UMAM Roadmap Report 2020 – Helmond

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List of abbreviations

UMAM	Urban Mobility Assessment Model
MaaS	Mobility as a Service
CAV	Connected and Autonomous Vehicles
ITS	Intelligent Transport Systems
EV	Electric Vehicles
TOD	Transit Oriented Development
LEZ	Low Emission Zone
PPP	Purchasing Power Parity

Contents

1. City Context

The city of Helmond is located in the South-East of the Netherlands, within North Brabant region. Helmond is home to 92,471 inhabitants and covers around 55km^2 of land including water. The city lies in the Eindhoven Metropolitan region and it is the second largest city of the region after Eindhoven.

The public transport system of Helmond is mainly covered by buses and train with a total of 4 rail stations in the area. In addition, there is a bike sharing service available in the city as well as a ride hailing, car sharing and micromobility sharing service.

The city is part of the so called Brainport region which consists of high-tech industries and plays an active role as a Living Lab for smart mobility solutions including MaaS, CAVs and ITS. Helmond Mobility Paper (Helmond Mobiel 2015[1]) focuses on improving the existing infrastructure through the use of cooperative technology.

[1]https://www.helmond.nl/BIS/2007/NOTITIES%20EN%20KAARTEN/126,%20HELMOND%20MOBIEL%202015.pdf

2. UMAM Scoring

2.1. Policy and Innovation

The objective of this dimension is to analyse how city authorities manage urban mobility and their policy making process. This is done by analysing public policies, actions and protocols that are developed to think about the mobility of the future, today. The importance of this indicator is to be the first approximation of the strategies of cities, as a regulatory body and manager of urban mobility.

The analysis model is divided into three dimensions: mobility of people, mobility of goods and innovation.

Mobility plan

Mobility plan and policy making is analysed in the dimensions of network city integration, public transport service, reduced mobility, touristic plan and resilience and sustainability in terms of policy development and implementation. Each of the five dimensions is analysed using a scale of 1 to 5[2] depending on its level of implementation in public policies defined according to:

- Analysis of problems and opportunities concluded: working structures set up, planning framework defined, analysis of mobility city environment- 1
- Vision, objectives and targets agreed: build and assess scenarios, vision and strategy developed with stakeholders, indicators and targets are set- 2
- Policy adopted: measures/actions/projects are bundled and run through stakeholders, agree actions and governance for implementation agreed, develop implementation plan and finance - 3
- Measure implementation evaluated: actions and projects start implementation, outcomes are monitored, change management implemented, communication strategy deployed, plan reviewed - 4
- Process has iterated and it counts at least with 2 policy cycles - 5

Cities with values between 1 and 2 will be those with greatest room for improvement, while those with 4 or 5 already have a more consolidated position. This is due to the

[2] A letter N is shown where data was not submitted or is not available.

progressive character of the policy making process based on the stages of the Sustainable Urban Mobility Plans.

Freight mobility plan

Freight mobility plan dimension is analysed based on the sub-dimensions of last-mile policies, delivery timings, virtual loading bays, digital management and resilience, and sustainability. Each of the five dimensions is analysed using a scale of 1 to 5 levels depending on its level of implementation in the public policies as defined above.

Innovation

The last dimension of the analysis is innovation. This is key to understand how the capacity and willingness of each administration is to seek and implement new mobility proposals in the city. The analysis is done by considering its innovation objectives, as well as the practice through the example of pilots already carried out. The ratio between total euros and number of pilots is also calculated, to understand an average value per pilot and the importance of each pilot project.

2.2. Transport Supply

This dimension analyses the infrastructure provision within the city and how well it supports a transition towards sustainable mobility. It analyses the availability of different modes within the city and how some infrastructure has been introduced. It is important in that it assesses the current situation and enables more detailed analysis with respect to criteria in other dimensions (e.g. modal split within transport demand). It further helps determine what kind of policies might be most beneficial in terms of infrastructure investment, improving accessibility and what the focus for provision of transport should be when considering availability of sustainable options for individuals.

Each one of the transport modes can be assessed both separately and as part of the total provision in the city. Each mode is scored separately using threshold values and allocating a score from 1 to 5 for each threshold. Additionally, UMAM assessed car ownership, number of charging stations, service reliability, and the number of consolidation centres (to show availability of last mile infrastructure).

2.3. Transport Demand

The transport demand section explores how the city is performing in terms of number of trips conducted by different modes of transport and the annual congestion levels which represent the additional travel time drivers experience compared to a free flow traffic situation with no congestion. Transport demand indicators provide an overview on how well the transport system of a city is performing, which can lead to insights regarding the improvement of traffic conditions and the modes of transport that are better suited to support sustainable mobility.

Within the modal split category, the aim for cities should be to achieve higher modal share for sustainable modes (i.e. active modes, public transport, sharing mobility) as opposed to private vehicles. The thresholds of scores for the different modes (1-5 based on the index) show whether the score for each mode is positive or whether there should be additional work and targeted intervention for this in particular. The criteria measured within Transport Demand is modal split and traffic flow and efficiency.

2.4. Data

The goal of this dimension is to analyse how city authorities divulge urban mobility data. The importance of this indicator lies on how best to benefit from the huge data flowing in our cities and determine recommendations to strengthen urban mobility. UMAM focuses on certain data types: travel behaviour, real time disruption, air quality, socioeconomic data, active travel, motorised traffic, public transport and road and street congestion. Each of these types is then assessed according to the actions taken in regard to their collection and availability: data collected, public authorities management, data availability to third parties, open data and data availability for application development. Each of one of these actions correspond to a point in a 1 to 5 overall score for each type of data.

2.5. Environmental Aspects

The goal of this section is to consider the environmental impacts of urban mobility systems on a local level. Currently, the transport sector emits 27 % of the European GHG emission[3]. But, decreasing local emissions does not only contribute to the current main

[3] https://www.eea.europa.eu/data-and-maps/indicators/transport-emissions-of-greenhouse-gases/transport-emissions-of-greenhouse-gases-12

political targets of the European Union (e.g. Green Deal) to reduce the global emissions but also to the quality of life of citizens.

The indicator considers four sub indicators: the presence of low emission zones, data on the European Air Quality Index, Green House Gas Emissions, and noise. The data cities input for these sub indicators are matches to a threshold and scored from 1 to 5.

2.6. Social Aspects

The objective of this dimension is to analyse how well urban mobility systems meet the needs of end-users from a social perspective. This is done by taking into account how people live and interact with mobility systems and infrastructure in their city, including socioeconomic and physical considerations.

The importance of this indicator is to be the first approximation of how closely aligned a city's mobility system is to the needs and desires of its users from a social perspective.

The analysis model is divided into four dimensions for assessment according to its objective in order to provide a holistic understanding of how well the system is meeting social needs: pricing of public transport, accessibility, traffic calming and traffic safety. The data is allocated to thresholds, which are link to a score from 1 to 5.

2.7. Roadmaps

After data is submitted, the UMAM score is generated. A brief literature review is completed to capture basic information of the city. With the information provided through the UMAM tool and the literature review, a roadmap is produced for each city. The roadmap follows a Avoid/Reduce, Shift/Maintain, and Improve approach.

The approach, known as A-S-I (from Avoid/ Reduce, Shift/Maintain, Improve), seeks to

- achieve significant GHG and air pollutants emission reductions,
- reduced energy consumption,
- less congestion,
- while increasing the levels of physical activity through walking and cycling as a daily mode of transport,
- more efficient use of public space,
- better accessibility, with the final objective to create more liveable cities.

Avoid/Reduce: Activities that are considered for this column are aimed to improve the efficiency of the transport system through integrated land-use planning and transport demand management, to reduce the need to travel and the trip length. There is a negative correlation between the activity and the objective, for instance: reduce car dependency in transport supply or demand to improve the city scoring.

Shift/Maintain Activities are aimed to improve trip efficiency, while encouraging modal shift from the most energy consuming urban transport mode (i.e. individual motorised transport) towards more environmentally friendly modes. There is a positive correlation between the action and the indicator, for example: Maintain and continue gathering Environmental data to keep the city score high.

Improve Activities focus on vehicle and fuel efficiency as well as on the optimisation and innovation of transport infrastructure and network. There is a beneficial correlation between the action and the scoring, for instance: improve stakeholder engagement practices for the city to achieve a higher score.

Additionally, each action is professionally assessed in terms of timeline and complexity. As regards timeline, the options are short, medium or long term, which can roughly be interpreted as 0-1, 1-3 and +3 years. Complexity is assessed at a high level according to the resources needed to implement such measures.

The analysis of this report has been conducted on the basis of the data provided by the city of Helmond using the UMAM online platform. The overall score of the UMAM assessment tool for the city of Helmond is 2.1.

Figure 1: UMAM scoring for the city of Helmond

3. UMAM Roadmaps

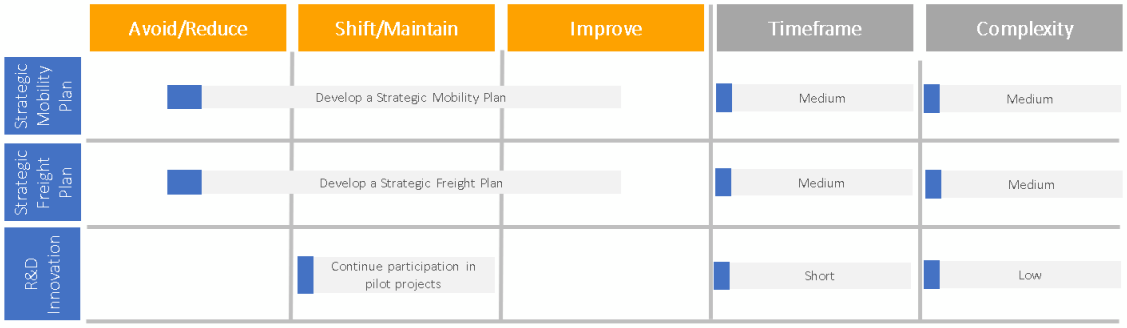
3.1. Policy and Innovation

The Policy and Innovation indicators for the city of Helmond scored 1 out of 5 including all sub-indicators of this domain which received the same scoring of 1 referring to both the Strategic Mobility Plan and the Strategic Freight Plan. Furthermore, the city reported to have 2 innovation pilots during the last 12 months in the new mobility sector with 20 direct participants: the TT Priority Broker Configuration and Smart Hubs. Helmond Smart Mobility Living Lab[4], a living lab for smart mobility with the Automotive Campus Helmond as its physical hotspot, is playing an active role for smart mobility solutions including C-ITS applications and automated driving tests.

Recommended actions

Helmond presents itself as knowledge and innovation centre for mobility solutions with Automotive Campus. The City of Helmond has a lot of experience in cooperation with industry and knowledge institutes on testing and first deployment of smart mobility solutions with a wide range of different partners. Continued efforts to participate and engage with pilot projects is encouraged, which involves a short timeframe and low complexity levels since this type of activity is already established in the city.

Figure 2: Policy & Innovation: Recommended interventions



The city of Helmond is lacking structured Policy Plans for its mobility and freight operations as well as innovation. The development of such plans could provide support in different areas of policy making related to urban mobility such as Network City Integration, Public Transport services, Reduced mobility, Touristic plans and Resilience

[4] https://www.automotivecampus.com/en/about-the-campus/smart-mobility

and Sustainability. In terms of policy making related to freight movements, the city can develop a plan to include strategic guidance on last mile policies, delivery timings, digital management and resilience and sustainability. The development of well-defined and structured policy plans would entail the involvement of different stakeholders a few months before launching takes place.

3.2. Transport supply

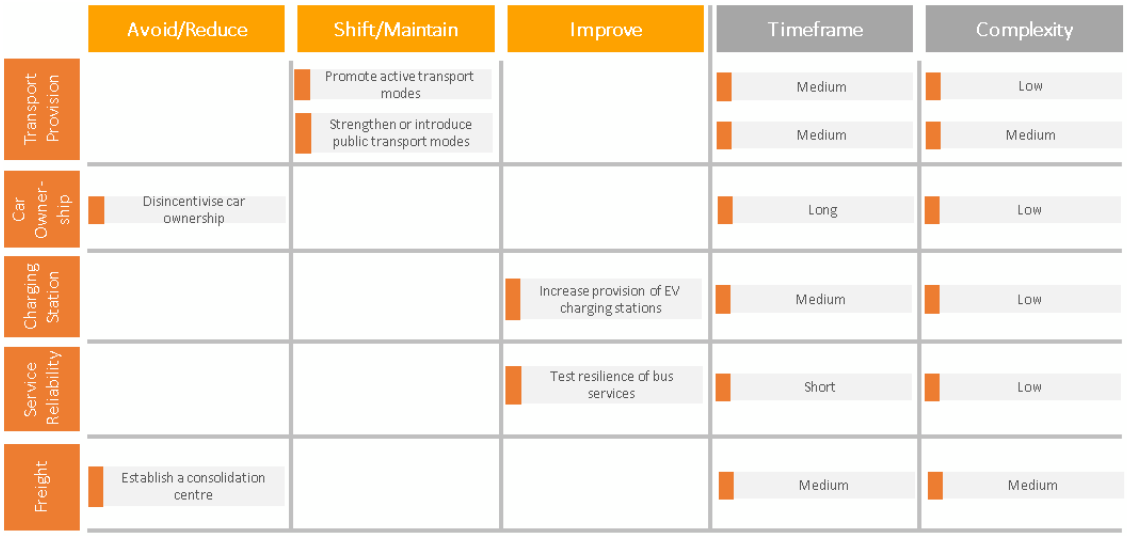
The transport supply section for the city of Helmond received an average score of 2.5. The city has no underground/metro service, a total of 4 rail stations and several bus stops. One ride hailing service, one car sharing service, one bike sharing service and one micromobility sharing service are also available in the city. The car ownership levels in the city are equivalent to 0.5 per capita and the city has a total of 59 EV charging stations. The percentage of delayed bus services is 13% which indicates poor reliability and there are no consolidation centres reported in the city; both indicators of this section received the lowest score of 1.

Recommended actions

Increasing the operational efficiency and infrastructure of public transport, as well as comfort, accessibility, safety and infrastructure for active transport, can provide more alternatives to car travel for citizens of Helmond and support sustainable travel patterns. At the same time, disincentivising car ownership with taxation schemes or less parking provision in the city can lead to less demand for car travel. Helmond city can increase the existing provision of EV charging stations and continue supporting the use of alternative fuels.

The service reliability of public transport services can be improved by optimising timetables to meet the forecasted demand while taking into account disruption management techniques. Testing the resilience of public transport services to optimise their operation has a short timeframe and low complexity levels when looking into one system at a time. At the same time, shifting to alternative modes of transport can decongest unreliable services and better regulate capacity levels. Reduced public transport reliability might result from different causes, however it is worth exploring this area since reliability is an important factor that increases the attractiveness of public transport modes.

Figure 3: Transport Supply: Recommended interventions



It is worth considering establishing a consolidation centre at a convenient location in the outskirts, which can reduce freight movements in the core of the city, improving the last mile operation of delivery services.

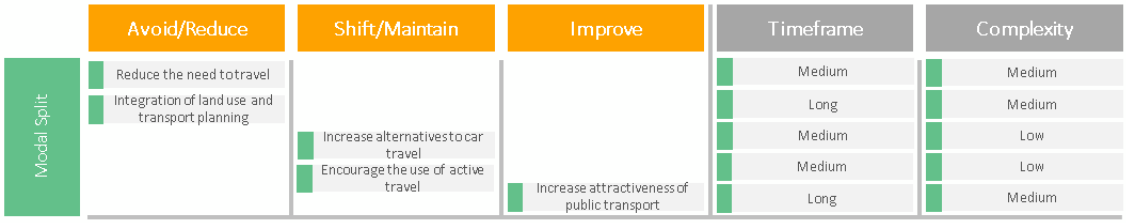
3.3. Transport demand

Private vehicle trips in the city of Helmond have a share of 58% in the modal split, followed by bicycle trips which represent 38% of total trips and the remaining 4% are trips conducted by bus. No data was reported for Traffic flow & efficiency indicator related to average annual congestion levels since Helmond city is not recorded by TomTom Traffic Index.

Recommended actions

Reducing the need to travel can be proven beneficial towards achieving less car traffic levels and reducing its associated impacts. Transport demand management and integration of land use and transport planning are some approaches which can reduce travel demand. For example, mix of land uses or transit-oriented development (TOD) can significantly reduce travel distances or even eliminate the need to travel. Campaigns to encourage the use of active modes and public transport or improvement of cycling and walking infrastructure can lead to more attractive alternatives to car travel. Increasing the attractiveness of bus services can potentially replace some of the car trips undertaken in the city. More frequent and regular services, increased reliability and better coverage of areas accessible by bus are some measures that can potentially increase bus trips.

Figure 4: Transport Demand: Recommended interventions



3.4. Data

The data availability section received an average score of 1.8. The city collects data on active transport, data on motorised traffic and data related to road and street congestion which is all accessible to public authorities but not to third parties. The city also collects data on public transportation which is accessible only to third parties. Only data related to road and street congestion is open. The city of Helmond is not collecting travel behaviour data for transport insights, real-time disruption data, air quality indicators or socioeconomic statistics.

Recommended actions

Availability of data often fosters innovation with data demanding projects coming into play. The accessibility of data to third parties or publicly available data such as travel behaviour data, socioeconomic statistics and data on active transport can initiate projects that examine for example the factors that influence individual decisions therefore understanding better mobility patterns. Making data available to the public and accessible by third parties is considered to have low complexity levels and a short timeframe. Moreover, when data can be used in the development of mobile applications or monitoring tools, the city can explore further topics of interest and importance. The development of a monitoring tool connected to a real-time database can provide visibility into the public transport system performance and help the city make better decisions about transportation by combining big data and spatial analytics. The process of aligning data collection with the requirements of monitoring tools has medium complexity levels and timeframe.

Figure 5: Data: Recommended interventions

The systematic collection of travel behaviour data for transport insights, real-time disruption data, air quality indicators or socioeconomic statistics is considered crucial for understanding the urban mobility ecosystem. For example, real-time disruption data can lead to the development of proximity-based services showing information when passengers really need it and thereby enabling them to choose different modes of transport in real time. Air quality indicators are also essential for monitoring urban climate and externalities of transport. In order to collect the aforementioned datasets, it might take some time to establish the required processes, but it entails low complexity levels.

3.5. Environmental aspects

Regarding the environmental aspects of UMAM index, the city of Helmond received an average score of 3.1. The percentage of the CO2 emissions that derives from the transport sector is 19% and the percentage of the population exposed to high levels of noise is 32%. Both indicators received a score of 4 out of 5. The city does not have a low-emission zone defined as an area where access to some polluting vehicles is restricted or deterred with the aim of improving the air quality.

Recommended actions

The city of Helmond can consider introducing Low Emission Zones (LEZ) to support alternatives to car travel and prevent high exposure to noise and pollution in densely populated urban areas. LEZs can lead to significant reductions in NO2 emissions and they are in alignment with zero emission policies targeting improvements in climate. Such an intervention involves medium complexity and a medium timeframe.

Figure 6: Environmental Aspects: Recommended interventions

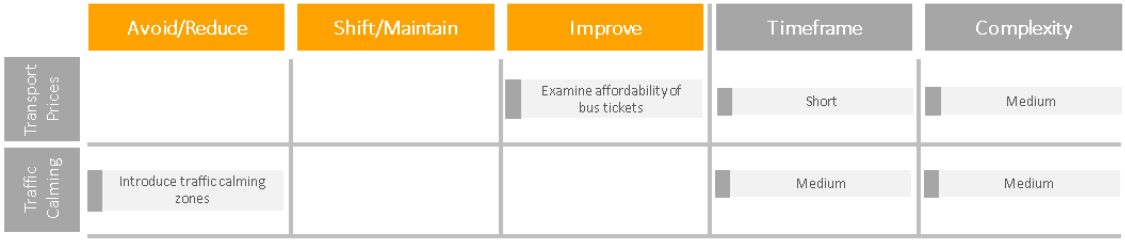
3.6. Social aspects

Social aspects within UMAM index for the city of Helmond received an average score of 3.5, which is the best score received across all sections of the index. The city offers full coverage of public transport stations providing assistance equipment and accessibility features for people with disabilities. Moreover, the five-year average road mortality in the city is as low as 1.29 road fatalities per 100,000 residents despite the lack of traffic calming zones in the city. The average share of household expenditure spent on transport in the Netherlands represents 11.8% of total expenses however the price of a single bus ticket in Helmond is relatively high compared to its PPP.

Recommended actions

Affordability of public transport modes increase their attractiveness and hence the frequency of their use. A reduced bus ticket fare can be considered in the city of Helmond, either for specific target groups within the city or as an incentive for those that switch from car travel to buses. This intervention can be adopted within a short timeframe and involves medium complexity levels depending on the approach taken.

Figure 7: Social Aspects: Recommended interventions



The city can consider introducing traffic calming zones which are designated areas that prioritise road safety for pedestrians by limiting driver speeds to 'walking pace'. Traffic calming zones can also lead to increased pedestrian and cycling activity. Such measures include narrowing driving lanes, introducing roundabouts or installing speed bumps which can potentially discourage driving. Such measures have a medium implementation timeframe and involve low to medium complexity depending on the availability and flexibility of relevant regulations.