Directive 2010/40/EU
Progress Report 2023
Norway

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Report prepared by

Norwegian Public Roads Administration (NPRA)

for the Ministry of Transport

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1 Introduction

1.1 General overview of the activities and projects

The ITS Directive has been included in the EEA (European Economic Area) agreement and is applied as a framework legislation for ITS in Norway.

The Norwegian Parliament adopted an ITS Act in 2015 based on a proposal from the Ministry of Transport. This act is used for transposition of ITS legislation (the Delegated Acts) into Norwegian law. The act does not exclude regulations based on national policy and priorities and will provide the legal authority to ensure national coordination of ITS applications and services within the road sector and covering the interfaces to other modes of transport.

Norway has already a legal framework enabling testing of vehicles and transport services with automated driving. Several tests have already taken place, several are ongoing and there are more to come.

By adopting these acts, Norway has the basic legal foundation for deploying ITS services in place. This is also the case for testing and piloting C-ITS and automated driving. There is still a need to have guidelines and regulations related to the connected vehicle data and define ownership and rules for privacy and security as well as securing openness and availability for both public and private data. There is also a need to define responsibility, ownership and business models for hybrid communication supporting C-ITS. Norway has a clear intention to participate in European work on harmonisation and legislation for these areas.

Norway recognises that ITS and new technology will play an increasingly prominent role in the transport system. ITS and the introduction of new technological solutions, including connected, cooperative, and automated mobility - CCAM, will contribute significantly to reaching the goals for traffic flow, traffic safety, environmental impact and accessibility. Economic incentives are pointed out as effective instruments for accelerating the shift towards fossil free transport technologies.

The main responsibility for implementing the ITS Directive and the subsequent Delegated Acts lies with the Norwegian Public Roads Administration (NPRA) in close consultation with the Ministry of Transport. The NPRA participates in expert groups with regards to the Delegated Acts MMTIS, RTTI, SRTI and in the sub-expert group on cyber security. With regards to the Delegated Act EU/2017/1926, Multimodal Travel Information Services, and the National Access Point (NAP), the Norwegian Railway Directorate, the Norwegian Digitalisation Agency and the state-owned company Entur AS also have significant roles. The relevant activities and projects included in this report are managed by the NPRA, or the NPRA has a significant role.

In order to enhance harmonisation of data sharing between different transport modes, the Ministry of Transport has initiated a cross-sector data collaboration in transport, involving authorities and agencies from all transport modes. The aim of the collaboration is to enhance data accessibility, sharing, and utilisation of data in the transport sector.

At the international level, Norwegian authorities have participated actively in numerous European projects targeting a harmonised implementation of the actions covered by the ITS Directive:

- The NPRA, the Norwegian Railway directorate and ENTUR are partners in NAPCORE. Participating in the NAPCORE project offers stakeholders in European mobility data exchange

a multifaceted advantage. Functioning as a coordination mechanism, NAPCORE enhances the interoperability of National Access Points (NAPs) across Europe, providing participants with the opportunity to actively contribute to the seamless exchange of mobility data. The project's focus on standardising mobility data practices, empowering NAPs, and supporting European-wide solutions positions stakeholders strategically in shaping a more efficient, integrated, and collaborative framework for managing mobility data on a continental scale. More information is available at https://napcore.eu/.

- The NPRA has participated in expert groups for the development of the delegated regulations 2022/670 and the revision of 2017/1926. During the revision process of the ITS Directive, the NPRA has actively engaged in relevant fora.
- The CEF supported *European ITS Platform (EU EIP)* and the corresponding *NEXT-ITS corridor projects* were both finalised in 2021/ 2022.
- In the area of C-ITS the NPRA has participated in the CEF supported *NordicWay* and *C-ROADS* Platform as described in relation to priority area 4 (linking the Vehicle with the transport infrastructure). More information is available at www.nordicway.net and www.c-roads.eu.
- The NPRA have participated in the *CCAM Single Platform* and in the preparations of the *CCAM Partnership*.
- The NPRA is an associated partner in **NOMAD** (Nordic Open Mobility and Digitalisation). The project aims to enable seamless mobility using several modes of transport across the Nordics. The project will introduce a market enabler framework of technology and business practices for Mobility as a Service (MaaS) and other smart mobility services.

1.2   General progress since 2020

The NPRA works actively to develop new ITS solutions in line with the National Transport Plan, EU regulations and guidelines. The NPRA's commitment to ITS contributes significantly to a vision of future mobility that is safe, efficient, green, seamless, service oriented and user friendly.

New regulation for road and traffic data

A new and more detailed national regulation under The Road Act has since 2020 been developed in collaboration with all public road authorities under the lead of NPRA. The proposed regulation is now on a public hearing and is expected to be put in force during 2024. It will secure data from road and road traffic, corresponding to type and function of the roads. It complements the regulations under the ITS Directive from the European Union which in Norway are transposed to national legislation by the ITS Act. While the EU regulations focus on data availability, the new national regulation focuses on what, how and by whom data shall be collected. In this respect the new national road data regulation will be an enhanced instrument to implement the EU regulations.

The proposal addresses many topics, data types and procedures. The picture below gives an overview of the content.

The New Regulation for Road Transport Data and Operational Procedures

Left panel:

Translation of name:
Regulation for road data, traffic information, incident management and traffic control etc. for public roads

16 Chapters (paragraphs)
1–6	General provisions
7–12	Registration and dissemination of data
13–15	Harmonisation of tasks and functions

Legal subjects
- National authority for road transport (NPRA)
- National road administration (NPRA)
- National Road Development Company (Nye Veier AS)
- County road administrations (11 today)
- Municipal road administrations (356 today)

Relation to the EU ITS Delegated Acts (RTTI, SRTI)
The new regulation complements and implements

Right panel:

Regulation for road data, traffic information, incident management and traffic control etc. for all public roads

1. Purpose and scope
2. Definitions
3. Responsibilities and general provisions
4. Provisions for co-operation
5. Protection of personal information
6. Digital security
7. National road data base
8. Traffic data and travel time data services
9. Road weather data
10. Web camera images
11. Road images
12. Traffic information
13. Traffic control from TMCs
14. Incident management and preparedness
15. Preparedness for avalanche and flooding incidents
16. Entry into force

National guidelines and detailed technical descriptions developed in cooperation and adopted by the Road Directorate to secure harmonized data quality

National Access Point

Transportportal.no is the national access point for Norway, covering the Delegated Acts (EU) 886/2013, (EU) 962/2015 and (EU) 1926/2017.

The portal contains only metadata describing the sets of data and where to find them. The data sources are at the individual data owners. The metadata include links (URL) where to access the data.
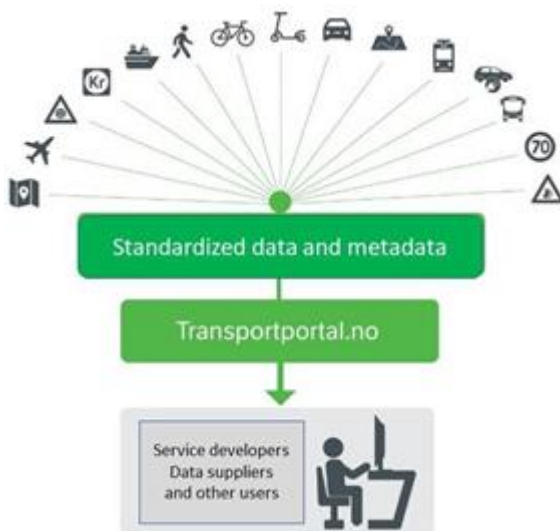
Major upcoming milestones will be related to deployment of level of service 2 and 3 for multimodal travel information services. In Q4 2023, the information pages on Transportportal.no is set to undergo a significant transformation as it migrates its Content Management System (CMS) from the NPRA, to the Norwegian Digitalisation Agency. This transition is aimed at enhancing the efficiency and digital capabilities of the information pages while ensuring that ownership and responsibility remains with the NPRA. Despite this CMS change, the public can expect the same high level of service and information continuity as before, as the core mission and management of the portal will continue to be under the auspices of the NPRA.

National body

The Ministry of Transport has designated the Norwegian Road Supervisory Authority (RSA) as the national body for RTTI and SRTI, ensuring that requirements are met. The formal assignment is based on the national ITS Act adopted in the Parliament December 2015. With regard to MMTIS the role of compliance assessment lies with the Ministry of Transport. The Ministry will, when implementing the revised MMTIS, look into how the compliance assessment can be arranged in the most appropriate way.

Assessment of compliance

The RSA performs assessment of compliance for RTTI and SRTI. The assessment has been based on the use of the standardised form for self-declaration developed by the follow-up expert group and coordinated by the Commission. The result of the assessment of compliance in 2020-2023 shows no deviations from the requirements.

DATEX II

The national DATEX II-node has been in operation since 2014 and is currently offering real time data from different NPRA source systems in DATEX II version 3.1 format. Per 2023 there are 600 registered external users of data from the DATEX II-node including international service providers and media. This is an increase compared with 2020 when the number of users was close to 500.

ITS standardisation

Norway is active in the standardisation work in CEN TC278 WG17 (ISO TC 204 WG 19), WG8 (DATEX II) and WG7 (TN-ITS) in addition to standardisation of other relevant European standards (NeTEx, SIRI and Transmodel). This work is aligned with NAPCORE WG4.

The general ITS progress since 2020 also includes:

- The NPRA has carried out a major ITS Program to obtain knowledge and experience through testing and pilots. The pilots focus on data collection, quality and availability, future traffic management services and to prepare for automated driving (CCAM). The ITS-program was started in 2018 and will be finalised in 2023.
- The Norwegian Road Supervisory Authority has carried out assessments of compliance annually for the Delegated Regulation EU/2013/886 and every other year for the Delegated Regulation EU/2015/962. No deviations have been found since 2020.
- The NPRA has carried out a quality assessment of some data sets available on the NAP, aiming to enhance the overall quality of road and traffic data. The assessment covers various datasets, including traffic data, speed limits, height restrictions and SRTI data. The results are presented in three separate documents and has potential relevance to the EU project NAPCORE.
- The NPRA participates in SIITS, a project supported by the Norwegian Research Council, focusing on vulnerabilities in future integrated intelligent transport systems. Over a three-year period with a budget of approximately 31 million NOK, the project aims to expedite the implementation of innovative mobility solutions by addressing challenges posed by rapidly evolving technologies in the transport sector. Led by Proactima, the consortium includes experts in societal safety, risk management, technology, insurance, and legal domains. Together they work on developing knowledge, methods, services, and tools to identify and manage risks in the construction and operation of these systems, with a focus on creating

safer, more efficient, and environmentally friendly future transport systems.

- Norway has established regulations and legislation on micro mobility. In addition, NPRA has developed a roadmap with the purpose to provide an overview of the most critical challenges and enabling the sector to collectively prioritise and contribute to the development of MaaS.

1.3   Contact information

This report is prepared by the Norwegian Public Roads Administration (NPRA) on behalf of the Ministry of Transport.

Contact in the Ministry of Transport:

- Senior Adviser Thomas Tangvik Magnussen: Thomas-Tangvik.Magnussen@sd.dep.no

Contacts in the NPRA:

- Senior Adviser Cathrine Ruud: cathrine.ruud@vegvesen.no
- Senior Adviser Kjersti Leiren Boag: kjersti.boag@vegvesen.no

2   Projects, activities and other initiatives

2.1   Priority area I. *Optimal use of road, traffic and travel data*

The following activities are related to all delegated acts in priority area 1.

The services defined in the delegated acts MMTIS, RTTI and SRTI has been in operation in Norway for several years. The services for RTTI and SRTI cover the TEN-T and the entire national road network. The service for MMTIS also include urban transport. The national body appointed for RTTI and SRTI is the Norwegian Road Supervisory Authority. Assessment of compliance has been carried out since 2016.

The following end-user services constitute the MMTIS, RTTI and SRTI services:

Travel time information

Real time travel time registration has been implemented mainly on the TEN-T road network and in the 5 largest urban areas. The service covers a total length of 600 km of the main road network.

Map-based travel information

The service (vegvesen.no/trafikk) offers a map-based travel information app to users. It provides real-time road information and warning about incidents on the roads. The app includes a map solution that displays roadworks, closed roads, important messages, rest areas, charging stations, mountain passes, ferries, and more. It also offers a route planner that helps users to find a legal route based on height and weight restrictions. One of its key features is its focus on heavy vehicle drivers, providing information about 24-hour rest areas and a route planner that considers restrictions related to vehicle classes.

Web camera service

The web camera service offers road-users a status of the current traffic and driving conditions from more than 600 cameras. Many of the cameras offer a video streaming service with image updates every second. The purpose of the web cameras is to provide useful information about traffic and driving conditions, as well as decision support for road maintenance and operational tasks. Cameras that are part of the traffic control centres' systems for monitoring and control are not available in this service.

Road weather data and prognoses

The road weather information system (Vegvær) provides information about weather and road conditions across the national and county road networks in the country. Vegvær primarily serves as decision support system for winter road maintenance, actively utilised by both internal and external users involved in winter maintenance operations. Vegvær also offers forecasts for road conditions up to 10 hours ahead, including road surface temperature and road conditions such as dry/no precipitation, wet, snow cover, snowdrift with weak/strong winds, and a risk/high risk of ice or frost.

Road weather data is available from the DATEX II-node. Inclusion of friction data from vehicles in traffic has been tested in the CEF-project Nordic Way.

Digital Road Network

Spatial data related to the road network (Elveg) is a cooperation between the National Mapping Authority and the NPRA. The National Road Data Base offers APIs for relevant static data about the road infrastructure available in the NAP. The service facilitates frequent updating of datasets from the complete road network to ensure that operational ITS systems contain correct data.

ITS out-station operation and management system (Målestasjonsregisteret)

The system covers all types of ITS out-stations along the road network operated by the NPRA. The system contains all characteristics and meta data necessary for the operation and management of the out-stations.

Multimodal travel information data:

Entur, a state-owned company, consolidates all public transport travel information in an accessible platform. They achieve this by collecting and processing data from both public and private public transport providers across the country. The data is made available in the national access point. The company is responsible for developing and maintaining a neutral, national travel planner, offering integrated solutions for route planning, travel information, as well as sales, ticketing, and settlement systems for the public transport sector.

For a full list of data sets available in the Norwegian NAP related to MMTIS, see Annex 1: Data types required in 1926/2017 available in transportportal.no today.

2.2   Priority area II. *Continuity of traffic and freight management ITS services*

Road traffic management centres (TMCs)

A state-of-the-art telephone and communications platform was deployed in the TMCs in 2018. A new traffic and incident management system including an integrated operator interface was finalised in autumn 2021. Harmonised traffic management and tunnel control is under development and planned to be part of the system. In addition to increased traffic safety and efficiency of rescue services, the system development for the TMCs will enhance incident and emergency detection and lead to higher quality for data required under the regulations 886/2013 and 962/2015.

Traffic incident management

Traffic incident management is based on close cooperation between the TMCs and police and rescue services. The new system mentioned above, will enhance management of incidents, road works, road closures and be the source for information about rerouting / diversions. Data will be available from the DATEX II-node.

Variable speed limits

Variable speed limits are implemented as part of traffic management systems in tunnels, according to national guidelines. Variable speed limits are also more commonly used on parts of the TEN-T network and other national roads, mainly multi-lane roads with high traffic volumes. The purpose of the implementations is mainly for traffic management in relation to traffic incidents, road maintenance and adverse weather conditions. Variable speed limits are also used to improve air quality in specific zones during the winter season.

2.3   Priority area III. *ITS road safety and security applications*

Automatic emergency call (eCall)

The Norwegian PSAP for the pan European eCall service in Norway is the Fire and Rescue service. Since April 2018, the PSAP infrastructure and organisation has been in operation. The Ministry of Justice and Public Security and the subordinate Directorate for Civil Protection and Emergency (DSB) are the responsible authorities for the Norwegian PSAP. The eCall alarms are routed to the PSAP operated by the call centre for the Fire and Emergency Services. In Norway there are three separate emergency numbers –police, health and fire –with their own separate emergency call centres.

Information services for safe and secure parking places for trucks and commercial vehicles

Norway has not officially started a service for the Delegated Regulation 885/2013. The government aims to establish a substantial number of new rest areas in the coming years. When data collection is reliable and complete, Norway will reconsider starting the information service based on the ITS Directive priority action e). For an overview of rest areas as of October 2021, see Annex 2. The National Plan for Rest Areas is available here: National Plan for Rest Areas revised 2021.

However, a preliminary map-based service showing the location of rest areas for HGV and their parking capacity is available here.

Automatic speed enforcement

Automatic speed enforcement has been deployed in Norway since the mid 1980's. This has later been supplemented with average speed enforcement on road sections with higher speed related accident rates.

Automatic incident detection

AID is implemented in high volume road tunnels in combination with video monitoring. Testing of new technologies for AID is also on-going. AID is a mandatory requirement according to the security level, traffic volume and length of the tunnel explained in NPRA guidelines.

2.4 Priority area IV. *Linking the vehicle with the transport infrastructure*

Management of electronic traffic regulations (METR)

The Ministry of Transport has assigned the task of planning and preparing for Connected, Cooperative and Automated Mobility to the NPRA. Digitising traffic rules and regulations will in this respect be an important building block for the preparation of the digital road of the future where automated vehicles can manoeuvre safely on the roads. Providing machine-readable traffic rules and regulations will in a shorter term also benefit vehicles with Advanced Driving Assistance Systems.

In 2022, the NPRA initiated a project which has the following main goal for phase 1 (2022-2026):

> **Develop a METR concept covering the public road network in Norway, harmonised with EC regulations and international standardisation work. The concept comprises a trusted value network; from authentic authorities to end users and the implementation of a METR operations and management organisation.**

The scope of the METR project includes international cooperation to develop and maintain a methodology, specifications, and standards for transforming traffic rules and traffic regulations into a machine-readable format. It also involves creating a legal framework for agreements between stakeholders, developing and operating the METR system, and ensuring interoperability and data availability for future transport.

Security in cooperative systems

Automated and connected vehicles require real-time communication through secure channels. The project on safety in cooperative systems aims at implementing a Norwegian organisation for issuing, managing, supervising and utilising digital certificates over data networks based on PKI (Public Key Infrastructure). This involves specifying the roles and stakeholders directly involved in carrying out these tasks in addition to managing the coordination and interoperability with the policy framework in EU (C-ITS security Credential Management system (CCMS)). The Norwegian organisation should, as far as possible, align with international initiatives, standards and policy documents specifying the CCMS. The project will ensure harmonising certificate utilisation across boarders as well as coordinate

the implementation with other relevant actors/authorities in Norway fostering collaboration to ensure a seamless implementation of this security framework in Norway.

Jammer test

The NPRA has for the past years organised annual Jammer tests on the island of Andøya (Northern Norway). Jammer test 2023 brought together more than 200 participants from 80 companies and 19 countries worldwide. Throughout the week, satellite-based equipment in cars, drones, airplanes, clocks, and ships were exposed to jamming, spoofing and meaconing attacks. The benefits of services from global satellite navigation systems (GNSS) are many - they can, among other things, make autonomous driving possible. However, systems we depend on need to be reliable and resistant against attacks and disturbances. This is what authorities, car manufacturers and technology suppliers from all over the world have tested in Andøya. At Jammer test, satellite-based equipment was subjected to jamming (interference or blocking of, among other things, radio, and GNSS signals) and spoofing (emission of false signals to trick the receiver of the signals into thinking that it is in another place - or at another time).

Nordic Way and C-Roads

The NPRA has been involved in the CEF supported NordicWay projects (1, 2 and 3) which have developed hybrid C-ITS services since 2015. The cloud-oriented NordicWay concept is relying on the use of existing cellular networks and stakeholder clouds to achieve cost-efficient C-ITS provision with the potential of covering most of the vehicle fleet already by 2030. The concept building on interchange nodes can via the federation of the interchange nodes be easily extended to cover all Europe and the whole TEN-T network, for instance.

NordicWay 1 showed that the concept works for selected Day 1 C-ITS services with sufficiently low latencies and high reliability, good user acceptance, and expected safety impact. NordicWay 2 extended the service portfolio to cover relevant Day 1 and Day 1.5 C-ITS services and some automated driving use cases as well as the road network coverage. It also proved the feasibility of the federation of interchange nodes. NordicWay 3 further extends the scope of C-ITS services to cities.

The NordicWay partners have been very active in European harmonisation activities within C-Roads, and in the forefront especially with regards to hybrid solutions and evaluation.

For more information visit www.nordicway.net and www.c-roads.eu

Integration of various ITS services in an open in-vehicle platform

Test Site Norway in Trondheim is equipped for testing of in-vehicle communication platforms. Several pilots that include C-ITS services was started in 2018. The present activities related to connected, cooperative and automated mobility are linked to the CEF-project Nordic Way and to the cross-border project on the E8 between Norway and Finland. Services such as RWW and TLA have been developed using C-Roads standards and deployed to in-vehicle solutions by using Google Automotive App. NPRA built a viable ecosystem for these services, and included the Interchange for publishing the C-ITS messages to both national and international service providers (cross border).

National Strategy for automated road transport

The NPRA is in the process of developing a national strategy for automated road transport through dialogue and collaboration with relevant stakeholders. The introduction of automated transport must be part of a comprehensive approach to the transport sector in Norway, ensuring alignment with societal and transport policy objectives.

While there are ongoing efforts and positive developments in automated transport in Norway, the work can appear fragmented and in lack of coordination. To unlock the full potential of these efforts, a unified and strategic approach is necessary. The NPRA aims to develop a national strategy for automated road transport that outlines areas where significant benefits can be realised. This strategy will encompass technological and industrial development, potentially setting ambitious goals for both businesses and transport development.

A draft version of the strategy will be finalised by the end of 2023.

CCAM Single Platform and CCAM partnership

The Ministry of Transport and technical experts from the NPRA have participated in plenary meetings and working groups in the CCAM Single Platform and in all the clusters in the CCAM partnership.

MODI

MODI is a European cross-border flagship initiative to accelerate the introduction of Connected, Cooperative and Automated Mobility (CCAM) solutions to significantly improve logistic chains. One of the main objectives of the NPRA in the MODI project is to gain an overview of the digital infrastructure required to support increased automation of road transport.

3 Key Performance Indicators (KPIs)

All the KPIs in this report are, unless otherwise stated, calculated based on the comprehensive TEN-T road network in Norway which covers 4845 km.

3.1 Deployment KPIs

The data used for calculating the deployment KPI's are collected from the National Road Database, the Road Traffic Database and the Travel Time Registration System in Norway.

Table 1: Basis for calculating deployment KPI's.

KPI	TMC East		TMC South		TMC West		TMC Mid		TMC North		Norway in total		
	TEN-T	Nat. roads	TEN-T	Nat. roads	TEN-T	Nat. roads	TEN-T	Nat. roads	TEN-T	Nat. roads	TEN-T	% of TEN-T	Nat. roads
Number of km in total	797	1290	554	1131	880	1059	885	317	1728	1380	4845	N/A	5179
Number of km with real time registration of travel time	191	52	186	0	72	44	13	13	0	34	462	9.5	143
Number of km with camera surveillance	150	87	140	115	215	91	117	49	85	51	707	14.6	394
Number of km with automatic incident detection (AID)	51	7	26	24	45	34	19	19	8	6	148	3.1	90
Number of km with traffic management and traffic control measures	112	28	175	34	60	60	60	13	7	6	414	8.5	141

The table above shows the total length of national roads per regional TMC. The table is divided into separate columns for the TEN-T comprehensive roads and other national roads (county roads are not included), which in total constitutes the entire national road network. The length of roads with the different kinds of equipment are calculated for each of the five TMC regions, and for the country in total. The total numbers are the source for calculating the deployment KPIs for Norway.

3.1.1 Information gathering infrastructures / equipment (road KPI)

The real time travel time system covers in total 462 km of the TEN-T comprehensive road network.

> 2023: KPI for real time travel time registration = 9.5 (comprehensive TEN-T)

Various types of data collection equipment are installed on parts of the Norwegian road network with high traffic volumes, high incident rates and demanding weather conditions. In addition, more than six hundred road tunnels are equipped with data collection and traffic management equipment. KPI for all types of data collection equipment is not available as a fixed number.

There is traffic monitoring equipment measuring traffic volumes, speed and vehicle length on the entire road network. There are 485 traffic counting stations on the TEN-T comprehensive road network, and furthermore there are 775 traffic counting stations to cover the entire national road network. This registration equipment is online with the central database and the data can be used in real time by ITS services.

3.1.2 Incident detection (road KPI)

National guidelines for tunnels in Norway require an AID system installed in tunnels longer than 3 km and an AADT above 8000 veh/day, and for tunnels longer than 5 km and an AADT above 4000 veh/day.

In total there are 148 km of tunnels with AID on the TEN-T comprehensive network. There are no installations of AID systems on road stretches outside tunnels in Norway.

2023: KPI for automatic incident detection = 3.1

In addition to the AID systems in tunnels, roadside video cameras for traffic monitoring and manual incident detection are installed along the road network. In total 707 km of the TEN-T comprehensive road network are covered.

2023: KPI for incident detection based on cameras = 14.6

3.1.3 Traffic management and traffic control measures (road KPI)

Parts of the national road network, and in particular the comprehensive TEN-T, are equipped with ITS-systems for traffic management. The main purposes are mainly related to e.g. critical road segments and motorways with high traffic volumes. These road segments are mainly parts of national corridors connecting regions that demands a higher level of traffic monitoring and management in order to keep traffic flow and safety at acceptable levels. A total of 414 km of the TEN-T comprehensive road network are covered with traffic management and traffic control measures.

2023: KPI for traffic management and traffic control measures = 8.5

3.1.4 Cooperative-ITS services and applications (road KPI)

Not available

Through the CEF supported NordicWay projects, all safety related messages that are available from the NPRAs DATEX II-node are disseminated to the common NordicWay Interchange system and thereby made available to all project partners for C-ITS applications. In the same manner, messages from all partners can be shared through the NordicWay Interchange Node. However, NordicWay is still a pilot project and not a fully operational production system which is available to every road user and every service provider. From the average traveller's point of view the coverage would therefore be 0%.

3.1.5 Real-time traffic information (road KPI)

Real-time traffic information can be obtained for the entire comprehensive TEN-T road network and other national roads through the Norwegian NAP or via existing road user services in Norway.

2023: KPI for real-time traffic information = 100

3.1.6 Dynamic travel information (multimodal KPI)

Not available

Oslo and many other Norwegian cities have dynamic travel information for public transport. The information is available on APIs and on stops and terminals. No KPI is calculated because the services are not linked to roads and road length.

3.1.7   Freight information (multimodal if possible or road KPI)
Not available

More work has to be performed in order to determine data sources and calculate KPIs.

3.1.8   112 eCalls (road KPI)
N/A – will be provided through the COCOM 112 questionnaire.

3.2   Benefits KPIs
ITS implementations are one of several measures deployed in the road transport network to reduce delays and emissions, and to improve traffic safety. Therefore, the benefits of the services cannot be directly measured, they will have to be estimated. In the ITS Directive Progress Reports of 2017 and 2020, the benefit calculations for road transport regarding change of travel time, fatalities, injury accidents and emissions was estimated based on a methodology framework developed within the CEF supported NEXT-ITS projects. NEXT-ITS was finalised in 2021 and the methodology is no longer maintained. Therefore, no change in Benefits KPI can be correlated to ITS implementations in the Progress Report 2023.

3.2.1   Change in travel time (road KPI)
Not available

KPI = ((travel time before ITS implementation or improvement – travel time after ITS implementation or improvement) / travel time before ITS implementation or improvement) x 100

3.2.2   Change in road accident resulting in death or injuries numbers (road KPI)
Not available

- Number of road accident resulting in death or injuries before ITS implementation or improvement:
- Number of road accident resulting in death or injuries after ITS implementation or improvement:

3.2.3   Change in traffic-CO2 emissions (road KPI)
Not available

KPI = ((traffic CO2 emissions before ITS implementation or improvement – traffic CO2 emissions after implementation or improvement) / traffic CO2 emissions before ITS implementation or improvement) x 100

3.3   Financial KPIs

Not available

Annual investment in road ITS (as a % of total transport infrastructure investments):

Annual operating & maintenance costs of road ITS (in euros per kilometre of network covered):

4 Annex 1: Datatypes required in (EU) 1926/2017 available in Transportportal.no today

Scheduled timetables
- Air
- rail including high speed rail
- light rail
- long-distance coach
- maritime including ferry
- metro, tram, bus, trolley-bus

Demand-responsive
- Shuttle bus, shuttle ferry, taxi, car-share, car-pool, car-hire, bike-share, bike-hire (partially)

Personal
- Car, motorcycle, cycle

The types of the static travel data
Service level I- 1.12.2019

Location search (origin/destination)
- Address identifiers (building number, street name, postcode)
- Topographic places (city, town, village, suburb, administrative unit)
- Points of interest (related to transport information) to which people may wish to travel

Trip plans
- Operational Calendar, mapping day types to calendar dates

Location search (access nodes)
- Identified access nodes (public transport stops incl. bus, tram and metro, railway stations, airport terminals, ferry terminals, taxi ranks) (partially)
- Geometry/map layout structure of access nodes (all scheduled modes) (partially)

Trip plan computation – scheduled modes transport
- Network topology and routes /lines (topology) (partially)
- Transport operators
- Timetables
- Planned interchanges between guaranteed scheduled services (partially)
- Hours of operation
- Accessibility of access nodes, and paths within an interchange (such as existence of lifts, escalators) (partially)

Trip plan computation – road transport
- Road network
- Cycle network (segregated cycle lanes, on-road shared with vehicles, on-path shared with pedestrians) (partially)
- Pedestrian network and accessibility facilities

Service level II-1.12.2020

Location search (demand responsive modes)
- Park & Ride stops(partially)
- Bike sharing stations

Service level III-1.12.2021

Information service (all modes)
- How to book car sharing, taxis, cycle hire etc. (incl. retail channels, fulfilment methods, payment methods) (partially)

Trip plans
- Detailed cycle network attributes (surface quality, side-by-side cycling, shared surface, on/off road, scenic route, 'walk only', turn or access restrictions (e.g., against flow of traffic) (partially)

Types of the dynamic travel and traffic data
Service level I- 1.12.2019

Passing times, trip plans and auxiliary information
- Disruptions (all modes, partially)
- Real-time status information – delays, cancellations, guaranteed connections monitoring (all modes)

Service level II- 1.12.2020

Passing times, trip plans and auxiliary information
- Estimated departure and arrival times of services

Availability check
- Estimated departure and arrival times of services (partially)
- Car parking spaces available (on and off-street), parking tariffs, road toll tariffs (partially)

Annex 2: Rest areas established along the national roads in Norway as of October 2021

Eastern Norway

- E6 Svinesundparken, Halden, Viken, 77 available spaces
- E6 Fugleåsen, Ski, Viken, 122 available spaces
- E6 Ormlia, Eidsvoll, Viken, 47 available spaces
- E6 Minnesund Circle K, Eidsvoll, Viken, 26 available spaces
- E6 Rudshøgda, Ringsaker, Innlandet, 20 available spaces
- E6 Biri travpark, Gjøvik, Innlandet, 30 available spaces
- E6 Vinstra vegpark, Nord-Fron, Innlandet, 58 available spaces included 18 spaces for short-term parking
- E6 Bekkemoen, Dovre, Innlandet, 6 available spaces
- E18 Ørje, Marker, Viken, 10 available spaces
- E18 Kjellstad sørgående, Lier, Viken, 15 available spaces
- E16 Mjøsvang, Vang i Valdres, Innlandet, 15 available spaces
- Rv. 3 Myklagard, Løten, Innlandet, 20 available spaces
- Rv. 3 Koppang Shell, Stor-Elvdal, Innlandet, 13 available spaces
- Rv. 3 Alvdal, Innlandet, 20 available spaces
- Rv 7 Gol sambruksstasjon, Gol, Viken, 21 available spaces
- Rv.2 Kongsvinger (Roverud), Innlandet, 15 available spaces

Western Norway

- E16 Dale Shell, Vaksdal, Vestland, 10 available spaces
- E16 Skulestadmo YX, Voss, Vestland, 10 available spaces
- E16 Steinklepp, Lærdal, Vestland, 10 available spaces
- E39 Vikeså Esso, Bjerkreim, Rogaland, 10 available spaces
- E39 Søylandskiosken, Gjesdal, Rogaland, 9 available spaces
- E39 Heiane, Stord, Vestland, 9 available spaces
- E39 Bergen travpark, Bergen, Vestland, 25 available spaces
- E39 Skei Cirkle K, Sunnfjord, Vestland, 16 available spaces
- E134 Røldal YX, Ullensvang, Vestland, 8 available spaces
- E134 Kyrping Best, Etne, Vestland, 10 available spaces
- E39/Rv. 15 Stad, Vestland, 10 available spaces

Southern Norway

- E134 Høydalsmo, Tokke, Vestfold og Telemark, 12 available spaces
- E134 Edland, Vinje, Vestfold og Telemark, 10 available spaces
- E18 Furulund Kro & Motel, Sandefjord, Vestfold og Telemark, 30 available spaces
- E18 Langrønningen Circle K, Bamble, Vestfold og Telemark, 25 available spaces
- E18 Grenstøl St1, Tvedestrand, Agder, 30 available spaces

- E18 Horisonten, Lillesand, Agder, 18 available spaces
- E18 Lillesand YX, Agder, 25 available spaces
- E18 Lillesand Circle K, Agder, 10 available spaces
- E39 Livold Circle K, Lindesnes, Agder, 10 available spaces

Central Norway

- E6 Oppdalsporten, Oppdal, Trøndelag, 15 available spaces
- E6/E39 Klett Circle K, Trondheim, Trøndelag, 22 available spaces
- E6 Stav Gjestegård, Malvik, Trøndelag, 25 available spaces
- E6 Gråmyra YX, Levanger, Trøndelag, 10 available spaces
- E6 Brekkvasselv Best, Namsskogan, Trøndelag, 8 available spaces
- E6 Snåsakroa, Trøndelag, 10 available spaces
- E39 Digerneset, Skodje, Møre og Romsdal, 15 available spaces
- Rv. 70 Håsøran, Sunndalsøra, Sunndal, Møre og Romsdal, 12 available spaces
- Rv. 70 Kristiansund, Møre og Romsdal, 19 available spaces

Northern Norway

- E6 Mosjøen, Vefsn, Nordland, 16 available spaces
- E6 Mo i Rana, Nordland, 10 available spaces
- E6 Storjord, Saltdal, Nordland, 10 available spaces
- E6 Fauske, Nordland, 12 available spaces
- E6 Innhavet, Hamarøy, Nordland, 5 available spaces
- E6 Buktamoen, Målselv, Troms og Finnmark, 12 available spaces
- E6 Storslett Circle K, Nordreisa, Troms og Finnmark, 10 available spaces
- E6 Talvik Shell, Alta, Troms og Finnmark, 10 available spaces
- E6/E75 Tana bru, Troms og Finnmark, 10 available spaces
- Rv. 80 Bodø havn, Nordland, 9 available spaces