

Future public transport in Norway 2025 Comprehensive delivery – Scenario Design

March 2021

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Executive summary

The scenario work provides a shared frame of reference for a future that is constantly changing and characterised by significant uncertainty

Objective of the scenario work

- > The scenarios help establish a shared language and perspective on various future outlooks that public transport players are facing
- The scenarios are based on a structured and fact-based analysis of future uncertainties
- Modelling and analysis of future scenarios tells stories about a more comprehensive future by reducing complexities and highlighting opportunities and risks
- Systematising, understanding and agreeing on various future scenarios and underlying drivers will strengthen Public Transport Norway's (PTN's) members' ability to make good, informed strategic decisions

How can the scenarios be used in further strategy work?

Drivers and Scenarios

- > 66 critical trends and driving forces for change were identified through literature studies and expert interviews
- > The critically uncertain drivers were grouped into key topics
- The two most important key topics, "The role of public transport as a community developer" and "The customer's travel habits," formed the axes for four scenarios
- A story was written for each of the four scenarios, depicting the various incidents necessary to trigger each scenario
- Finally, implications and criteria for success were identified for each scenario, both for Public Transport Norway's members and the ecosystem

- > The scenarios will be used as a tool and a knowledge base in further strategic processes and discussions in PTN's member organisations
- > The scenarios can be used to either validate an existing strategy or develop a new strategy, as well as to monitor the surroundings:
 - How robust are the individual elements of the current strategy when they are challenged by critically uncertain trends and drivers in the four future outlooks?
 - How suitable are the identified alternatives, measures and actions in the different futures? Which are robust and which are only suitable in one of the scenarios?
 - What are the gaps with regard to the winning capabilities needed to succeed in the different scenarios?

Scenario stories

Scenario stories

A story was written for each scenario, depicting the various incidents necessary to trigger the scenario. The idea is that these stories will now be prescriptive for the further, more detailed work.

Mission statement

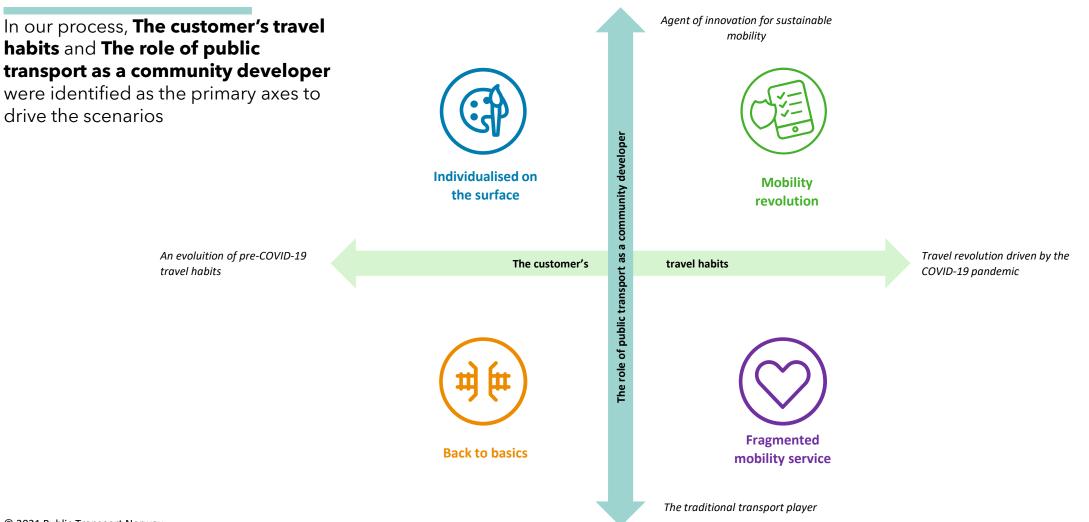
- Each scenario has a starting point for a history that describes the proposed future and how it came to be
- Scenario stories...
 - Are descriptions in plain text of future developments that lead to an expected condition
 - Organise humans, places/areas and things into future outlooks that challenge the status quo
 - Give life to alternate futures in a way that makes them meaningful for stakeholders
 - Depend on classic storytelling techniques to succeed

Good sets of scenarios are characterised by the following criteria:

- Plausibility: Each scenario could potentially materialise in the future
- Relevance: Each scenario is relevant for the core issue
- Divergence: The scenarios are distinctly different from each other
- **Disruption:** Each scenario challenges existing assumptions and the status quo
- **Balance:** All scenarios are balanced with regard to tone and identified key topics

Summary

Two key topics were chosen as axes to extend the scenarios for future public transport in Norway 2025



Scenario 1: Mobility revolution

The customer's travel habits have drastically changed after COVID-19; public transport players are able to utilise technology and become the agent of innovation for sustainable mobility

In scenario 1 «Mobility revolution» COVID-19 has led to a drastic and lasting change in the customer's travel habits. The public transportation players are able to utilise technology in an effective way which allows them to maintain direct customer contact.

As the customer is no longer travelling as frequently and is now more concerned with safety and the experience, the public transport players must focus on quality rather than quantity. This shift has led to the precursor of a fundamental change in the services delivered by the public transport players. The changed travel habits and needs are being met with the public transport players' dynamic and flexible pricing models, and the sharing economy will become part of the public transport system in new business models.

More sharing economy and a better public transport system are the results of significantly improved cooperation between public and private players. This market stimulates local innovation in the transport sector. One example is chartered transport, in the shape of a kind of Nabobil (shared neighbourhood car), which is provided via the public transport players' apps.

The public transport players are utilising technology to develop solutions to provide more attractive and profitable public transport, including in rural areas. This is done in municipalities dominated by vacation homes by providing transport with electric snowmobiles supplied by players such as Tier and Voi from the bus and train stations up to the vacation homes.

The public transport players' role as community developers is highly valued, and public transport is both a political and financial priority. Despite the drastic change in the customers' travel habits after the COVID-19 pandemic, the public transport players are receiving the funds they need to provide the best possible service to the population. © 2021 Public Transport Norway

This also results in less inequality, since the public transport players are providing good user experiences for the visually impaired, the elderly and the disabled, including in less profitable areas.

The pursuit of "sustainable mobility for all" makes the public transport players a key instrument beyond the energy transition. Public transport helps facilitate alternative forms of transportation, such as walking, bicycling and micromobility in their customer solutions and travel planners. The use of big data and real-time planning allow for vastly improved capacity utilisation in various means of transportation. This is important both for the energy transition, but also for better city planning with regard to land use and noise, as well as efficiency measures in public transport.

In this scenario, the public transport players have a number of opportunities, but also challenges. The public transport players must not become too dependent on the private players, and must not lose their confidence in fulfilling their civic role. New business models and in some instances, more profit, are beneficial, but the public transport players must avoid becoming profit-driven, because they need to remain credible in their effort to maximise civic benefits over revenue. This balancing act will be particularly challenging in this scenario.

This future represents vast opportunities, but also substantial expectations for collective solutions. In the mobility revolution, public transport players flourish through political and financial support, as well as their ability to employ new technology and provide services that accommodate the customers' new travel needs. However, if the public transport players cannot keep up with technology developments and the private players, they could lose their key role. They could end up in a future with a more fragmented transport service, where private and public players compete for paying customers (scenario 2).

Scenario 2: Fragmented mobility service

The customer's travel habits have changed drastically after COVID-19, but the public transport players are not able to transition quickly enough to provide individualised means of travel and are therefore less relevant

In scenario 2 «Fragmented mobility service» the customer has opened their eyes to new travel habits and become accustomed to not being crammed together like sardines. The fear of COVID-19 infection might have calmed somewhat, but they remember the experience and desire more room and comfort on their journey. This, combined with lower general demand for transport, will undermine the traditional systematic approach the public transport players are best equipped for. The public transport players are unable to live up to the new needs for flexibility and individualisation to an equivalent extent, which leads to a larger gap between customer expectations and what the public transport players can deliver. This means that the public transport players are slowly but surely losing the critical customer contact and a significant share of paying customers.

Newly established private players in the industry, such as Zoom, IFARTA and OppOgFrem in 2022, 2023 and 2025, respectively, create attractive and more individualised travel alternatives. Many politicians believe that it is easier to let people choose alternative solutions rather than spend considerable resources to develop solutions under the public umbrella. Flexible booking of transportation in rural areas was piloted as early as in 2024 through a publicly organised collaboration with UBER, which regained its old market share in 2021 after a few years in exile.

In light of the customers' new travel habits and preferences, the politicians recognise that other measures, such as greater focus on electric mobility and deregulation to promote innovation among the private mobility players, could be a more effective and less costly way to reach the Sustainable Development Goals. One attractive victory in the short term is better user experiences, for example that deregulation gives rise to a more seamless service across national borders in Europe through the private players. A written proposal will be up for consultation in the Storting (parliament) in the summer of 2025, which proposes elevating public transport to the state level from the county authority level to ensure that the service is uniform across the entire country. At the same time, several opposition leaders are making the public aware that this short-term mindset could harm the Norwegian society over the longer term, as the mobility market now lacks a civic player to ensure a comprehensive perspective and a socially equitable travel service. The challenge is that private services are based in places where many people live and where it is commercially profitable. The market is characterised by a fragmented landscape of private mobility players. Instead of being a player that focuses on the energy transition, the public transport players must provide service in the parts of the country that the private players cannot or will not cover, as well as for customer groups such school children and the elderly.

Much of the current public transport system is reminiscent of what we saw in the US in the 2010s. Without the most central and attractive routes or an equally captivating topic like the energy transition, the public transport players will have a tighter financial framework. A negative spiral has reduced the quality of the service and public transport is associated with lower status. Will Norway's public transport players be able to find a viable way to operate and regain their status?

Scenario 3: Back to basics

The customer's travel habits are developing in line with the pace observed prior to COVID-19, while a new regulatory framework has led to the public transport players losing the right to sell tickets to their customers and are therefore a less relevant instrument for achieving the sustainability agenda

In scenario 3 «Back to basics» the customer's travel habits are developing at more or less the same pace as expected prior to COVID-19, while the public transport players are undergoing a radical strategic shift. This shift involves playing the role of public facilitator and standard-setter for public transport, without direct access to the customer.

The public transport sector was shocked in the summer of 2022 by the EU's decision to not only open up ticket sales, with the objective of removing barriers for multimodal passenger transport, but also to take away the public transport players' right to sell their own tickets. This responsibility is now handled by private mobility as a service (MaaS) players, and it is up to them to define and price the products, while the public transport players are relegated to produce and deliver their services on equal terms.

This decision means that the public transport players have to completely reconfigure at the strategic level, and they will now have the role of public standard-setter and facilitator for public transport. Instead of competing for customers, the somewhat more limited public funds are prioritised towards innovating and developing the underlying infrastructure tied into the private platforms so that they are still in line with the public civic objective. This means that the public transport players will play a larger role as advisory bodies for the regulatory authorities, to design appropriate requirements and terms the MaaS players have to follow, for example surrounding the topic of data management.

The public transport players will also play a critical role as advisory bodies in connection with city planning and network development. Among other things, they contribute their technical expertise and insight concerning infrastructure, forms of transport and travel patterns in decision processes associated with major infrastructure developments. Municipalities and county authorities also cooperate closely with the public transport players as regards testing new solutions and technologies such as more energy-efficient means of transportation or self-driving vehicles. This is done to gain insight and experience as a basis to develop appropriate regulation and focus areas to achieve sustainable accessibility.

The customer's travel habits are changing, but the expected radical changes due to new habits from the COVID-19 pandemic do not come to pass. Instead of home offices every day, most people are at the office at least three days a week, but with greater flexibility in when they travel to and from the office, which somewhat alleviates rush hour pressure compared with the situation prior to COVID-19. New developments within cold resistance and range for battery technology have resulted in the electric car leaving public transport "in the dust", particularly in rural areas where travel distances are longer and public transport is generally of poorer quality than in the cities. In a sustainability perspective, this is viewed as a positive, as it puts less pressure on the public transport players to compete with the passenger car in the more rural parts of the country, where there are high costs associated with establishing a more finemeshed public transport system that can compete with the passenger car.

Few would have thought that this future outlook for the public transport players in 2025 would be possible just five years earlier, but fundamental work was done to face such a challenge. Despite the fact that many of the public transport players felt that they had "lost" their role as a civic player by losing direct access to the customer, intense efforts have been made to identify other ways to exercise the role. The players have worked hard to make themselves relevant and position themselves vis-à-vis other public bodies, in order to gain the power of influence as the standard-setter in the public ecosystem.

Scenario 4: Individualised on the surface

The customer's travel habits are relatively unchanged from before COVID-19; the public transport players utilise technology in a good way and the public transport players are the agents of innovation for sustainable mobility

In scenario 4 «Individualised on the surface» the customer's travel habits change more or less at the same rate as expected before COVID-19, with a continued substantial focus on rush hour traffic and commuting in connection with work and school travel.

The public transport players are able to utilise technology in a sufficiently good way with regard to capacity planning and schedule optimisation with existing material. By making smart investments in big data, the public transport players are seizing every opportunity to innovate. They have improved the way they design bids by obtaining and working on customer insight and the users' needs. Therefore, the public transport players are now providing a more individualised experience at a digital, superficial level, and they generally own the customer interfaces.

Several of the pilots for autonomous vehicles and new business models have succeeded in the transition from concept to operation and now make up a small part of the conventional public transport service, while large-scale pilots are exploring opportunities for further roll-outs. Certain challengers have appeared and are offering competition with their mobility solutions, but the public sector has worked strategically to enter into cooperation with these private players and has incorporated them into the publicly owned platforms.

The customers perceive the public transport player as a modern, demand-focused and innovative MaaS player that simply provides the most practical app to use. All forms of mobility are available in this app and they can be booked in combination with each other. In short, traditional forms of transport such as buses and trams are able to compete with the private car because they are connected in a coordinated ecosystem of means of mobility operated by third parties.

By keeping the critical contact points with the customer, the public transport players in this scenario are still a relevant instrument in the sustainability agenda. The public transport players continue their innovation projects and the investments they started prior to COVID-19. The public transport players particularly focus on electrifying their fleets, with major efforts aimed at electric ferries and buses. Other types of sustainable vehicles are also being tested. However, there is still some work to do to change customer behaviour and cut down on the actual need to travel, for example by incentivising not travelling or continuing some of the travel habits we gained during the COVID-19 pandemic.

In this scenario, the public transport players are doing well, but a few key changes in society could potentially lead to a more competitive landscape (scenario 2). If there is more deregulation, for example from international authorities, the public players will be challenged by private players with the muscles to innovate more rapidly than the public transport players. Correspondingly, if a new pandemic or similar upheaval of society occurs again and causes the customer's travel habits to change rapidly over a short period of time, this will demand more than what has been achieved so far. If this happens, there are no guarantees that the public transport players will be able to keep up.

Implications and criteria for success

Different roles for the public transport players

Depending on the scenario, the public transport players have different roles that are most relevant to focus on in 2025. All of these roles will be relevant in the various scenarios, but to a different extent. The emphasised roles are therefore the ones that are most relevant and the ones that should be focused on in the given scenario.



1. Community developer in sustainable mobility

- Maximising the civic benefit of mobility (public health, environment, social, value for money, etc.)
- Concerned with equalising social differences
- Secure an equitable and fair system for everyone, regardless of physical, mental and financial circumstances



3. MaaS platform-player / orchestrator

- Own the customer interface (digital and in the field)
- Aggregator and orchestrator of an ecosystem of mobility suppliers
- Agile, very little in-house

5. Mobility adviser for public authorities

Focused on training and communicating important insight and knowledge about what different forms of mobility

- need to function optimally in relation to both private and public players
- Safeguarding the public interest in an otherwise private mobility industry (smart regulation, long-term mindset, requirements and terms for private players)
- Advocate for the customers, which translates customer needs into premises used as a basis with point of departure in securing a more fair and social service



2. Large-scale public transport company

- Standard-setter with everything in-house (resources, expertise, infrastructure)
- Primarily tender-driven cooperation with private players
- Developing the most important technological and digital solutions itself

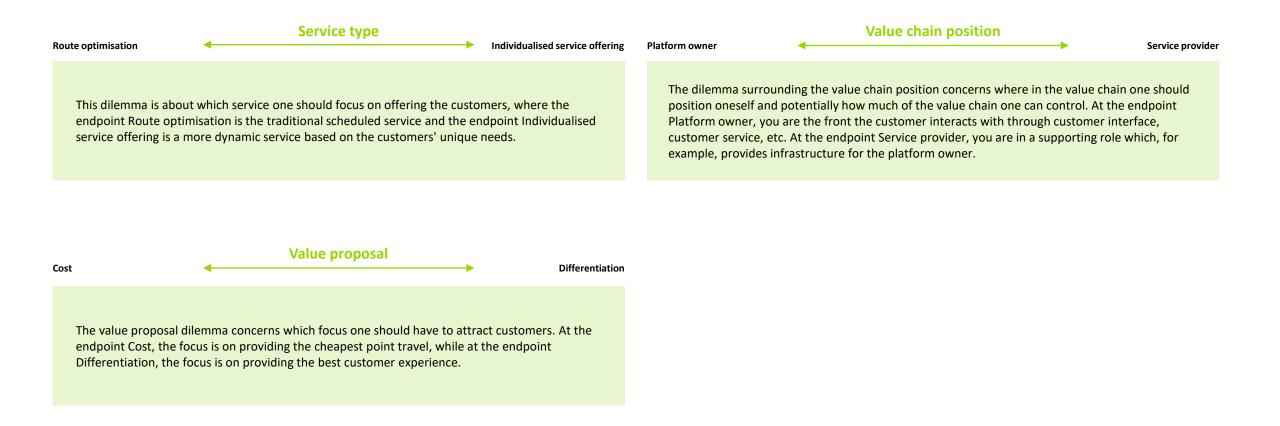


4. Infrastructure supplier

- Little focus on the customer front, but rather focus on ensuring that the infrastructure is of the highest quality
- Ensures a long-term perspective and that the infrastructure covers the civic mission of the public mobility service
- Responsible for procuring the vehicle fleet

Strategic dilemmas

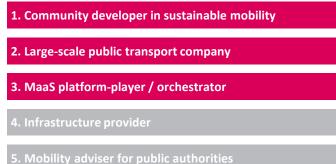
The various roles mean that choices are made in a select number of strategic dilemmas associated with the public transport players' business model, depending on which scenario we are in



Mobility revolution

Scenario implications | Scenario 1

What are the most important roles the public transport players can play in this scenario?

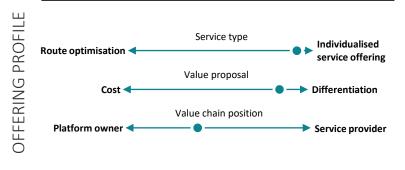


In this scenario, the customer's travel habits have drastically changed after COVID-19; public transport players are able to utilise technology and become the agents of innovation for sustainable mobility. This means that:

- This scenario contains vast opportunities for the public transport players to innovate and take a leading role. At the same time, it also sets considerable expectations for them from the politicians and inhabitants as regards professionalism and ability to deliver.
- In general, the overall mobility service has increased, driven e.g. by the sharing economy, which now makes up an important part of the public transport service in 2025, as well as new technologies such as autonomous vehicles which are slowly but surely moving from pilot stage to normal operation.
- By providing a fair service for everyone, we are helping to equalise social differences.
- The suburbs have a better service, not in the form of increased frequency (and empty seats), but in the form of enhanced seamlessness, connection and accessibility.
- The public health perspective and active mobility will have to be balanced with door-to-door service.
- The customers experience a much more individualised service that satisfies a broad spectrum of travel needs.

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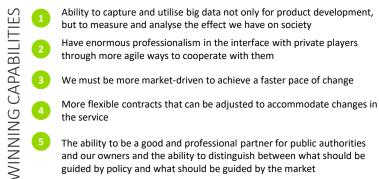
What characterises the profile of the service provided by the public transport players in PTN?



The most important criteria for success for this scenario include e.g.:

- <u>Customer group/segment:</u> We are very familiar with our customers through professional data management and are able to reach out to new customer groups.
- <u>Services and channels:</u> We can adequately control the comprehensive service to the customer - a seamless one-stop-shop tailored to their needs where everything is simple and more userfriendly, across players and regions.
- <u>Funding:</u> We have to develop new pricing models that make it more attractive and easier to use public transport, in addition to identifying business models that create new sources of income.
- <u>Operators:</u> We create successful cooperation and partnerships that stimulate innovation among operators e.g. by giving away some of the "control".
- <u>Ecosystem:</u> We are attractive partners in connection with city and land use planning. We break down silos and share knowledge and learning between urban and rural areas and between regions facing the same challenges.

Which strategically important capabilities are needed to succeed?



In light of the success criteria, the following initiatives are relevant:

- The way chartered transport works will have to be streamlined in this scenario.
- More flexible and dynamic pricing models which differ considerably from what we had before COVID-19.
- Autonomous vehicles will play a larger role for public transport and we have to be able to evolve them from pilot to operation.
- There will have to be increased cooperation between public companies, e.g. collaboration on technological development cycles and procurement.
- New/different tender processes that are less rigid and timeconsuming for the pace of innovation required by the role.
- We are able to share learning between players across urban and rural areas.

Fragmented mobility service

Scenario implications | Scenario 2

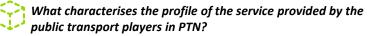
What are the most important roles the public transport players can play in this scenario?

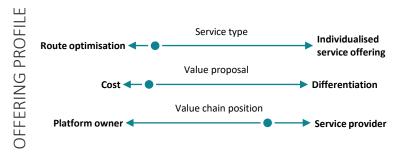


5. Mobility adviser for public authorities

In this scenario the customer's travel habits have changed drastically after COVID-19, but the public transport players are not able to change rapidly enough following the emergence of more individualised means of travel, and are therefore less relevant. This means that:

- There is a low end-to-end-focus where the customer has to relate to multiple different players. Many players and greater competition will nevertheless lead to more innovative customer interfaces and datadriven services
- Because public transport becomes a state responsibility, public transport is being standardised to realise economies of scale, giving it a more uniform character than today with the same buses throughout the country and the same customer interface.
- Where it is not commercially attractive for private players to establish themselves, for example in rural areas, the public transport service will be a fundamentally basic service.
- Public transport will hardly be profitable for the public transport players, as they will primarily be relegated to unprofitable, but important civic responsibilities such as transporting school children and the elderly and providing competitive service in rural areas.
- It will be demanding to ensure interaction between all players as regards providing the same basic service everywhere, which is not affected by demand.

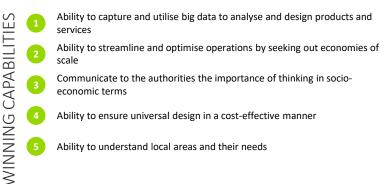




The most important criteria for success for this scenario include e.g.:

- <u>Customer groups/segments:</u> We will take care of the more vulnerable customer groups, such as the elderly, blind and visually impaired, and people with disabilities.
- <u>Services and channels:</u> We will utilise the capacity for school transport and other basic services in a smarter manner.
- <u>Operator:</u> We will plan and deliver with smaller units and lower costs in a complex scenario with many different players.
- <u>Funding:</u> We will receive dedicated investment funds from the public sector, earmarked for investments in new, smaller, electric buses.
- <u>General ecosystem:</u> We will utilise synergies across sectors and county authorities.

Which strategically important capabilities are needed to succeed?



In light of the success criteria, the following initiatives are relevant:

- Employing talent within big data to optimise transport.
- Ensuring expertise within universal design in order to achieve a service that covers the needs of everyone through new hires and courses.
- Knowledge surrounding what drives socio-economic gains rather than gains for the public transport players
- Focusing on technology for autonomous vehicles that can meet the needs of the elderly, visually impaired and disabled.
- Being a clear civic player and being at the forefront of changes
- Creating new routines and processes for procurement.
- Employing talent within process efficiency
- Boosting expertise surrounding local needs through focused insight projects and hiring people with expertise in the area

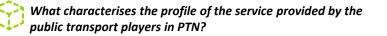
Scenario implications | Scenario 3

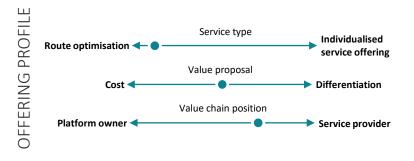
What are the most important roles the public transport players can play in this scenario?

5. Mobility adviser for public authorities

In this scenario the customer's travel habits are developing in line with the pace observed prior to COVID-19, while new regulatory framework conditions have led to the public transport players losing the right to sell tickets to their customers, and they are therefore less relevant for sustainable mobility. This means that:

- There is increased user-friendliness across national borders, since the service is controlled by global MaaS players.
- Until the market consolidates and a handful of leading companies have won the competition for the customer interface, we will experience a highly competitive and more fragmented range of different players.
- Customers will potentially receive a better service in densely populated and other popular routes at the expense of an equitable service for everyone.
- Increased use of cars, since the players only take the profitable routes and the rest are primarily covered by the use of cars.
- The role of public transport players is therefore to secure the mobility of the groups that receive poorer coverage than in 2021.
- Wider class gap in society those who can afford it will have a broader selection and better quality.





Which strategically important capabilities are needed to succeed?



The most important criteria for success for this scenario include e.g.:

- <u>Customer groups/segments:</u> We need to find different ways to work with user behaviour, since we no longer have direct contact with the users. We take up the role of advocate for the customers with greater challenges
- <u>Services:</u> We provide services in rural areas where market forces do not facilitate the private players providing good enough solutions.
- <u>Funding:</u> We must contribute to creating a financial incentive for private players providing mobility in less profitable areas, including rural areas, to ensure the most equitable service possible.
- <u>Operator:</u> We must facilitate flexible contracts in order to achieve the desired pace of change within technology changes, for example.
- <u>Ecosystem:</u> We will be an adviser for the authorities and must focus on training politicians to prevent greenwashing and hype solutions. The public transport players' role will be to prevent the occurrence of sub-optimal services for customers through assessments surrounding city planning and land use policy

In light of the success criteria, the following initiatives are relevant:

- We must change our current data strategy from understanding the customer and providing advice on preferences to using the data we have vis-à-vis third parties such as the City of Oslo (Smart City Oslo, etc.).
- This scenario will contain a drastic shift in core capabilities from operations to influencing/giving advice.
- We must develop good data management tools so we can provide relevant insight to the private mobility players.
- We will need lobbying and communications enterprises to help build understanding of the complexity
- Increased cooperation between levels of public administration
- We will have the expertise to create a better foundation for smart regulation.
- The role of mobility adviser for the public sector requires the authority to enforce the requirements set by PTN

Back to basics

Individualised on the surface

Scenario implications | Scenario 4

What are the most important roles the public transport players Ο can play in this scenario?

1. Community developer in sustainable mobility 2. Large-scale public transport company

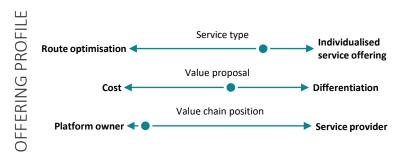
3. MaaS platform-player / orchestrator

. Mobility adviser for public authorities

In this scenario the customer's travel habits are developing in line with the pace observed prior to COVID-19. The public transport players are utilising technology in a good way which contributes to them being perceived by the politicians as attractive agents of innovation for sustainable mobility. This means that:

- · The customer interface that best utilises data and is user-friendly will be preferred by the users
- The customer experience will be fragmented as regards travel from A to B, but not when it comes to the customer interface.
- There will be greater differences in service between urban and rural areas.
- The public transport players will have an important role to play in projects surrounding the development of comprehensive hubs and districts.
- The public transport players will play an orchestrator role as regards mobility coordination and being proactive in relation to MaaS solutions.
- It is demanding to put the customer first, because the sectoral state focuses on infrastructure rather than the customer's actual needs.
- The public transport players will have an important role to play in contributing to achieve Norway's sustainability agenda, for example by contributing to less inequality, where universal design will be one of many tools.

What characterises the profile of the service provided by the public transport players in PTN?



The most important criteria for success for this scenario include e.g.:

- Customer groups/segments: We will better understand the different customer groups and have more appropriate segmentation by gathering and analysing more customer data.
- Services and channels: We will provide digital tickets in digital channels based on a dynamic pricing model.
- Funding: We will ensure funding that guarantees service in rural areas and facilitate municipalities' ability to purchase services
- Operator: We will use new types of vehicles, for example, smaller vehicles, electric and autonomous vehicles, and streamline our services.
- General ecosystem: We will be involved in horizontal cooperation and demonstrate that public transport is a good, democratic policy instrument - not only for the energy transition, but also for general sustainable development. We will have dynamic costs with lower risk and more flexibility.

Which strategically important capabilities are needed to succeed?

| ⁻ IES | 1 | Ability to focus on value creation through service development based on customer insight rather than route planning |
|------------------|---|---------------------------------------------------------------------------------------------------------------------|
| CAPABILITIES | 2 | Ability to implement innovation processes instead of jumping directly to a solution |
| APAI | 3 | Ability to utilise data in the best possible manner for both customers and us |
| | 4 | Ability to follow rapid changes and identify new needs. |
| WINNING | 5 | Ability to think horizontal integration, for example home offices and home delivery of goods. |
| ~ | | |

In light of the success criteria, the following initiatives are relevant:

- Ensuring a shared direction for mobility players by, among other things, developing criteria in cooperation with and setting clear requirements for mobility players.
- Gaining more attention from the policy level surrounding cooperation in the industry, as well as focusing on mobility assignments rather than public transport assignments.
- Creating new routines, processes and requirements for procurement
- Employing talent within marketing and customer insight and service design, as well as more extensive collection of data about the customer, so we can meet the customer's expectations and needs for user-friendliness and mobility services
- Building network understanding through cooperation and talent
- Implementing innovation processes by working in an iterative manner, conducting more trials and choosing the best options, as well as the ability to conclude projects at the right time.
- Employing talent with expertise within IT, data sharing and data strategy

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Contact information





Olov Grøtting Project owner (PTN) Head of Public Transport Norway +47 918 20 510 olov.grotting@kollektivtrafikk.no



Laura Herzig Project Manager (Deloitte) Head of Future of mobility +47 462 47 747

lherzig@deloitte.no



Jon Olsen Responsible for methodology (Deloitte) Head of Strategic Transformation +47 952 68 738 jolsen@deloitte.no