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THE DUTCH MOBILITY TRANSITION

GENDER AND E-MOBILITY IN THE NETHERLANDS

POSITION PAPER

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Executive Summary

The Netherlands is broadly seen as a lighthouse for mobility systems around the world due to how the country transitioned away from car and fossil fuel dependency during the 1970s oil crisis. While the country has a broadly effective system in place, particularly in terms of active mobility options, there are gaps that exist for portions of the population. This position paper takes a particular interest in the gender inequalities of the Dutch mobility system, including in how the system fails to address the differences in time, cost, sense of safety, and mobility needs between men and women. As the mobility sector is once again undertaking a transition, this time parallel to the energy transition in the race to reduce climate impacts, it especially analyses how e-mobility options could be deployed to ensure this transition is just. The result of the analysis is actionable recommendations for policymakers, academics, activists, and industry on how to address the shortcomings of the existing mobility system. Additionally, a concluding section is devoted to the lessons which other countries can learn from the Netherlands, wherever their mobility system stands.

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1. Introduction

In the face of the broadening climate crisis, there is an urgent need to decarbonise energy production and transportation as a part of the energy transition. These are the two highest polluting sectors in most countries, including the Netherlands, where the transportation sector. Account for 23.1% of CO₂ emissions, second only to electricity and heat producers' 29.3% (IEA, n.d.). Decarbonisation pathways for the transport sector include expanding public transport, supporting active mobility safety and options, and encouraging the uptake of e-mobility alternatives to cars. While public transportation and active mobility options provide the most effective decarbonisation pathway for densely populated areas, they aren't always able to address accessibility challenges, resolve last-mile travel, or motivate behavioral changes.¹ Therefore, e-mobility options such as e-bikes, e-scooters, and small electric vehicles can play an impactful role in the mobility transition.

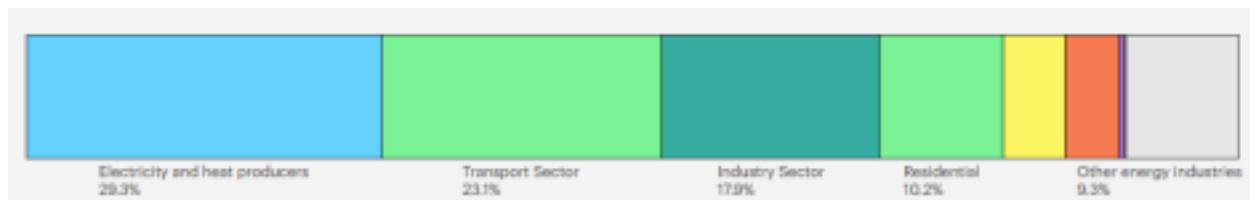


Figure 1: Breakdown of CO₂ emissions by sector in The Netherlands as of 2023 (IEA, n.d.)

The mobility transition, as with the energy transition, has the opportunity to overcome persisting inequalities for women and other marginalised groups. Gendered dimensions of urban mobility have so far been largely overlooked in the formation of decarbonisation policy in the Netherlands and most other countries. Men and women view and utilise urban mobility options quite differently, so a one-dimensional approach to decarbonisation in the sector would be, and has been, insufficient. A better understanding of the gender dimensions and social inclusion aspects of mobility, from academic research to policy making to industry contributions, is key for e-mobility to play an impactful role within the energy transition.

This paper will first discuss the gender dimensions and social inclusion aspects of e-mobility policy. Then, we will outline e-mobility dilemmas and opportunities in the Netherlands, specifically from a gendered perspective. We then analyse existing mobility policies in the Netherlands and make some recommendations for how e-mobility policy can be more gender-responsive and socially inclusive. We close with how lessons learned from the Netherlands can be applied to other countries.

¹ Meaning willingness to rapidly transition to different forms of mobility from personal vehicles to public transportation or active mobility options.

2. Gender Dimensions and Social Inclusion Aspects of E-Mobility

For the mobility transition to be effective, it must be theorised, developed, and implemented with justice and justness in mind, addressing the social and economic inequities that persist from our current sociopolitical system. Some of the disparities that the mobility transition needs to consider are gendered differences in mobility use, rural-urban accessibility, and mobility gaps in urban and suburban areas.

Women have different mobility patterns, needs, and behaviors than men. These differences are characterised by trip-chaining and time poverty, with women traveling a smaller range while carrying more baggage and accompanying more people under more time pressure than men. More of these trips are done on public transportation and on foot than by vehicle, despite the aforementioned complicated nature of the trips. The main reasons for the differences by gender are connected to their social role, including unpaid care work, the gender pay gap, and physical condition (Bellmann et al. 2020). Research also indicates a link between gendered mobility and activity patterns and impacts on gendered mental health. Though women are more open to taking public transport as part of multimodal trips, the usage of public transport can have a negative impact on mental health due to a feeling of vulnerability, particularly in nighttime conditions, and ever-influencing time and monetary constraints (Donggen and Yang 2023).

Financial disparity between genders remains a pertinent aspect in daily life in the Netherlands, where women earn 32% less than men on an annual basis. They also experience a pension gap, receiving on average 36% less in pensions than men, maintaining financial disparity upon retirement (Thijs 2025). Meanwhile, public transport in the Netherlands is getting more expensive, with train ticket costs increasing by 6.5% in 2026 (Risseuw 2025) and bus and tram tickets projected to simultaneously rise by 4% (van Gurp 2025). For those who could use an EV to supplement their journeys, the cost of used EVs is dropping, though they are still not cheaper than petrol vehicles. Additionally, subsidy schemes and tax exemptions have expired, removing some of the financial incentives to purchase EVs over other used and new vehicle options (Mauro 2025). A non-gender-divided study showed that 1% to 3% of Dutch households could not afford sustainable alternatives to petrol vehicles before the policy expirations. This minority mostly lives in medium-sized cities and drives three times as many kilometres yearly as households who could afford sustainable mobility alternatives (Dalla Longa et al. 2025).

With women's journeys and financial barriers broadly defined above, the next factor to consider is differences in accessibility to transport for women in rural, suburban, and urban areas. Geographic disparities in access have been so far under-addressed in mobility policy, which instead tends to focus on ideas like the 15-minute city that benefit the urban core rather than individuals living in rural or suburban areas. Even for individuals in urban areas, these ideas can fail to consider all the reasons they may travel beyond their residential area for goods and services (Poorthuis and Zook 2023). Some of the more pressing challenges with public transportation options for individuals in suburban and rural areas in the Netherlands are low frequency, limited operating hours, and distance to reach them. These public transport experiences are defined as time-dependent (in)accessibility (Fransen et al. 2015).

Sheltering individuals from oil shocks and other rapid price influxes

The near halt in shipping traffic through the Strait of Hormuz following the US and Israel's invasion of Iran has resulted in the largest supply disruption in the history of the global oil market. Resulting sharp increases in costs have hit individual consumers the hardest, particularly those already under financial strain. In a 2026 report responding to the oil shock, the International Energy Agency proposed various best practices for demand-side sheltering from the strains on affordability. They included shifting travel habits to the utilisation of public transport, cycling and walking for shorter journeys, increasing car-sharing, and dissuading private cars from cities (IEA 2026). Encouraging these habit shifts outside of crises would provide long-term insulation from price fluctuations.

In some cases, perceptions of inaccessibility to transport impact mobility decisions, including perceptions of frequency and distance. Many demographic factors influence this perception, including gender and age, but the most significant indicator is rurality. Though the Netherlands is the second-most densely populated country in the EU,² around 72% of the country's land is defined as rural,³ containing 6.5% of the population (Trading Economics, n.d.). Services for these rural populations are worsening as a result of centralisation and urbanisation forces, particularly for activities outside of commuting. Changes to the public mobility systems are also harder to communicate, and the digitalisation of ticketing and mapping further complicates mobility systems for older and more rural populations. For all these reasons, perceptions of the accessibility and quality of the mobility system are potentially worse than they actually are, and influence a higher rate of car reliance (Pot et al. 2020). Rural communities are disproportionately affected by rising fuel and car running costs due to this reliance. The dependency also influences carless rural residents' ability to participate in local activities (Dalla Longa et al. 2025). Considering the above discussion, mobility options to address gaps do not need to cover the whole journey. Rather, options such as EVs and e-micromobility play a role in a system of mobility options, either as one leg of a multimodal trip for rural or suburban populations or to supplement trips that people may take for reasons beyond goods and services (i.e. social or familial). Yet, despite the potential of EVs aligning with transportation gaps that exist for women, the distinct majority of EV owners and drivers in the Netherlands are male. Research indicates that more than 79% of EV drivers are male, as compared to 21% female (Vanhaverbeke et al. 2024). A variance in EV ownership by gender is seen across the world, including in Nordic countries (B. K. Sovacool et al. 2018) and Western Australia (O'Mahony et al. 2025), with such a widespread difference suggesting that EV adoption has so far been primarily driven by middle- to upper-class men. Furthermore, a majority of EVs are classified as medium or large vehicles, insinuating that there is a gap in the market in the adoption of affordable small EVs, which would effectively cover the defined mobility gaps, particularly for women, low-income, elderly, rural, and suburban individuals.

² Behind only Malta

³ $1 - \left[\frac{(\text{Total Surface} - \text{Built Up Area} - \text{Inland Water} - \text{Tidal Water})}{\text{Total Surface}} \right] * 100$ from (CBS 2023) 3

Smaller EVs as an affordable alternative

While many countries' manufacturers have focused on producing EVs that rival the private vehicles on the road today, Chinese manufacturers have emphasised smaller and more affordable electric vehicles. This encourages accessibility, more rapid uptake, increased competitiveness with gas- and diesel-powered alternatives, and reduces impact on urban space usage and the grid. Some manufacturers in Europe, including Citroën, Fiat, and Opel, have also been successful in producing microcars, which take the place of larger vehicles for short journeys. Government support for these mobility alternatives is key to driving affordability, as shown in China, Norway, and by other EV leaders (Jaeger 2025).

3. What we Found

a. E-mobility Dilemmas

While e-mobility options provide high potential for multi-modal trips, particularly for women in suburban and rural populations, some fundamental dilemmas in their adoption influence support of their uptake in the EU and the Netherlands. One of these dilemmas is the sustainability challenges and risks associated with lithium-ion batteries. Beginning in the supply chain, the concentration of raw materials in countries such as China and the DRC contributes to fear of supply chain disruption and human rights abuses. Transportation of concentrated materials from extraction to production facility produces emissions, as does the production and shipment of the vehicles. Increasing global reliance on rare earth minerals, due to increased EV, solar panel, and wind turbine production introduces further geopolitical risk as China is home to over 95% of rare earth mineral processing (Kempston et al. 2025). Risk is also associated with who produces the EVs which the Netherlands and other European countries import. Chinese EVs, for example, are much cheaper than European EVs, but risk data security and job security in the EU (Oertel 2024). As such, import of these vehicles has been restricted, reducing the affordability and uptake of EVs but providing some data and labour market protection.

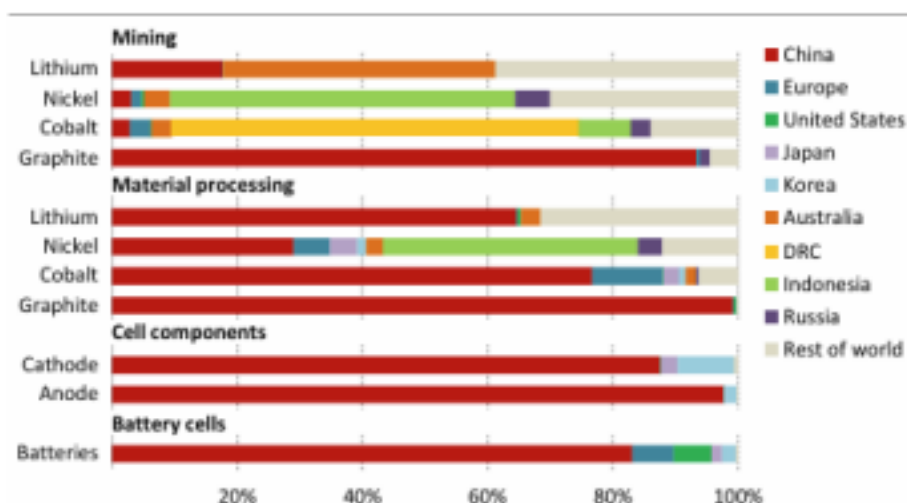


Figure 2: Geographical distribution of the global battery supply chain (Cozzi et al. 2024)

Additional dilemmas of EVs 'at home' are related to congestion, both of the grid and of streets. The Netherlands, as is the case in many countries, has an aging grid system that is under strain due to the dual challenge of new construction and electrification of modern life. The country faces a shortage of approximately 400,000 homes, or about 5% of the national housing stock (Muresan 2026). Energy consumption is expected to increase by 27% to 46% by 2030 from a 2023 baseline (de Boer 2024), while production remains complicated as old transmission lines are poorly equipped for the disparate nature of renewable energy sources in opposition to the centralised gas-fired power plants they are replacing (Laurenson 2025).

A major source of electricity consumption increases is the charging of electric buses, cars, e-bikes, and e-scooters, especially at private chargers in homes or apartment buildings. Though there is potential for EVs to help the grid in the form of storage from rapidly emerging vehicle-to-grid technology, there is also a high chance of expanded strain on the grid, depending on charging habits and their variability. EVs, while an elegant solution for persuading some car users towards more sustainable daily mobility and for fulfilling the "last-mile" of trips that some mobility options cannot cover, congest the streets just as much as gas-powered vehicles do. As such, they may not motivate the habit shifts which bring more widespread safety and health benefits. The dilemmas above, though individually complex, together raise a simple question of prioritisation in the question of short-term infrastructure costs versus long-term savings. There are strengths and weaknesses to EVs as a part of a decarbonised urban mobility system, with the extent of their benefit dependent on community to community. When and how they should be deployed depends on the answer to the extent of this benefit and relies on an understanding of the local context rather than broad stroke policy support.

b. Are we not solving a man's problem?

Modern transport systems are unjust, often designed to favour motorised transport and accept the related burdens of pollution, space usage, and safety concerns experienced by society as a whole (Gössling 2016). Encouragement of EV purchase and use maintains these modern systems, as well as the imbalance of who reaps the benefits of these systems. Men use cars more frequently, own cars more often, drive further, and use less public transport than women. Meanwhile, women have stronger preferences for greener and safer modes of transport, and attach less importance to the acceleration, power, and sound of personal vehicles. This manifests not only in mobility choice but in EV vehicle preference. With a preference for speed and acceleration, men have a leniency towards mid-sized EVs, viewing smaller and cleaner EVs as 'girly' (B. Sovacool et al. 2019). Mid-size EVs are similar to existing petrol vehicles, maintaining the burdens of space usage, safety, and noise pollution⁴ while only reducing air pollution impacts. Plananska et. al. find that there is a positive correlation between a European countries' femininity ranking on the masculinity-femininity Hofstede's cultural dimensions scale and their EV market share, with the Netherlands ranking 4th in EV market share as of 2020:

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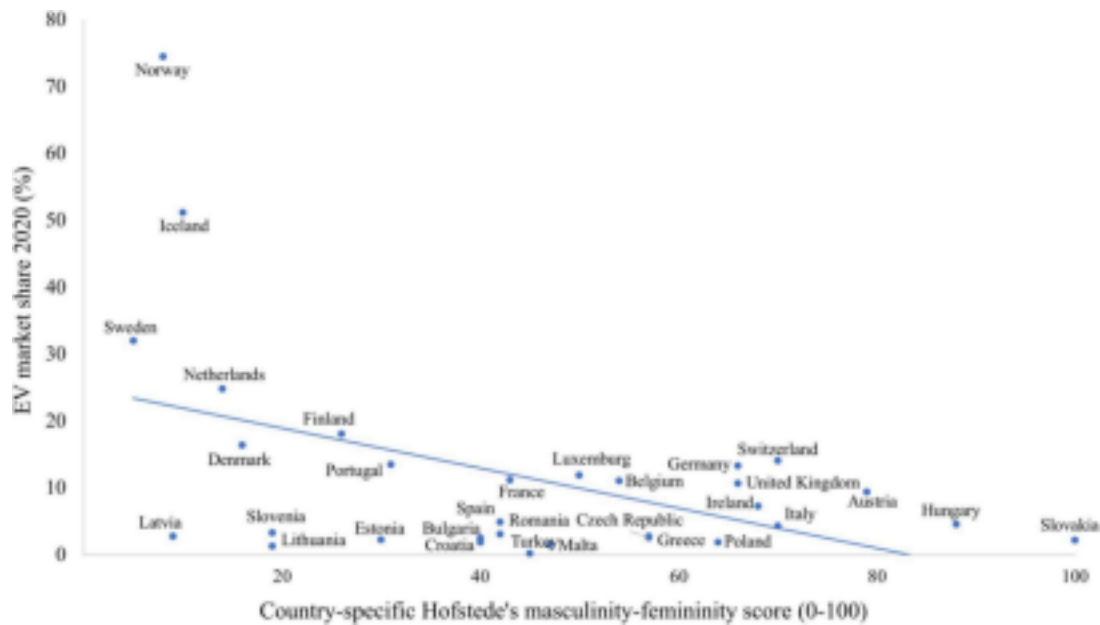


Figure 3: Country-specific Hofstede's masculinity-femininity score graphed against their EV market share (Plananska et al. 2023)

⁴ Like that from tires and honking, rather than the artificial engine noise made to alert vision impaired people of the presence of EVs.

This positive correlation does not define EV owners as women; in fact, as stated above, a majority of EV owners and drivers in the Netherlands are men. Correlation of the masculinity-femininity score instead defines the likelihood of men to overlook traditionally masculine aspects of personal vehicles to adopt EVs instead of defining the likelihood of women adopting EVs.

So, through generic policies encouraging EV purchase, such as subsidies and tax breaks, are we not solving a man's problem? Research has shown that subsidy schemes primarily attract people who are already likely to undertake the climate actions in question, such as purchasing an EV (van Valkengoed and van der Werff 2022). Engaging more women in the E-Mobility ecosystem is vital to unlocking the ecosystem's full potential (Allen and Berlin 2024), which is why it is important to look beyond EV ownership as the sole E-mobility option. Applying a justness framework to the conversation allows for the consideration of alternative mobility options, specifically with the goal of broadening mobility options and lessening mobility gaps for women and other marginalised groups.

From a lens of distributional justice, maintaining a reliance on private automobiles through policies supporting EVs and EV infrastructure mean the injustices caused by personal vehicles are overlooked. These injustices, including mental and physical health impacts, air and noise pollution exposure, and inaccessibility are disproportionately experienced by women, as discussed in chapter 2. This additionally exemplifies recognitional injustice, wherein policymakers are failing to identify the gendered experiences of mobility systems in the Netherlands and the accompanying negative impacts of these different experiences. In light of these injustices, the Netherlands has not sufficiently included women in the decision-making processes of mobility, also known as procedural injustice.⁵

A **gender just mobility policy**, as transposed from work done in the energy sector (Feenstra and Özerol 2021), should include **three main elements**:

- Recognising the differences in the mobility dynamics/needs of men and women
- Builds mobility access technologies and services responsive to the dynamics
- Recognises women's and men's rights in policy processes that provide environments for equal participation in policy processes

Considering that subsidies for electric vehicles have recently expired in the Netherlands, the government should recognize the above injustices of past mobility policy and use procedural and restorative justice approaches to overcome them. To do so, they will need to expand involvement from underserved groups and focus on their needs in upcoming policy and initiatives. A more cosmopolitan approach to future mobility policies would improve the potential of the Netherlands to achieve their lofty goals in the transportation sector.

⁵ Definitions of justice from (Jenkins et al. 2017; Feenstra and Özerol 2021) via (Vivancos Mirapeix 2025)

c. Micro-mobility and community car shares

Due to the nature of mobility gaps persistent in the Netherlands, particularly for women, micro-mobility options such as micro-EVs and e-bikes have a high potential to close the mobility gap. Forms of these mobility options have existed in the Netherlands for many years; the Canta microcar first came onto Dutch streets in the 90s with the intent of being an aid for the mobility impaired, with the Birò entering almost 20 years later for an entirely different population – wealthy urbanites (Booth 2026). The Dutch national and municipal governments had to navigate this regulatory challenge, eventually differentiating the Canta from other modern microcars, while still encouraging the uptake of microcars through simpler permitting processes (Zipper 2023b). These microcars are still expensive, though, and tax incentives and other policies promoting e-mobility ownership in the Netherlands have recently broadly supported EV adoption, leading to the purchasing of mid- to large-sized EVs mainly for those who can already afford cars. Costs of EVs are beginning to drop, due to the return of leased vehicles and lower base costs of new models (Mauro 2025), though tax incentives are beginning to expire.

Even with the costs of EVs dropping and their potential for resolving mobility gaps, individual ownership of EVs is still cost-prohibitive and straining on the grid. A variety of ever-changing factors (Maltha et al. 2017) determine car ownership in the Netherlands, including economic and demographic characteristics (Oakil et al. 2016). In suburban and urban areas, especially centralised, publicly supported EV carsharing could alleviate mobility gaps that tend to especially impact women, such as the last mile of a multimodal journey or the transport of passengers and luggage. Government support of the system would allow two distinct advantages in the Netherlands – control over the size of the vehicles and control over the location of the charging infrastructure for the vehicles. Keeping the vehicles' dimensions small to reduce space usage and centralising their charge points minimizes impact on the road and grid congestion and lowers the associated costs. Additionally, centralisation allows the opportunity for effective energy generation at hubs with battery capacity maximised through vehicle-to-grid technology. Carsharing is vital to the potential success of this pathway, particularly as a tool to transition individuals from private car ownership to public mobility systems.

Government supported carshare systems

Bremen, Germany included a shared mobility action within their sustainable urban mobility plan for the city. Government support for the introduction of carshares meant that these systems were better integrated with public transportation, bicycle parking, and charging infrastructure, supplementing other forms of mobility rather than replacing them. In fact, one carsharing car can replace up to 18 privately owned cars if well incorporated with the existing mobility system (Karbaumer 2020; Jochem et al. 2020).

Some research shows that carsharing in the Dutch context meets a small fraction of total mobility needs. This is likely because of a misdirection of policy rather than the potential of this option. Car ownership is still deeply ingrained in policy-making, preventing systemic changes that would encourage car-sharing options, such as the reduction of parking places for private vehicles. It has been found that users who adopt car-sharing make use of a combination of public transport, active mobility, and other shared modes. Understanding this distinction between cars under private ownership and cars within a carsharing system will allow policymakers to facilitate a

well-connected multimodal system that could convince larger groups of people towards carsharing (Meelen and Münzel 2023).



Figure 4: Example of an E-Bike and an E-Cargo Bike (City of Boulder, n.d.)

Another government-supported mobility share system with the potential to resolve the gaps is bikesharing. For non-bike users, e-bikes and e-cargo bikes (see Figure 4) especially have high potential to address mobility gaps and the challenges of connecting trips and carrying both people and luggage. These forms of transport are expensive to buy and maintain, challenging to store (though less so than a car), and widespread ownership strains public systems such as bicycle parking at train stations (Goeeverden and Correia 2018). Bikesharing can address these challenges and mobility gaps, particularly in urban and suburban areas, for individuals who aren't impacted daily but rather on a weekly or more sporadic basis. E-cargo bikes, in this system, provide a smaller alternative to EV carsharing options while still having the added capacity benefit. Democratising access to these practical options would also encourage overcoming stereotypes of gender, ethnicity, and class, which currently hang over e-bikes and e-cargo bikes (Boterman 2020), encouraging positive modal shifts, especially through equitable design of the systems (Ma et al. 2020). Public ownership is again vital in the bikesharing context due to the importance of integration with public transport modes (Pritchard et al. 2019), the need for operators to be willing and able to accept operational losses (Mbugua et al. 2025), and extensive design considerations needed to develop an equitable and accessible system.

Alleviating Strains on Public Systems

In 2012, the Dutch government allotted €221 million towards bike parking at train stations in the "Action Plan for Bicycle Parking at Stations", with a further €200 million allotted towards the project in 2020. The result is almost 200,000 secure bicycle parking spots across 106 rail stations across the Netherlands. "Bicycle parking itself isn't a profitable business," program manager Rebeca van der Horst has said. "But passengers buy tickets, they buy coffee at the station. If you add such revenues together, it becomes profitable." (Zipper 2023a)

The Netherlands does have a robust bikesharing system in OV-fiets, a Dutch Railways-owned bikesharing system which has provided significant societal benefit since its introduction in 2004 (Mbugua et al. 2025). The OV-fiets fleet is made up of 22,000 bikes across 288 train stations, and has 5,900,000 trips completed each year (NS 2025). Though the system experienced significant growth in the 2010s to reach these numbers, the OV-fiets system has stabilised over the last few years (see Figure 5). There are a couple of variables preventing further growth and

use of this well-established and affordable⁶ system. First is the requirement to return the bike to the station from where it is rented. This requirement is in place to help with maintenance of the shared bicycles and to prevent the costs of collecting the bicycles from dispersed drop-off points. A recent development in how the bikes are locked and unlocked, electronically rather than by physical key, has opened the door for expanding where bikes could be stored, such as at new housing developments or non-train station mobility hubs (Puylaert 2021). Second is accessibility and affordability challenges related to uptake of new technology. OV-chipkaarts used to unlock bikes and access public transport can be difficult to acquire for new and non-residents, electric lock malfunctions can leave users stranded awaiting support from customer service (NL Times 2025), and the cost of the recently implemented OV-e-bike fleet is three times more expensive than the manual fleet (NS, n.d.).

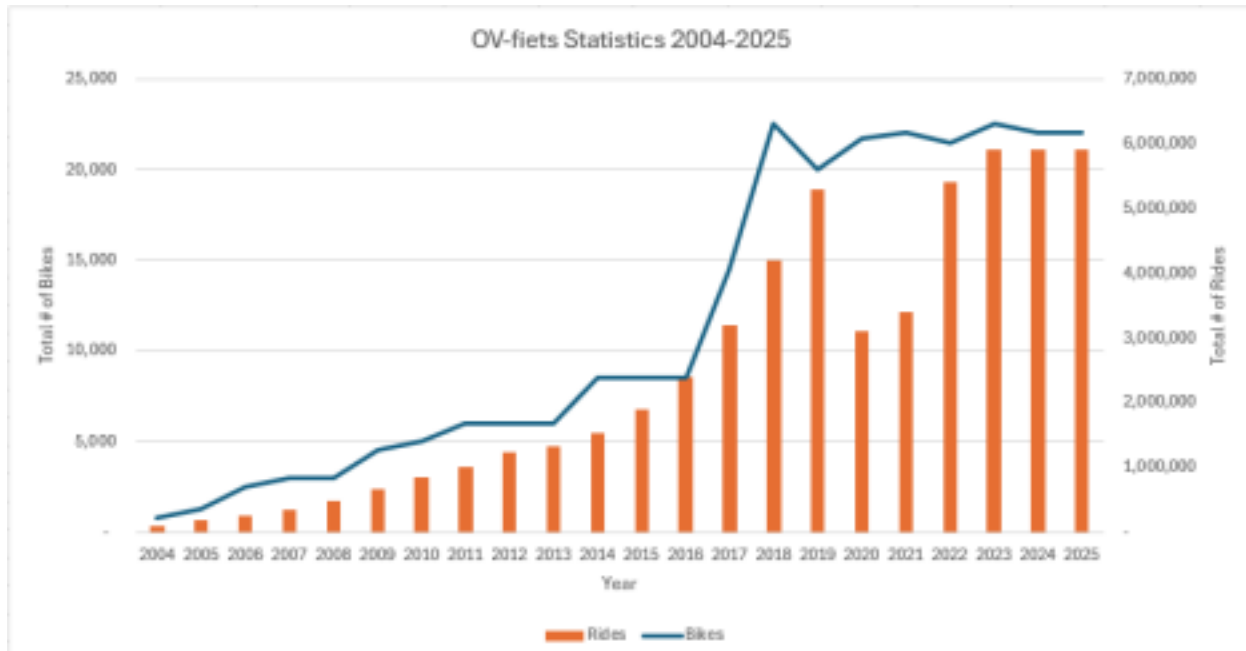


Figure 5: Ov-fiets bike and ridership statistics 2004-2025. Data from www.nsannualreport.nl/

Micromobility and carsharing would not only have a positive impact in urban and suburban areas; there is also high potential for rural areas. E-bike mobility is already used among a broad population of varied ages and backgrounds for different purposes in the rural areas of the Netherlands. There is high potential for persuading car owners towards e-bikes or EV carsharing options (Plazier et al. 2022), especially if these options improve connection to regional mobility systems, which are more time accessible for non-work-related activities (Sun et al. 2020). Though there is less potential for persuading bike users towards e-bikes or EV carshares in rural or urban areas, there is potential persuasion for the occasional use to better connect individuals to errands, activities, and social networks that extend beyond urban borders (Martens 2013).

⁶ A 24-hour rental costs less than €5

4. What needs to happen

a. Dutch Policy Landscape

The overarching guide of Dutch transport policy is the restriction on all new passenger vehicles to be zero emissions by 2030, ahead of the EU’s recently reduced mandate of a 90% reduction by 2035. In support of this policy, the Netherlands has one of the densest EV charging networks in the world (Neth. Enterp. Agency 2026). From 2020 on, subsidy schemes in the Netherlands supported the purchase of EVs, and since 2016 registration rates for hybrid vehicles and EVs have been heavily decreased from those of gas-powered vehicles. At the end of 2025, these subsidy schemes were phased out and the registration rates increased, though they remain much lower than those of gas-powered vehicles. While there are still local incentives from several Dutch municipalities, there are no national-level incentives intended to replace these subsidies (Eur. Altern. Fuels Obs. 2025).

Differences between policy implementation at a municipal level is an ever-present challenge in Dutch sustainability policy due to the structural impacts of the 2010 passing of the “Participation Law” on governance. This law resulted in municipalities inheriting extensive responsibility for social service provision, poverty alleviation, and implementation of social welfare policy. Municipalities are hamstrung by the absence of a national framework for more specific aspects of the energy transition, a lack of a clear mandate for overcoming energy and transport poverty, and inadequate resources at the local level to impact desired changes. Furthermore, this can lead to geographical disparities where municipalities enact different policies which support individuals and households to varying levels but are not standard, even across neighbouring municipalities (Clancy et al. 2024). In a concise summation as it relates to governing e-mobility in the Netherlands, “local economic interests sometimes conflict with the national desire to limit car use” (Rongen et al. 2022).

In March of 2023, the Dutch Ministry of Infrastructure and Water Management published their “Mobility Vision 2050” – a Framework Memorandum working to integrate the fragmented accessibility policy (Zaken 2023). The vision outlines four policy spearheads for 2050, outlined below:

Striving for more integrated objectives that safeguard the public interest of access to critical socioeconomic functions across the Netherlands.	Utilising, reinforcing and combining the strengths of the various modes of transport in such a way that the accessibility objectives are efficiently and effectively achieved: the right mobility in the right place at the right time. With that in mind, the national government is increasing its efforts to utilise and encourage innovations.
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The mobility system of the future complies with the public frameworks for sustainability, healthy living environment and safety.	The three policy spearheads are elaborated in an area-specific manner, in close consultation with the administrative partners, in a process that also involves the users of the mobility system. For goods transport, a corridor-based approach that ties in with international networks is used.
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Table 1: The policy spearheads for 2050, outlined in Mobility Vision 2050 (Zaken 2023)

While the vision addresses topics such as reducing transport poverty, addressing time- and location-based inaccessibility, and financial barriers, it fails to acknowledge gendered gaps in transportation and policy. It bears no mention of gendered differences in mobility patterns and access, nor a structure for addressing these challenges. Not only is this a major gap in the vision from the viewpoint of this research; it is a gap from how Dutch citizens view government responsibility in mobility policymaking, being that safeguarding accessibility standards should be a core government task (Mouter et al. 2025). Gendered differences in mobility must be addressed as the framework is elaborated and used to influence future national policies. Furthermore, the framework provides some national guidance for how municipalities should develop their future transportation policy, but fails to set standards nor provide funding.

Within the vision, it is clear that the Netherlands views one tool, the mobility hub, as a potential magic bullet to solve transport-related issues in the country. However, despite the reference to mobility hubs across the Mobility Vision 2050, National Environmental Vision 2020, municipal and provincial strategic visions, and coalition agreements of the Dutch cabinet, implementation and interpretation remains in the early stages and the concept is still unstandardised. It holds that the provision of multimodal transfers at high frequency with local context taken into account is a vital idea behind alleviating the gendered pressures outlined through this paper and incorporating many of the presented solutions such as bikeshares, carshares, and micromobility. Historic policies have laid the groundwork for node and place-based planning, particularly as seen with park-and-rides and transportation-oriented development. Using these policies and the lessons from their implementation successes and challenges provide a basis upon which mobility hubs can be better deployed, particularly with defined national guidelines (Rongen et al. 2022).

At the EU level, the Sustainable and Smart Mobility Strategy has laid the groundwork for its member states to decarbonise their mobility systems in a just way, considering affordability, accessibility, and fairness. Within this strategy, the only reference to gender was that “any future proposal for transport will be compliant with the Commission’s Gender Equality Strategy and Disability Strategy” (Sustainable and Smart Mobility Strategy – Putting European Transport on Track for the Future 2020). In early March 2026, the European Commission adopted a new Gender Equality Strategy for 2026–2030, which indicates the need for gender mainstreaming across policy. This includes urban planning, with the strategy acknowledging that the sector “has great potential for advancing gender equality through ensuring that public spaces are safe for women and girls, and that infrastructure and services such as care services and public transport are adapted to their needs” (Gender Equality Strategy 2026–2030 2026). The EU Agenda for Cities develops further the potential for urban planning

policy in addressing gender disparities in safety, but misses some nuance in the present disparities in accessibility and transportation use (“An EU Agenda for Cities: Driving Growth and Prosperity,” n.d.). The “Women in transport – EU platform for change” may better address these gaps, as it seeks to close the gender gap in employment in the transport sector (“Women in Transport – EU Platform for Change – Mobility and Transport,” n.d.).

b. What should be done

Following the expiry of subsidies supporting uptake of EV ownership in the Netherlands and increased emphasis on the intersection of gender and urban planning from the EU, policy and funding mechanisms should be primarily directed to address last-mile mobility services which improve safety, accessibility, and multimobility for women and other individuals experiencing transport poverty. Government-supported EV and e-bike sharing systems are best equipped to address these challenges due to their incentive to improve connectivity to public transportation systems and access to using other policy levers, such as low-emission zones and reduced public parking, to encourage these systems’ success. To address infrequent or last-mile trips, these systems can consist of small EVs, e-cargo bikes, and e-bikes, which have a smaller impact on the grid and urban space usage while having a large potential for improving an individual’s quality of life. Government subsidies for these systems have the potential to maintain affordability for individuals, with the government able to take a loss on the system while providing a public service which reduces individual barriers and enhances the national economy.

Subsidising Low-Income Travel to Improve Participation in Society

Dutch Railways (NS) wants to work with municipalities and other authorities to create a rail pass for residents with a low income. As a first step, NS is trialling the idea with the municipality of Amersfoort. A member of the NS Executive Board highlights that “travelling is freedom”, and the goal is to expand this freedom for all people (Kroeze 2026). This concept has the potential to improve last-mile mobility, as OV-fiets are part of the NS mobility system.

Maintaining a centralised EV carshare system also has the potential of alleviating grid congestion through vehicle-to-grid compatibility at a time when the Dutch grid requires additional storage and flexibility. All that is missing for utilizing mobility hubs to expand grid storage and flexibility is a clear mandate to do so (Pennings et al. 2025). Controlling where the batteries are charged is a huge advantage in opposition to dispersed ownership of EVs amongst households. Furthermore, encouraging the use of EVs and e-bikes promotes further modal shifts towards active mobility and public transport rather than stagnant, continued use of vehicles as the race towards emissions targets continues. The use of EV carshares particularly provides a short-term solution to last-mile challenges, giving time for urban mobility policy and implementation to improve the standards of alternatives to personal vehicles. This action would also support the upcoming ban for new gas-powered vehicles in the Netherlands in 2030, and put them far ahead in the continent in transport emissions.

In the placement of EV carshares and expansion of bikeshares, geographical considerations should be taken into account. While EV carsharing has high potential, the presence of vehicles in congested urban areas continues to have negative effects. As such, The Netherlands and its municipalities should consider closing streets or areas to cars in urban centres to disincentivise driving and enhance safety of active mobility methods. Urban mobility

hubs should then be better stocked with e-bikes and e-cargo bikes, ideally from the OV-fiets supply, and drop off options beyond train station round trips should be considered. In rural areas, EV carshares should be expanded at stations with EV bike options as well.

While implementing the above recommendations, the Dutch government should additionally conduct research into transport poverty in the country. Part of this will be expanding the definition in order to understand who is at risk of transport poverty and who the policy should be targeted towards. At the moment, transport poverty measurements in the Netherlands are calculated by the ratio of low income and high field costs (De Vriendt 2024), failing to capture the nuance of the EU's definition, which includes affordability, accessibility, and safety (Cludius et al. 2024). It also fails to consider transport poverty beyond vehicle use, missing a portion of the population who experience transport poverty without owning or having access to a vehicle. Expanded research into transport poverty in the Netherlands could also improve the connection of transport poverty to another salient issue in the country, energy poverty.

Finally, in order to mainstream solutions for gender gaps within urban planning and the national transport sector, a portion of the Dutch national gender equality action plan should be dedicated to these sectors. Transport and mobility are everyday experiences for every person in the Netherlands, and improving the experience for all is vital to bettering the mental and physical health, quality of life, and economic situation for all. Constructing this mainstreaming from the national level is key to ensuring the replication of positive implementation at the regional and municipal levels, particularly as the onus lies on them to implement change within the Dutch political structure.

c. Summary of Key Takeaways and Recommendations

Key Takeaways	• The Netherlands would significantly benefit from the creation of a national framework for the decarbonisation of urban mobility, overcoming the onus placed on municipalities to build plans from scratch. • Other benefits of a clear national framework would be the addressing of gendered differences in mobility and standardisation across similar geographies. • Many of the correct ideas or basic systems are already in place, and just need better support and direction to reach their full potential. • Dutch Railways should analyse the trips which OV-fiets are not addressing in order to continue system growth and utilisation after a couple years of stabilisation. • Further research should be done on transport poverty and gendered differences in mobility in the Netherlands with an emphasis on highlighting undersupported populations and identifying possible solutions.
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For Policymakers	• Clarify the definition of a mobility hub and establish funding pathways for the vital elements of these hubs. • Define hubs differently based on size of local area, taking steps like banning cars from dense urban mobility hubs and targeting the deployment of EV carshares and e-bikeshares in more rural and suburban contexts. • Acknowledge the gendered differences in mobility usage and shape policies accordingly.
For Researchers	• Further research the links between transport poverty and gender in the Dutch context. • Analyse the connection between mobility inequities experienced by gender, geographic context, race, socioeconomic status, and physical disability, mainstreaming social inclusivity in mobility research. • Investigate the effectiveness of different mobility innovations and urban planning concepts with the context of the current system in mind. • Develop a mobility decision-support framework (Hosseini et al. 2026) which could be deployed in different municipal and regional contexts in the Netherlands, as that is where the political onus lies. • Construct a web of the municipal, regional, national, and European policies which define how mobility advancements are implemented in the Netherlands to better understand where there is room for improvement.
For Activists, Lobbyists, and Industry	• Fight for the continued removal of cars from urban areas • Advocate for gender mainstreaming in policy construction at all levels of government. • Approach mobility innovations with caution, advocate for early regulation as they are adopted.

Table 2: Key Takeaways & Recommendations

5. Lessons for Other Countries

The Netherlands remains a leader in the urban mobility sector with a model that is replicable across other countries. First and foremost, they are proof of the effectiveness of major action in reshaping urban landscapes and national mobility trends with the transitions that occurred in the country in the 1970s. Paris has shown that similar action is still possible and impactful in the 2020s and onwards. Secondly, the country has undertaken positive actions in the realm of multimodality, such as with bike parking and OV-fiets at train stations, which have proven to be very effective in reducing car usage. Integration within government owned or supported national mobility systems is a vital step towards increasing affordability and accessibility. Third, the early embracing of micro-cars has eased the transition from petroleum-powered vehicles to EVs, and continuing regulation shifts on these vehicles support them as a tool for transition rather than complete answer. Other countries should consider the benefits of microcars for specific portions of the population and allocate resources accordingly.

There is also much to learn from The Netherlands' shortcomings in the mobility sector. For example, the absence of a national framework and placement of burden on municipalities has resulted in geographical inequality in energy access, transportation, and social welfare systems. National frameworks and funding are vital to ensure that these gaps in benefits do not appear. Gaps additionally exist for women and marginalised communities in the Netherlands due to the lack of a framework addressing the inequalities which exist in their experiences of mobility systems. National guidance should mainstream gender, race, and socioeconomic topics to ensure a just mobility transition for all.

In examining the inequities of a municipality's, region's, or country's mobility system, the first step is to construct a picture of the historical and current policies which have shaped the mobility infrastructure. The examiner must take a critical eye to analyse who the system has overlooked, particularly by gender, race, and socio-economic status. Across Europe and the rest of the world, we are at a critical tipping point in the mobility and energy transition where these systemic failures can be overcome, so long as they are properly identified.

Considering what has been learned through the Netherlands as a case study, the other countries of the UsersTCP project EmPOWERing All tasks, namely Austria, Ireland, and Sweden, should conduct similar research into their situation of gender and mobility underneath the broader goal of including all users in policy, governance and implementation design.

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