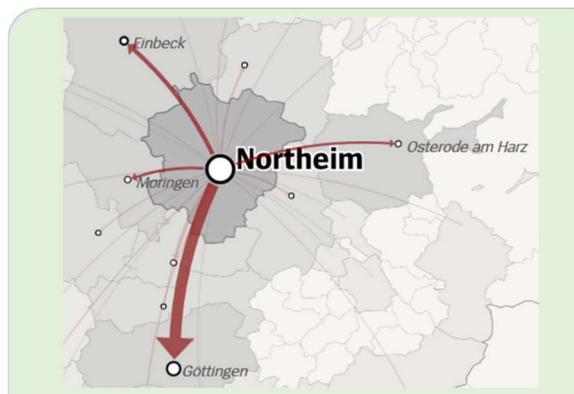


Fig. 08: Out-commuters City of Northeim 2018. Source: spiegel.de (13.03.2021).

Mobility also plays an important role with regard to the employment of the residents. A large part of the Northeim population commutes to the surrounding area in order to get to their workplaces. The 4 largest commuting destinations are Göttingen (1,630 commuters), Einbeck (584 commuters), Moringen (342 commuters) and Osterode am Harz (301 commuters).

The car is one of the most frequently used means of transport in rural areas. This can be seen from the relatively high level of motorization among people living in rural areas compared to urban regions. This also applies to the city and the County of Northeim as a rural area. Even though no figures are available for the city and County of Northeim, the MID 2018 (Mobility in Germany) figures show precisely this polarization in the degree of motorization between urban and rural areas. Despite the high level of motorization in rural areas by spatial category, other factors also affect car ownership or availability. One important factor when it comes to car ownership is a person's economic status. People with a very low or low economic status are much more likely not to own a car than people with a medium or high economic status. The importance of the car as a means of transport in rural areas and the dependence of car ownership on socio-economic status show the need to ensure mobility for people who cannot afford their own car by providing new and affordable mobility services. But also to guarantee the attractiveness of the rural area as a place of residence for such groups of people.

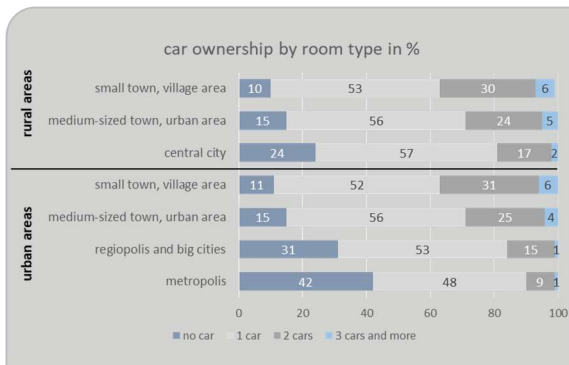


Fig. 09: Car ownership by room type. Source: MID 2017 (p. 35).

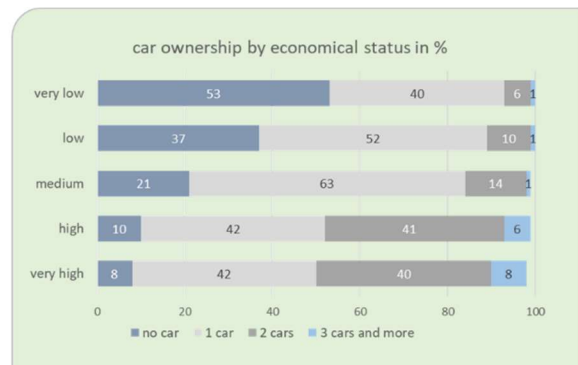


Fig. 10: Car ownership by economical status. Source: MID 2017 (p. 35).

2.3 Political context

Political interest in sustainable mobility options has grown steadily in recent years. First and foremost, the aim is to make environmental transport more attractive and to offer people a good alternative to using their own cars. This is driven by two developments - climate change and demographic change.

Anthropogenic climate change is closely linked to the increase in pollutant emissions since industrialization, with CO₂ emissions in particular playing an important role. One of the largest emitters is the transport sector, which is responsible for the most CO₂ emissions after the energy industry and the rest of industry. Based on the Brundtland Report and the agreements reached at the 1992 climate conference in Rio, legally binding limitation and reduction obligations for industrialized countries in the area of emissions were laid down for the first time in 1997 in the Kyoto Protocol. The targets laid down there help the political level to advance the legal framework as well as the financial resources for environmentally friendly mobility. Thus, the position of a climate protection manager was created both in the county and in the City of Northeim. The district of Northeim is participating in two EU Interreg projects (MOVE project and MatchUp project) to promote sustainable mobility in the region. In addition, the district of Northeim is currently planning to equip its fleet of company cars with e-vehicles and to make e-bikes available to employees. It is also being examined whether employees can be offered job tickets in order to strengthen public transport.¹

The Zweckverband Verkehrsverbund Süd-Niedersachsen, which is responsible for road-based public transport in this region, is itself trying to promote sustainable mobility. On the one hand, it is working closely with the County of Northeim on the two EU mobility projects, and on the other hand, the new Local Transport Plan 2021 (Nahverkehrsplan - NVP; currently draft stage) is setting new accents in the direction of environmentally friendly mobility and strengthening the environmental alliance. For example, a planning project linking measures and mobility projects at the defined linking points is planned there (p. 130f). Within this framework, the equipping of bus stops with Car-Sharing parking spaces is also to be examined in individual cases and implemented if necessary (p. 86).

Another driving force for policy is the demographic change. Due to the migration of people from rural areas and the increasing average age of the overall population, it is becoming more and more

¹ <https://www.landkreis-northeim.de/portal/pressemitteilungen/360-2019-landkreis-northeim-will-sich-noch-staerker-fuer-klimaschutz-engagieren-900001405-23900.html>

difficult to guarantee mobility for everyone, especially when it comes to guaranteeing it in the entire area. The district of Northeim is meeting this challenge together with the ZVSN by promoting new and flexible offers such as citizens' and village buses, creating night bus lines (night owl) or carrying out pilot projects for on-demand ride pooling (Ecobus), which are more closely oriented to the real needs of citizens than is possible with conventional offers alone.

Nevertheless, further efforts are still needed, as greenhouse gas emissions in the transport sector in Germany have not decreased since 1990 and have even increased in certain years.

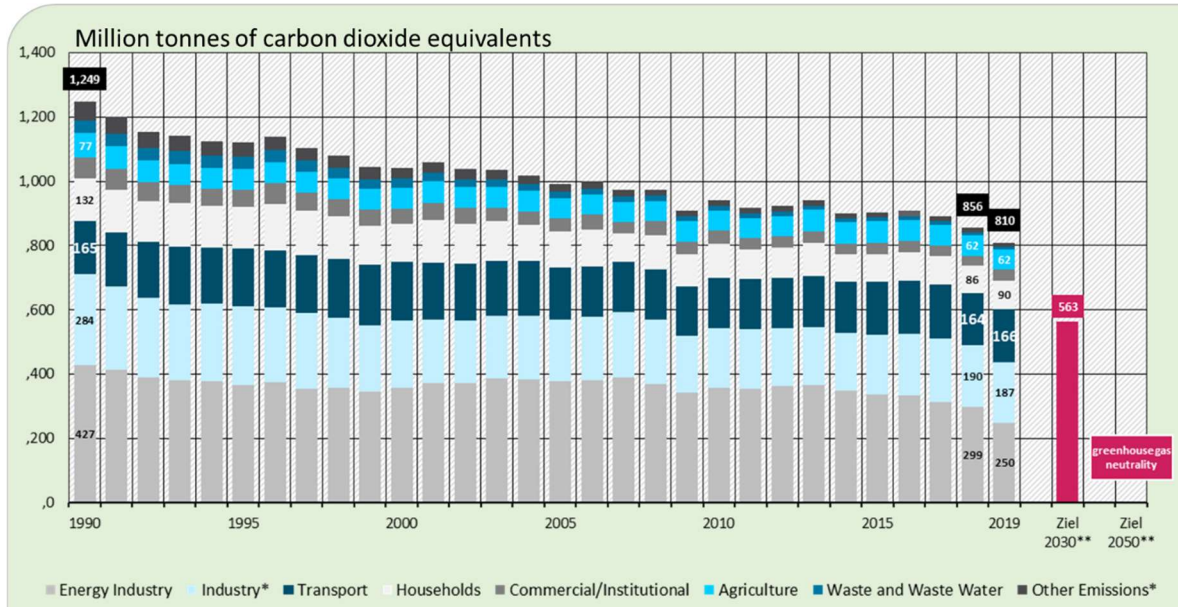


Fig. 11: Million metric tons of carbon dioxide equivalents by sector. Source: Umweltbundesamt, Nationale Treibhausgas-Inventare 1990 - 2019 (12/2020).

2.4 Promotion of eco-mobility and multi-/intermodal mobility

In rural areas, many people associate mobility with their own car. Surveys show, for example, that compared to people with their own vehicle, the average daily distance travelled by people without a car is shorter, regardless of the type of area in which they live.

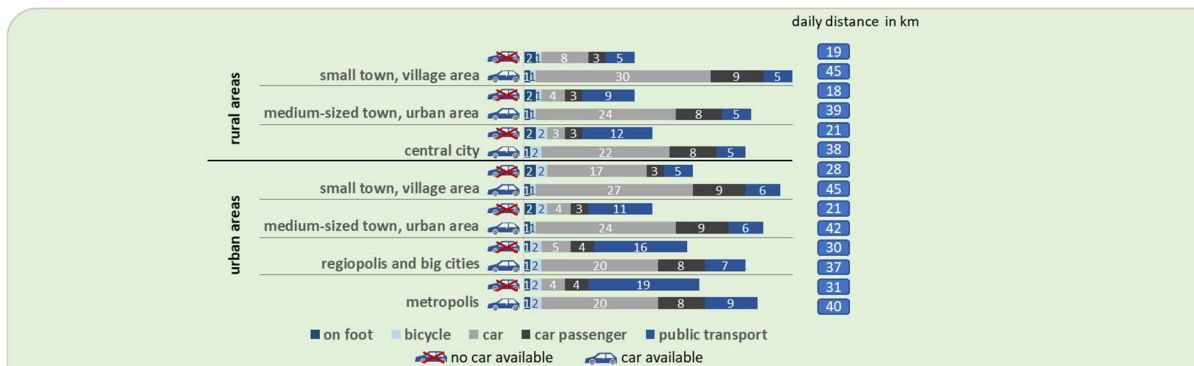


Fig. 12: Daily distance by mode of transport, car ownership and space category. Source: MID 2017 (p. 48).

Even if this says nothing about a person's mobility per se, it can at least be an indication of limited mobility. However, the use of one's own car, which is usually powered by a conventional combustion engine, contributes to the fact that emissions in the transport sector remain at a high level. It is

therefore particularly important that environmentally friendly mobility alternatives are also offered in rural areas so that all those who either cannot afford their own car or can no longer drive a vehicle for health reasons are nevertheless not restricted in their mobility.

Since the need for mobility can usually not be completely satisfied by one of the other means of transport, it makes sense to promote and improve the environmental alliance with its means of transport foot, bicycle and public transport as a whole. The City of Northeim already has a relatively good city bus network, with which one can reach all parts of the city well.

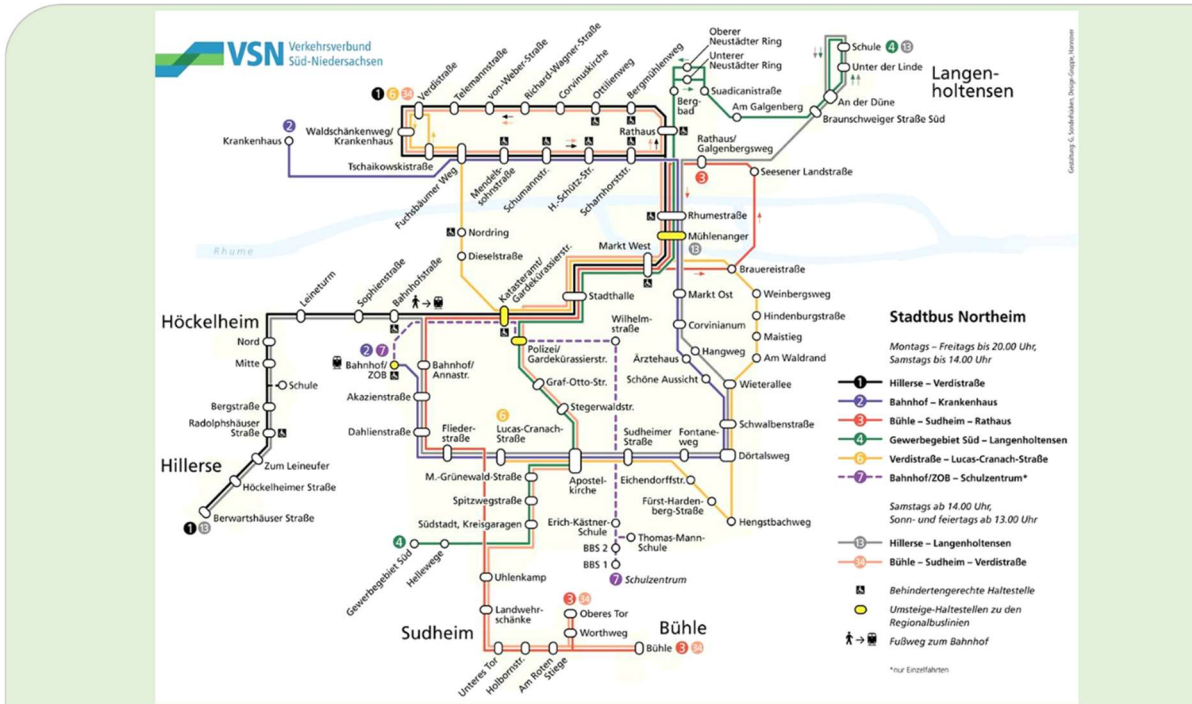


Fig. 13: Route network map city bus City of Northeim. Source: VSN.

In combination with walking or cycling, problems such as coping with the first or last mile can also be solved. Bicycles are allowed on Northeim's buses, but are subject to prioritization. For example, people with limited mobility (wheelchair, rollator) and people with a stroller enjoy priority on the buses if there is not enough space for everyone.

Both the county and the City of Northeim are increasingly committed to making the means of environmental transport more attractive to citizens and easier to use, in order to ensure people's mobility in the future despite the challenges of climate change and demographic change. The goal is to make transportation more environmentally friendly without restricting people's mobility. Multi- and intermodal mobility, particularly in the area of environmentally compatible means of transport, is one approach to achieving this goal. For this to be achieved, there must be a sufficient range of options, there must be good networking among the various modes of transport, and new target groups must be attracted.

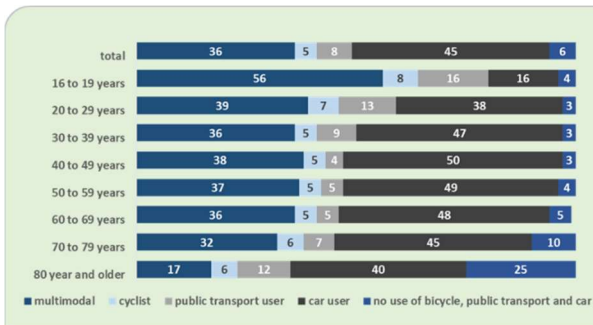


Fig. 14: Mono- and multimodal groups of people by age. Source: MID 2017 (p. 57).



Fig. 15: Multimodality in the City of Northeim. Source: R. König 2018.

The willingness to move multimodally is shown by the figures in Germany. More than one-third of the population already travels multimodally. However, the figures also show that 45% of the population still travels monocausally by car. This is a great potential that we must try to win over by offering new and attractive services for multimodality in the environmental network.

One element that can help strengthen the environmental network and generate new user groups are sustainable sharing services. Environmentally friendly sharing offers in the form of e-car sharing or (e-)bike sharing can help to close existing gaps in the route chains of the environmental network or to cover mobility needs that cannot be met by the other means of transport of the environmental network. In addition, e-car sharing services can encourage people with a car affinity to consider the new, more environmentally friendly mobility options.

3 PILOT DESCRIPTION

The County of Northeim strives to establish sustainable mobility for all citizens in its region, both for today and for the future. With its pilot project MOPINO, which is part of the Interreg NSR project MOVE (Mobility Opportunities Valuable to Everybody), the county tries to establish an e-car sharing service in a medium-sized town (City of Northeim), which is located in a rural area. The project seems to make sense especially against the background that approximately 40 percent of the cars are not used on an average day and the average operating time per car and day is about 45 minutes. MOPINO expands/improves the portfolio of environmentally friendly mobility offers and creates a good alternative to using one's own car.

Car sharing is still mainly a metropolitan phenomenon. In rural areas there are hardly any offers and only a few people have a car sharing membership.

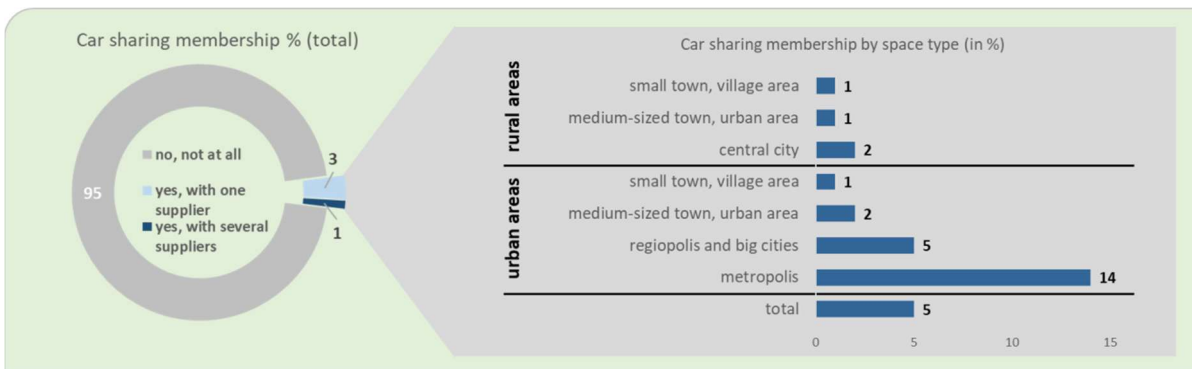


Fig. 16: Share of households with car sharing membership total and by type of space. Source: MID 2017 (p. 37).

On the one hand, this is due to the fact that small car sharing systems without special agreements (e.g. anchor tenants) can rarely be operated profitably at the moment, which is not least related to the high degree of motorisation in rural areas and the low demand resulting from this. On the other hand, demand also depends on routines and implicit/explicit motives, behaviour-influencing elements that determine our everyday mobility. The MOPINO pilot project in the City of Northeim provides the opportunity to get to know car sharing and to experience it in the truest sense of the word. Unanswered questions can be answered and prejudices can be reduced, with the result that people scrutinize their own mobility behaviour and change their routines if necessary. In order to make the new offer environmentally friendly, the district of Northeim has decided to choose an electric drive (battery operation) for the vehicles of the car sharing system.

3.1 Target groups

The MOPINO e-car sharing offer is aimed at all persons with a valid driving licence. Generally, it is aimed at residents of the City of Northeim for whom a starting and ending point in the City of Northeim is practicable, as the vehicles can only be borrowed and returned at the stations in the city. The journey itself can also lead to destinations outside the city area. Nevertheless, private as well as business visitors can also rent the vehicles.

Another target group are students living in the City of Northeim. There is a housing association in the city that explicitly rents shared flats to students. Students often have a limited budget and do not need a car permanently, which makes e-car sharing interesting for this group. On the other hand, this group is relatively open-minded towards new offers and willing to try new things. This makes it easier to get them to give e-car sharing a try and to integrate it into their daily mobility routine.

Another potential target group is the employees of the Northeim county and city administration. The immediate proximity of the charging station at Medenheimer Platz to the district hall and the direct placement of another sharing station at the town hall offer the possibility of using the two e-vehicles for both business and private purposes. A simplified use of sharing vehicles, booking and accounting of business trips for the employees of the two administrations are currently being worked out.

Consideration is being given to whether and how commercial enterprises or the retail trade can be attracted as a user group for the e-car sharing system. A first approach is that larger commercial enterprises (Thimm, Continental/ContiTech), which regularly receive employees from other branches, receive a company card for e-car sharing. The employees arriving at the station could then easily use the car sharing car to get from the station to the commercial enterprise and back. Further considerations go in the direction of bundling deliveries from retailers within Northeim and using an e-car sharing car for the delivery.

3.2 Organisation

The County of Northeim publicly tendered the operation of an e-car sharing system in the City of Northeim in order to find an operator. A total of 3 companies submitted a bid, which were evaluated according to a scoring system.

During the evaluation, the offer of Regio.Mobil Deutschland GmbH turned out to be the one with the best price-performance ratio. A contract was concluded between both parties for a period of 14 months.

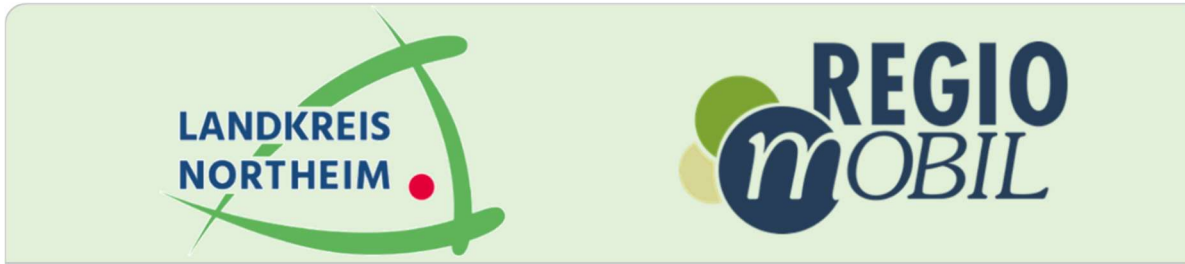


Fig. 17: Logo County of Northeim / Regio.mobil.

Regio.Mobil as the operator of the e-car sharing system provides the vehicles as well as a booking system, takes over the billing of the journeys and the servicing of the vehicles. In return, the operator receives a monthly deficit compensation per vehicle from the County of Northeim in a fixed amount. The deficit compensation to be paid is reduced by the operator's income from renting out the vehicles. For the total of 3 vehicles, the City of Northeim provides the necessary parking spaces to the district of Northeim free of charge. For this purpose, a written agreement was concluded between the city and the County of Northeim. For the period of use, the county takes over the duty of road safety for these areas.

The required infrastructure in the form of charging points and electricity is provided by the Northeim public utility company. The charging stations were already available at two of the three e-car sharing stations, but a new charging station had to be built at the station at Northeim railway station. The costs for this were shared by the city and the County of Northeim. For the use of the charging stations, the district pays a monthly usage fee to the Northeim public utility company. The electricity required for refuelling the e-vehicles is billed directly between the Northeim municipal utility and Regio.Mobil.



Fig. 18: Logo City of Northeim / Northeim municipal utilities.

3.3 Communication

MOPINO is a completely new mobility service that has only been available since January 2021. That's why communication is primarily about letting citizens know what it's all about, perceiving it as an opportunity to be mobile and getting them interested in using it. It is all about communication, information and motivation. In order for all these steps to be carried out successfully, the first step is to develop an independent logo for the pilot project. The logo should present the existing sharing offer to all target groups and convey the characteristics, values and goals of the project. All promotional materials will include the pilot logo to create an identity for the project.

Communication - the aim here is to draw the attention of citizens and businesses to the fact that there is a new environmentally friendly mobility service in the City of Northeim. The goal is to draw attention to the MOPINO pilot project through statements and messages that are easy to perceive and absorb. The name should be made known and what is associated with it. The means used are announcements on various internet portals (e.g. county and City of Northeim), press releases in local

print media (e.g. HNA) and the placement of posters. The posters are placed at locations that are frequented by people in large numbers and frequently. The places are notice boxes at bus stops and shops where citizens buy things for their daily needs, such as bakeries, grocery shops or bookshops.

Information - interested people should get more concrete details about MOPINO. It should be conveyed which requirements have to be fulfilled, how one can use e-car sharing and what it costs. It should also serve to break down prejudices, such as the fact that the range of e-vehicles is not sufficient for one's own needs. In the end, the potential user should have all the information he needs to make a decision whether to use the e-car sharing offer or not. This information is conveyed via flyers and detailed presentations on the internet. The flyers will be displayed in the shops where the posters are also hanging, so that people who have become aware of MOPINO through the posters can be informed about further details without much effort. The flyer informs about the locations of the e-vehicles, the procedure for registration as well as borrowing and gives a first insight into the cost structure. The flyers will also be made available in the vocational schools in the City of Northeim so that the target group of 18- to 24-year-olds is also reached. There is also a reference to the MOPINO website, where more detailed information can be found.

The section about the pilot MOPINO on the website of the County of Northeim describes the developments of the project and provides for detailed information on the use of the e-car sharing system: <https://www.landkreis-northeim.de/portal/seiten/mopino-e-carsharing-900000379-23900.html?vs=1>. Likewise, the cooperation partners of the County of Northeim report on the current e-car sharing offer: Stadtwerke Northeim invites sharing users here: <https://www.stadtwerke-northeim.de/e-mobilitaet/carsharing-regiomobil/>. The City of Northeim also reports on the MOPINO project and gives information on how to use the sharing system here: <https://www.northeim.de/startseite-details/elektro-car-sharing-in-der-stadt-northeim.html>.

Motivation - people who are already thinking about using the new e-car sharing should be given a final push to actually do so. The aim is to overcome a final inhibition threshold in the user. This should succeed by creating an incentive for use in cooperation with retailers in the City of Northeim. At the participating retailers, a card is distributed on which a person receives a stamp if he or she purchases a certain number of items. Once the person has collected a certain number of stamps on the card, the person will receive a voucher for using the e-car sharing system MOPINO. By redeeming the voucher, the person can get to know the new mobility service and its benefits for themselves and discover that e-car sharing is not as complicated as they might have thought at first. If the Corona pandemic should allow markets and public events again at some point, information booths are planned where information can be provided. If possible, there should also be the opportunity to try out one of the e-car sharing vehicles.

3.4 The service

MOPINO is an e-car sharing system in the City of Northeim (Nds.) for everyone. It is a station-based car sharing system. This means that you have to return the vehicle to the station where it was borrowed. The vehicles can be rented 24 hours, 7 days a week. The system includes 3 designated stations (parking space and charging station) with 3 Renault Zoe e-vehicles. All three stations are located in the city area of Northeim. One station is located as a multimodal connection point directly at the train station, where it is possible to transfer to or from numerous trains and buses. The second station is located directly at the border to the core city with its many shopping facilities. The last station is located in the northern area of the City of Northeim, not far from the Northeim city hall with its various offices.

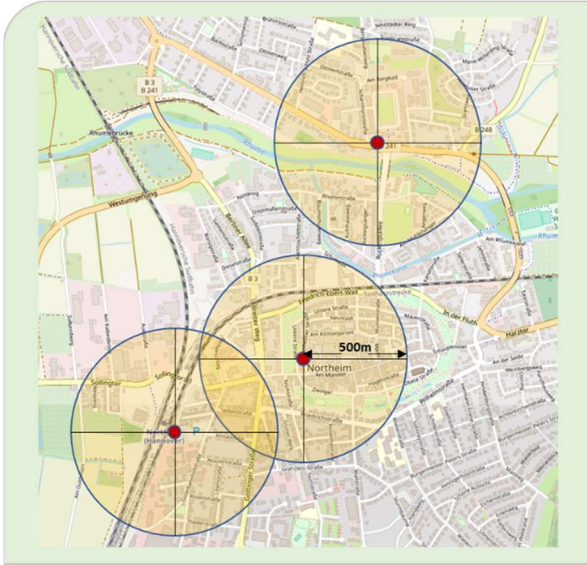


Fig. 19: Positions of the 3 stations in the City of Northeim.
Source: own illustration 2021.



Fig. 20: Station at the edge of the core city with Head of County Administration Ms. Klinkert-Kittel and representatives of Regio.mobil. Source: own photography County of Northeim.



Fig. 21: e-car sharing station railway station City of Northeim. Source: own photography County of Northeim.



Fig. 22: e-car sharing station town hall City of Northeim. Source: own photography County of Northeim.

To be able to use the offer, you must register in advance. Online registration takes place at <https://regiomobil.azowo.com>. The registration for the sharing system is free of charge. After registration, the user is assigned an RFID chip that is used to open and close the vehicles. This must be requested due to the Corona restrictions up-to-date by telephone with the sharing company Regio.Mobil Deutschland GmbH (Tel. 06695 8329970). The RFID chip will be sent by mail together with a manual from Regio.Mobil. The chip received must be affixed to the driver's license. As a proof, a photo or video of both sides of the driver's license has to be sent to the support of Regio.Mobil. The validation of the account takes place after sending the photo/video within one working day, in urgent cases even faster. Once these steps are completed, the registered user can use the e-car sharing system.

The booking of the vehicles can be done in two ways. Either you book a vehicle via your computer using the link <https://regiomobil.azowo.com>, or you download the Azowo-Mobility Sharing app and book via your smartphone. The app is available for both Android and Apple devices. Bookings can be made for trips that will begin immediately or for trips in the future. A booking must be started within one hour at the vehicle, otherwise the booking expires automatically. The start of the journey begins with the opening of the vehicle.

The vehicle is always available 15 minutes before the start of the booking. Before starting the journey, the user must check the vehicle for damages or heavy soiling and, if necessary, report it via the app or the hotline.

To open the vehicle, the RFID chip is held onto the reader, which is located under the windshield on the driver's side. The orange LED lamp of the chip reader goes out as soon as the vehicle is opened.

Inside the vehicle, to the left of the steering wheel, there is a button that is used to unlock the charging cable from the vehicle. The charging cable must then be disconnected from the car and the charging station and stowed in the vehicle. The vehicle key card in the glove compartment can be used to start the vehicle via the slot in the centre console. The vehicle can be unlocked and locked as often as desired during the rental period by placing the chip against the reader until a corresponding sound is heard. The green or orange LED on the reader indicates whether the vehicle is open or locked.

After the journey, the user must always connect the vehicle to the charging point. To do this, the charging station is activated with the Northeim municipal utilities charging card, which is located in the glove compartment. For the final return, the RFID chip must be held against the reader from the outside until the LED flashes blue. When the blue flashing changes to a green glow, the rental has been successfully completed.



Fig. 23: Price model e-car sharing MOPINO. Source: own illustration 2021.