National Transport Master Plan 2030

GOVERNMENT OF MALTA
MINISTRY FOR TRANSPORT, INFRASTRUCTURE AND PUBLIC WORKS

National Transport Master Plan **2030**

Contents

Acronyms and Abbreviations

Acronym	Full Form / Description
AAC	Aviation Advisory Committee
AAM	Advanced Air Mobility
AFIR	Alternative Fuels Infrastructure Regulation (Regulation (EU) 2023/1804)
AIS	Automatic Identification Systems
ATC	Air Traffic Control
AVL	Automatic Vehicle Location
BAAI	Bureau of Air Accident Investigation
BCR or B/C	Benefit-Cost Ratio
C-SAM	Connection for Safer Active Mobility
CAA	Climate Action Authority
CAPEX	Capital Expenditure
CBA	Cost-Benefit Analysis
CEF	Connecting Europe Facility
CERS	Cyclist Environment Review System
CO_2	Carbon Dioxide
CVRA	Climate Vulnerability and Risk Assessment
DRT	Demand Responsive Transport
DS Scenario	Do-Something Scenario (model scenario in transport planning)
EASA	European Union Aviation Safety Agency
EEA	European Economic Area
EFTA	European Free Trade Area
EMSA	European Maritime Safety Agency
ERA	Environment and Resources Authority
ESR	Effort Sharing Regulation
ETS	Emissions Trading System
EU	European Union
EV	Electric Vehicle
EWA	Energy and Water Agency
FAME	Fatty Acid Methyl Ester
FSIs	Fatal or Serious Injuries
FUA	Functional Urban Area
GDP	Gross Domestic Product

Acronym	Full Form / Description
GHG	Greenhouse Gas
GHRC	Grand Harbour Regeneration Corporation
GIS	Geographic Information System
HGVs	Heavy Goods Vehicles
HVO	Hydrotreated Vegetable Oil
ICAO	International Civil Aviation Organisation
ICE	Internal Combustion Engine
IM	Infrastructure Malta
IRR	Internal Rate of Return
ISPS Code	International Ship and Port Facility Security Code
ITS	Intelligent Transport System
LCDS	Low Carbon Development Strategy
LESA	Local Enforcement System Agency
LEZ	Low Emissions Zone
LNG	Liquid Natural Gas
LOA	Length Overall.
LPG	Liquefied Petroleum Gas
LPS	Local Permit System
LV	Light vehicle
MAIS3+	Maximum Abbreviated Injury Scale 3+ (road safety KPI standard)
MCA	Multi-Criteria Analysis
MCAST	Malta College of Arts, Science and Technology
MFF	Multiannual Financial Framework
MFT	Malta Freeport Terminals
MI	Minor Intervention (project code)
MIA	Malta International Airport
MNEAP	Malta National Electromobility Action Plan
MP	Major Project (project code)
MRO	Maintenance, Repair and Overhaul
MSIU	Marine Safety Investigation Unit
MTIP	Ministry for Transport, Infrastructure and Public Works
NAP	National Access Point (for transport data)
NECP	National Energy and Climate Plan
NGO	Non-Governmental Organisation
NHTS	National Household Travel Survey
NMVOC	Non-Methane Volatile Organic Compounds
NOx	Nitrogen Oxides
NPV	Net Present Value
NSO	National Statistics Office (Malta)

Acronym	Full Form / Description
NTM	National Transport Model
OD	Origin-Destination
OPEX	Operating Expense
OPS	Onshore Power Supply
PA	Planning Authority
PBRMC	Performance-Based Road Management and Maintenance Contract
PEDS	Pedestrian Environment Review System
PM10	Particulate Matter with a diameter ≤10 microns
PPP	Public–Private Partnership
PT	Public Transport
PUA	Principal Urban Area
PV	Private Vehicle
RFNBOS	Renewable Fuels of Non-Biological Origin
RPS	Road Permit System
RRP	Recovery and Resilience Plan
RTI	Real-time Information
SAF	Sustainable Aviation Fuel
SDG	Sustainable Development Goal
SIRR	Social Internal Rate of Return
SNPV	Social Net Present Value
SPED	Strategic Plan for Environment and Development
STOL	Short Take-Off and Landing
SUMP	Sustainable Urban Mobility Plan
TEN-T	Trans-European Transport Network
TEUs	Twenty-Foot Equivalent Unit
TJ	Terajoule
TM	Transport Malta
TMP	Transport Master Plan
TSIC	Transport Safety Investigation Commission
TSPFR	Transport System Public Finance Review
TTW	Tank-to-Wheel (emissions accounting boundary)
UAS	Unmanned Aerial Systems
veh*h	vehicle-hours
veh*km	vehicle-kilometres
VGT	Valletta Gateway Terminals Ltd.
VOT	Value of time
VTIMS	Vessel Traffic Monitoring and Information Systems
ZEVs	Zero-Emission Vehicles

Foreword

The National Transport Master Plan 2030 is a testament to Malta's commitment to sustainable development and resilience in the face of modern challenges. As a small island nation, our transport system is not just a means of connectivity but a critical lifeline that shapes our economy, environment, and quality of life. This document encapsulates our vision to build a transport system that is inclusive, efficient, and future-ready.

In recent years, Malta has witnessed transformative advancements across its transport sector. From the expansion of public transport to include sea ferries, to the drive to electrify our current fleet, we have embraced innovation to enhance connectivity and reduce our carbon footprint. Significant investments in road infrastructure, maritime facilities, and aviation hubs have further strengthened Malta's position as a key player in the Mediterranean transport network. However, these achievements are only the beginning of our journey.

The challenges we face—urban congestion, environmental sustainability, and the evolving demands of a growing population—call for bold strategies and decisive action. Continuing on the previous National Transport Master Plan 2025, this Master Plan provides a comprehensive roadmap to address these challenges while ensuring Malta meets its commitments to European Union directives and international climate goals. At the heart of this plan lies a vision of a multi-modal, equitable, and climate-resilient transport system that serves every citizen, from urban centres to rural communities.

Collaboration is key to the success of this vision. Achieving the goals set out in this Master Plan requires the concerted efforts of government, private sector stakeholders, and the public. Through this spirit of partnership and shared responsibility, we can overcome challenges and unlock the opportunities that lie ahead.

I invite every citizen, stakeholder, and policymaker to embrace the vision and objectives laid out in the National Transport Master Plan 2030. Together, let us work towards a transport system that is not only functional and efficient but also sustainable and transformative—one that leaves a legacy of progress for generations to come.

Hon. Chris Bonett
Minister for Transport, Infrastructure,
and Public Works

Acknowledgements

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Particular recognition is due to Transport Malta's Integrated Transport Strategy Directorate for its continuous contribution in providing data, technical input, and institutional coordination throughout the development of the Master Plan.

The Ministry also acknowledges the work of the INECO, Systematica and Ricardo, whose international experience and multidisciplinary expertise were instrumental in shaping the analytical framework, scenarios, and policy recommendations of the National Transport Master Plan 2030. A special thanks also goes to Adi Associates Environmental Consultants Ltd for drafting the accompanying Strategic Environmental Assessment document.

Executive Summary

The National Transport Master Plan 2030

serves as Malta's blueprint for achieving a sustainable, resilient, and inclusive transport system. Building upon the foundations of the 2025 Plan, this strategic framework aligns Malta's transport policies with socio-economic, environmental, and EU objectives. It integrates lessons from past initiatives and addresses evolving challenges to outline a comprehensive roadmap for Malta's transport future.

Since the implementation of the 2025 Master Plan, Malta has gone through a series of significant, transformative changes, including major infrastructural projects, such as the Marsa Junction and Santa Luċija tunnels, which have enhanced connectivity and reduced bottlenecks. Maritime upgrades like onshore power supply for ports and competitive ferry services between Malta and Gozo have fortified Malta's position as a Mediterranean transport hub. Public transport, both land-based and sea-based, has been improved and is now provided free of charge. The government continued to incentivise the scrappage of older, more polluting vehicles with low-emission ones while, at the same time, incentivising active travel modes (walking and cycling). Despite progress, significant challenges remain:

- **Dependence on Private Vehicles:** High car ownership and urban congestion persist, exacerbated by population growth.
- **Environmental Impacts:** The ageing vehicle fleet and increased traffic volumes contribute to air quality concerns and carbon emissions.
- **Infrastructure Constraints:** Limited land availability and urban density pose barriers to expanding transport networks.
- **Climate Vulnerability:** Rising sea levels and extreme weather events threaten transport infrastructure.

This updated Plan envisions a multi-modal, climate-resilient transport system, focusing on:

1. **Sustainability:** Embedding climate adaptation, renewable energy, and low-emission transport into infrastructure planning while ensuring efficiency of the transport system.
2. **Accessibility and Inclusion:** Enhancing public transport coverage, integrating active mobility routes, and ensuring equitable transport access.
3. **Technological Advancements:** Expanding the Intelligent Transport System (ITS) deployment, real-time data systems, and electric vehicle (EV) infrastructure.
4. **Asset Management:** Prioritising preventive maintenance and performance-based frameworks to sustain infrastructure quality.
5. **Public Transport and Active Mobility:** Expanding bus networks, promoting park-and-ride schemes, and improving cycling and pedestrian infrastructure.

The Plan includes a comprehensive demand-supply forecast, addressing growth scenarios and impacts on traffic, the environment, and safety. Investments focus on completing the TEN-T Core network, electrifying the bus fleet, expanding EV charging infrastructure, and modernising maritime and aviation hubs.

Last but not least, the Plan includes a robust monitoring and governance framework that ensures accountability and adaptability, supported by:

- **Public-Private Partnerships:** Leveraging collaborations for funding and expertise.
- **Institutional Capacity Building:** Strengthening local agencies and professional training.
- **Data-driven decision-making:** Utilising the National Transport Model for evidence-based policy formulation.

Current situation of the transport sector

1.1 Introduction

In 2016, the government released the National Transport Strategy, which outlines a vision for a sustainable and integrated transport system in Malta through 2050. The strategy promotes sustainable transport modes and seeks to improve accessibility, reduce the environmental impact of transport, and enhance the competitiveness of the sector.

The National Transport Strategy was complemented by the Transport Master Plan 2025, which formulated a holistic plan for investment and policy implementation in the transport sector for the next decade. This updated version extends the scope of the Transport Master Plan (TMP) to 2030 with a reassessment of the current situation and proposals for additional measures to provide clear policy direction, underpinned by a robust methodology.

At the end of 2022, a mid-term review was carried out on the current Transport Master Plan. Out of 191 transport measures across all transport modes, approximately 58% had been completed or partially completed. These included several public transport initiatives, such as introduction of high-quality infrastructure, low and zero-emission buses, the Tallinja app and integrated ticketing system to all holders of a personalised Tallinja card, upgrades to bus stops and improvements to walking and cycling provision at key locations, promotion of electromobility, the electrification of the national motor vehicle fleet, and the introduction of cycling facilities on a number of routes.

In road transport, significant progress was made on major projects within the TEN-T core and comprehensive road networks, including the Marsa Junction, Central Link, Kirkop Tunnels, Santa Luċija Avenue, and Luqa Junction. Additional developments included the construction of several footbridges, the refurbishment of key tunnels such as Tal-Qroqq, Santa Venera, St. Julian's, and Kirkop, as well as upgrades to maritime infrastructure.

In maritime transport, notable initiatives included the introduction of onshore power supply and the provision of free fast-ferry services for Tallinja cardholders within the Port of Valletta. Furthermore, a competitive passenger fast-ferry service was established between Malta and Gozo. Improvements to port and harbour infrastructure were undertaken to enhance resilience against extreme weather events, alongside the implementation of critical infrastructure and superstructure elements within the Malta Freeport Terminals' masterplan at the Port of Marsaxlokk.

In the aviation sector, the Malta International Airport saw various enhancements aimed at increasing capacity and efficiency, both on the landside and airside.

Many of the issues identified in the National Transport Strategy and the previous Master Plan remain highly relevant. There is still a significant dependence on private transport, and coupled with increasing population density, congestion is gradually worsening. While there have been improvements in vehicle efficiency, the old age[1] of the predominantly Internal Combustion Engine (ICE) fleet and an increase in fleet size have resulted in limited improvements in air quality, with certain locations experiencing problematic levels of some air pollutants.

However, there are also new opportunities, such as flexibility introduced through new working practices, such as remote work, the take up of online shopping practices, and the adoption of technologies and services that have evolved over the last decade. Furthermore, there is a renewed will and appetite to improve the transport system from the public, businesses and the government, driven by an evolving transport scenario and regulatory initiatives taken at an EU level.

[1] *Source: NSO Transport Statistics 2023 – Table 3.2.18 - https://nso.gov.mt/wp-content/uploads/Transport-publication-2023.pdf*

This chapter has been grouped into sections that represent the key transport modes. The content of each chapter addresses the key themes in that mode and provides a summary SWOT analysis (strengths, weaknesses, opportunities and threats). The chapter is split into the following subsections:

- **Governance and Planning of Road Transport**
  (Strategic planning, safety and enforcement, and sustainability)
- **Motorised Road Transport**
  (Public Transport, Private Transport, Freight and Logistics)
- **Active Travel and Micromobility**
  (Walking, cycling, e-scooters and e-bikes)
- **Ports and Maritime Transport**
  (Internal and External Maritime Transport)
- **Airports and Aviation**
  (The aerodrome and governance)
- **Multimodal Transport**
  (Passengers and Freight)

1.2 Governance and Planning of Road Transport

Effective governance of land transport is a cornerstone of Malta's wider mobility system. With the country's exceptionally high road density, limited land availability, and rapid growth in vehicle ownership, decisions about planning, regulation, and enforcement directly shape the everyday experience of residents and businesses. Strong governance structures are essential not only to maintain and modernise the existing infrastructure but also to guide the transition toward safer, cleaner, and more efficient transport.

A high-level summary of the SWOT analysis for the governance and planning of road transport is presented below. This is followed by a more detailed review of the current situation, covering the current services available, planned improvements, utilisation and user experience, efforts to decarbonise the sector, and the current organisational framework.

GOVERNANCE AND PLANNING OF ROAD TRANSPORT

Strengths

The National Transport Model is available as a planning, policy, research and educational tool and can be enhanced by linking to data electronically collected through roadside camera equipment, automatic vehicle location devices and electronic ticketing data in public transport, many of which operate in real-time.

Weaknesses

Challenges with managing and processing road permits result from a disconnect between the entity managing the major roads and the local councils, which manage the local roads.

Opportunities

Further development of synergies between education and research agencies and road transport planning and engineering practitioners will propagate the continued development of curricula in local educational courses, leading to a qualification in transport at undergraduate and postgraduate levels and increasing the availability of shorter specialised vocational training courses for transport professionals.

Threats

The transport sector is highly vulnerable to climate change. Infrastructure developed to facilitate the adoption of electric vehicles, such as charging points and powerline connections, could be susceptible to the same vulnerabilities as the existing transport system unless it is specifically engineered to withstand climate-related hazards.

Governing Framework of Land Transport

Within the organisational framework of Maltese land transport, the one critical aspect that affects the sector is that the space limitation constraints in Malta tend to require focused, localised measures and projects primarily aimed at road widening or increasing existing road capacity at problematic locations in isolation, rather than considering the broader strategic policy context.

The process of constructing and reconstructing road infrastructure necessitates a high degree of collaboration. Key stakeholders include Transport Malta, Infrastructure Malta, the Planning Authority, Local Councils, and utility service entities responsible for electricity, water, drainage, and communications. Additionally, agencies tasked with heritage preservation play a crucial role. This collective effort ensures a seamless and efficient execution of infrastructure projects while preserving Malta's rich heritage. Project implementation has experienced delays due to service utilities requiring upgrades to the infrastructure to address increased demands on utility service providers. Moreover, discovering historically significant artefacts, buildings, or structures during road excavations often leads to further postponements. The formulation of a comprehensive ten-year plan for road infrastructure investment presents an opportunity to enhance integration and foster improved collaboration among entities and stakeholders during the planning phase.

Another constraint faced by the road transport sector is the shortage of qualified and experienced professionals specialising in transport planning, traffic management, road safety and traffic signal control, both in the public and private sectors. This is probably linked to the lack of specialised educational programmes in this sector and limited career opportunities at a local level. However, there have been efforts to address this issue, including the setting up of the Department of Spatial Planning and Infrastructure at the University of Malta, which now focuses on sustainable transport planning, amongst others.

The University of Malta also launched a Masters programme in transport engineering, which aims to provide specialised education and training for professionals in the field. Further development of synergies between education and research agencies (such as the University's Faculty for the Built Environment and Institute for Climate Change and Sustainable Development) and road transport planning and engineering practitioners will propagate the continued curricula development in local educational courses leading to qualification in transport at undergraduate and postgraduate levels and increase the availability of shorter specialised vocational training courses for transport professionals.

Evolution of the road network

The road network in Malta comprises a well-developed, existing strategic road network with few missing links and, in general, provides an adequate level of connectivity between the main towns and the smaller urban and rural settlements. The total extent of the Maltese road system has increased from 2,410 km in 2016 to 2,861km in 2021. At approximately 905 km of roads/100 km^2, this represents the densest road system in the European Union. The Maltese transport system is dominated by road-based transport, with private cars, buses, road freight, cycling and walking representing 99% of all internal travel movements in a typical day.

The Maltese government is committed to the continuous enhancement of the country's road network, with a focus on modernisation, safety, and sustainability. To achieve this, the government is implementing a €700 million road upgrade programme, which includes the construction of new roads, the widening of existing ones, the installation of Intelligent Transport Systems (ITS), and the improvement of road safety measures considering multiple modes of transport. These smart technologies aim to improve traffic management and reduce congestion, reflecting the government's commitment to innovation and efficiency.

Malta's TEN-T Network

Regulation (EU) 2024/1679 on Union guidelines for the development of the trans-European transport (TEN-T) network, which entered into force in July 2024, has seen some minor changes to Malta's TEN-T road network when compared with the now repealed TEN-T Regulation (EU) 1315/2013. On the core TEN-T network, new road links have been added as a result of the Marsa and Kirkop tunnels and Luqa junction tunnels, and the ring road around Valletta has been reclassified on the TEN-T extended core network. The TEN-T comprehensive network now includes a new road alignment of the Central Link and the removal of the section passing through the centre of Mosta. The road network currently comprises 15.4km of core network and 97.3km of comprehensive road network, 80.9 km in Malta and 16.4km in Gozo.

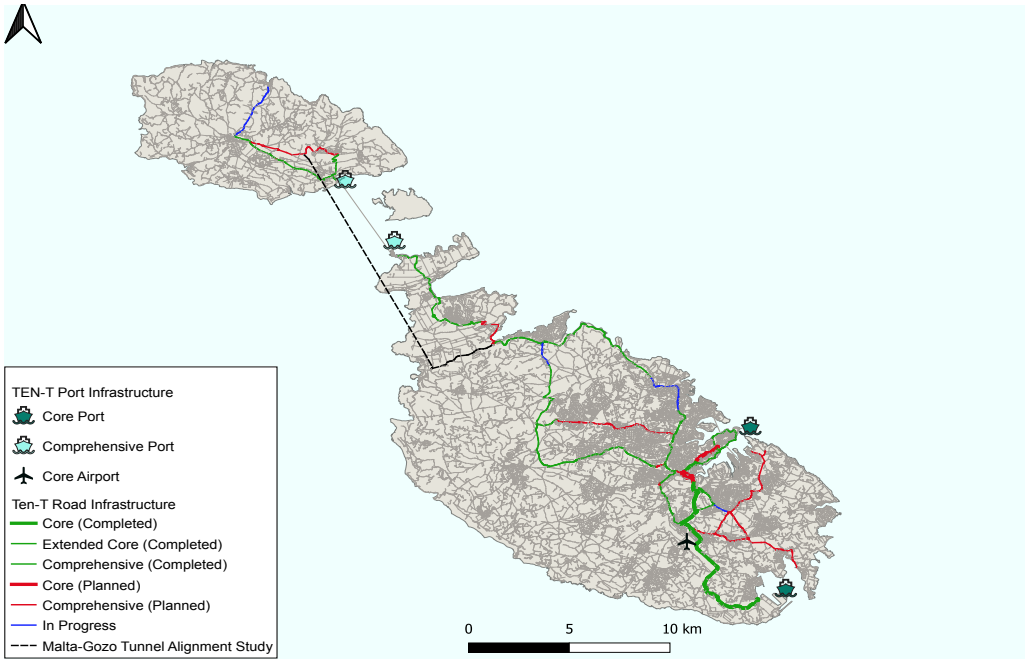
83% of the current TEN-T core network is completed and 60% of the TEN-T comprehensive network is completed.

As the mandatory EU-wide date for completion of the TEN-T Core network is 2030, an implementation plan for completion has been developed, in line with the work plan for the Scandinavian-Mediterranean European Transport Corridor. A plan for the completion of the TEN-T Comprehensive network is being developed. The extensive upgrading of the TEN-T road network is a result of efficient planning and design, quick mobilisation of resources and effective absorption of EU funds. Malta's experience in developing the TEN-T road network should be maintained and further developed during the operational programming periods covered under this Transport Master Plan, 2030. The setting up of a road infrastructure asset management system will facilitate holistic infrastructure budget forecasting for capital projects, and maintenance and budget sourcing.

The quality of road infrastructure on the strategic arterial and distributor road network has greatly improved as a result of important investments allocated for road refurbishment over the past decade. However, a fair portion of local access roads (non-arterial or distributor) need to be upgraded or repaired. National road design and construction standards and specifications are followed which have led to significant improvements to design quality - resulting in safer and more efficient road layouts, and to the type of materials and construction methodologies being used - resulting in better planned and longer-lasting roads.

As revenue collected from transport (i.e. vehicle licensing, fees and taxation) is not necessarily available for transport infrastructure works, national funds need to be sourced for road network repair, construction, reconstruction and operation. Over these past few years, there has been a drive to improve the transport infrastructure. In fact, the infrastructure investment on the arterial and local distributor roads has steadily risen. However, as the fleet mix evolves, revenue from road transport will change according to the different tax schemes in place (e.g. registration, circulation and fuel), and there is a potential threat that fiscal policies aimed at encouraging sustainable transport will face opposition if revenues are negatively affected.

Figure 1: Malta's TEN-T Network



Demand on the road network

Demand analyses have shown that, in the absence of railway or inland waterway links, domestic transport is mainly served by road, with internal maritime transport representing less than 1% of total travel. The highest increase in motorisation levels occurred in the second part of the 1990s, and the trend is still that of increasing vehicle ownership. The predominance of road transport is evidenced by the high rate of motorisation, which stood at 784 motor vehicles per 1000 residents, increasing to 924 per 1000 residents when only those aged 18 years and over are counted in 2022 (NSO, 2024). This represents one of the highest per capita rates of the 27 EU Member States.

In addition, the high rate of motorisation and increases in traffic volumes have been the result of three key growth factors: population, economy and tourism. From the demographic point of view, it is important to underline that today, people are far more mobile than ever, and deliveries are more available and faster than ever before. One of the primary challenges faced when developing and implementing transport policy is the conflict arising from limited space. Indeed, Malta's population has experienced significant growth since the publication of the previous Transport Master Plan, reaching an estimated 563,443[2] at the end of 2023—a notable increase of 18.4% from 2016 levels.

Regarding the economic aspect, over the past 30 years, transport growth for both passengers and freight has been closely linked to economic growth and land transport volumes have been growing at approximately the same rate as GDP. GDP itself has increased from €11.94 billion in 2017 to €19.38 billion at the start of 2024.

Further to this, the constant growth of the Maltese tourism sector has contributed to increased pressure on the road transport system, particularly during the peak tourist season. The total number of inbound tourists has increased from 2.3 million in 2017 to 3.5 million in 2024.

Compounding the significant demographic, economic and social changes since publishing the last TMP, global crises triggered by the COVID-19 pandemic and the war in Ukraine also had a negative effect. Amid these changes, the climate emergency remains a crucial catalyst for transformation in the transport sector.

Efforts to decouple private transport growth from economic growth have been a challenge for Malta, but the government has taken steps to address this issue. The Government has invested in public transport, expanded cycling infrastructure, and pedestrianised certain streets in urban areas. However, the full effect of these measures can only be evaluated in the longer term, while additional policy interventions may be required. The National Transport Model facilitates the evaluation of these policies and helps inform future transport planning decisions.

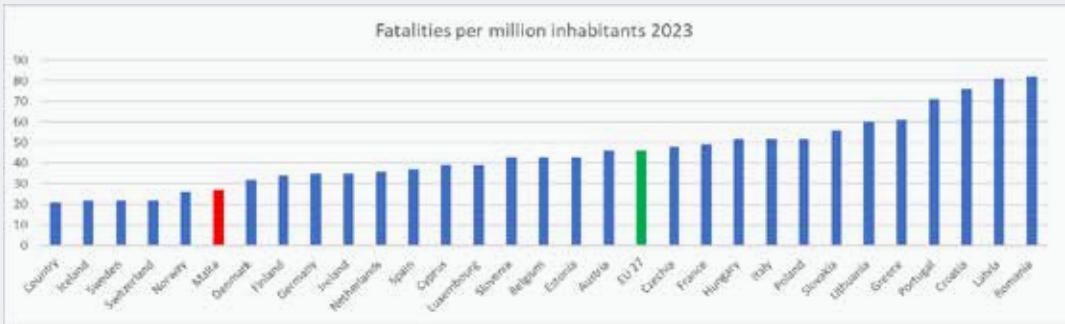
An important factor impacting the road transport sector is population density. According to 2023 NSO figures, there is an average of 1,783 inhabitants per square kilometre, which means that Malta has by far the highest population density of any country in the European Union. These unique factors, along with Malta's small country size, present practical difficulties when comparing the performance of Malta's internal transport system with that of the other EU countries. For instance, the short travel distances mean that the marginalisation of rural communities is not a major issue compared with most other EU countries but the lack of high-speed, inter-regional roads in Malta naturally gives rise to longer nationwide travel times and higher congestion levels, which are more akin to congestion levels found in medium and large cities in Europe, rather than at a country level. Malta's very high road network density, high population density and urban agglomeration patterns result in a scarce availability of land for road network improvements and conflicting needs between the road network and its surroundings.

[2] *Source: NSO NSO Malta | World Population Day: 11 July 2024 - NSO Malta*

Road Safety Challenges

Malta performs well at an international level when considering per capita road fatalities. Indeed, in 2023, Malta had 28 deaths per million inhabitants, which was substantially lower than the EU average of 46.

Figure 2: Fatalities per million inhabitants 2023 (Source: Eurostat)



Considering a three-year average, there has been a decreasing trend in the total number of accidents since the publication of the last TMP. However, it is important to note that the COVID-19 pandemic caused a dip in the total number of vehicle kilometres travelled, especially in 2020 and 2021. Indeed, the trend of deaths and serious injuries is slightly increasing over the same period, and this is something to be vigilant about. While some of this increase has resulted from changes in reporting methodologies, there are root causes affecting road safety that should be addressed, including education concerning sharing the road with motorcycles, pedestrians and cyclists, non-designated pedestrian crossing, driving under the influence of substances, driver distraction and a lack of enforcement.

In 2020, Infrastructure Malta launched new guidelines about design and material specification for road construction, which has contributed to improved road safety. The current National Road Safety Strategy 2014-2024 will be replaced by a new National Road Safety Strategy for the coming years. A Bureau of Road Safety Investigation will be tasked with making recommendations to enhance road transport safety.

Road safety education campaigns to raise awareness of road safety issues and encourage safer driving practices have also been implemented. Despite these efforts, there are still areas where further action is needed. There is a need for better enforcement of speed limits, particularly at night, to reduce the number of accidents caused by speeding. There is also a need for clearer and more effective road signage in areas of high traffic or complex road layouts to help drivers navigate safely and reduce the number of accidents caused by poor visibility. Updates to road safety standards and specifications have enabled the introduction of improved technology and best practices in safety standards. This has made Malta's roads safer and more attractive for citizens to explore active modes of transport.

EU legislation includes several relevant provisions relating to improving the safety of the road networks[3] that were transposed nationally in 2022. In addition to road safety impact assessment, road safety audits and periodic road safety inspections on the TEN-T networks, new requirements for network-wide road safety assessment and targeted road safety inspections were introduced. A network-wide road safety assessment must be undertaken at least every five years. The first of these assessments was carried out in 2023 and must be followed, as necessary, either by targeted road safety inspections or by direct remedial action. This will ensure that the needs of vulnerable road users - pedestrians, cyclists and motorcyclists - are considered in road infrastructure design. However, there is a continued challenge around the availability of road safety data that is collected in relation to the location and the likely causes of road traffic collisions.

Compliance with road traffic laws and enforcement

The behaviour of drivers affects the safety and functionality of Maltese road transport. Disruptions to the transport network occur daily due to non-compliance with road traffic rules. Nonetheless, in a recent study regarding key performance indicators for road safety, Malta compared favourably with other EU countries in relation to speeding compliance, distraction (mobile use) and helmet use[4].

Yet, illegal parking remains a problem and currently represents 12% of all transport contraventions issued by the police and traffic wardens in 2022. This includes illegal car parking on bus stops, double parking by goods delivery vans and parents waiting for children outside schools located on or near the strategic road network.

However, there have also been improvements in the legal framework surrounding enforcement. In 2017, the blood alcohol limit when driving was decreased from 0.8g/l to 0.5g/l to be more in line with EU standards. In addition, the driving licence points demerit system was expanded from new drivers to all drivers at the end of 2017. It should also be noted that legislative measures to grant police officers the authority to conduct random breathalyser tests are currently progressing through Parliament.

Drivers' lack of traffic law compliance is also a key factor in the increased number of accidents. Infringement typically includes the incorrect use of overtaking lanes, non-observance of traffic rules at junctions and roundabouts, and slowing or stopping to answer mobile phones. Additionally, one in ten road traffic accidents resulted in an injury. In 2016, Transport Malta introduced a tidal lane system design in Paola as a pilot project to maximise the capacity of the road. However, this was abandoned due to the high count of accidents. This is an example of the importance of driver awareness in supporting the implementation of new approaches to road management.

[3] *Directive 2008/96/EC on road infrastructure safety management, as amended.*
[4] *VIAS (2023) Baseline Project - Summary*

The enforcement of traffic rules is a collaborative effort involving the Police, the Local Enforcement System Agency (LESA), and Transport Malta officers. However, this shared responsibility presents challenges related to defining roles, allocating responsibilities, and ensuring adequate resources. Currently, 110 Transport Malta enforcement officers are tasked with managing both road and maritime traffic operations.

The enforcement operations face particular challenges due to limitations in equipment and systems, which can affect the ability to effectively monitor the transportation of dangerous and perishable goods and ensure compliance with traffic rules and regulations.

Investment has been made to facilitate the rolling out of the ITS, which improves traffic management, safety, and efficiency on existing strategic roads. The existing National Action Plans for the Deployment of ITS aim to build on the experience gained from the operation of automatic vehicle location devices (and real-time information) in the bus service, vehicle-activated road signs and the use of automatic number plate recognition equipment in the operation of speed cameras and access charging in Valletta. To support the use of ITS and improve both road safety and the efficiency of road networks, EU legislation sets target dates by which specified data is to be made available and accessible and by which specified ITS services are to be deployed. In addition, it would require Member States to put in place the necessary infrastructure to ensure that the specified ITS services can successfully be deployed.[5]

Efforts to decarbonise the road transport sector

The EU's most recent transport strategy, the Sustainable and Smart Mobility Strategy from 2020, emphasised the need to reduce transport's CO_2 emissions by 2050 to meet the EU's international climate change commitments. The National Energy and Climate Plan (NECP) highlights the transport sector's central role in Malta's decarbonisation pathways, contributing both directly through the use of renewable fuels and indirectly, via emission reductions. This aligns with the objectives of the Renewable Energy Directive (RED III), which forms part of the broader NECP framework.

This will imply a significant increase in the electrification of most transport modes, as well as an increase in the use of other zero-emission alternative fuels. In early 2023, Member States and the European Parliament agreed to phase out the use of fossil fuels in new cars and vans by 2035[6] to help the EU deliver its CO_2 emission reduction targets. In addition, the European Commission has proposed an ambitious average CO_2 emissions performance standard for new heavy-duty vehicles for 2040 that is likely to result in a significant increase in the number of new electric and hydrogen trucks being put onto the market. At the same time, the Commission proposed that practically all new urban buses should be zero emission from 2030[7].

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5 *Directive (EU) 2023/2661 amending Directive 2010/40/EU on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport*

6 *Regulation (EU) 2019/631 setting CO_2 emission performance standards for new passenger cars and for new light commercial vehicles, as amended by Regulation 2023/851*

7 *Regulation (EU) 2024/1610 amending Regulation (EU) 2019/1242 as regards strengthening the CO_2 emission performance standards for new heavy-duty vehicles and integrating reporting obligations, amending Regulation (EU) 2018/858 and repealing Regulation (EU) 2018/956*

The European Union has established a separate Emissions Trading System (ETS2) targeting CO_2 emissions from fuel combustion in buildings, road transport, and additional sectors, set to become fully operational in 2027. This would have implications for how road transport vehicles are used, as introducing a carbon price on top of the price of the fuel would increase the cost of fuel, which in turn could have an indirect effect on the type of vehicles that are purchased, as buyers could choose vehicles that emit less CO_2. This is also confirmed in Malta's NECP, which highlights the need to carry out a national impact assessment to gauge the effects of this regulation on road transport.

The Ministry for Transport, Infrastructure and Public Works (MTIP) has been offering purchase incentives for new electric vehicles to private individuals, non-governmental organisations, businesses, and private companies, with funding for these incentives provided by the Recovery and Resilience Plan (RRP). The RRP has allocated €50 million over a period of four years to support these incentives. Additionally, in 2023, the Government announced a new interest-free loan scheme for the purchase of electric vehicles, aimed at promoting the adoption of low-emission vehicles and reducing carbon emissions from the transport sector. The electrification of vehicles is also recognised as a key transport measure within the NECP.

As with most countries, Malta has been affected by global manufacturing and supply chain issues affecting the availability and delivery of electric vehicles. This has been made more challenging by the UK leaving the EU, as there has been a reliance on the British market for the import of right-hand drive vehicles.

Malta will need to be ready for the increased number of electric vehicles and vehicles using other zero-emission energy sources that will come onto the market in the next decade, particularly in relation to the provision of the necessary recharging and refuelling infrastructure. The new Regulation sets out the minimum requirements for the provision of the relevant recharging and refuelling infrastructure for the TEN-T[8]. These will need to be implemented in Malta, while the provision of the necessary infrastructure on the remaining road network in Malta will need to be ensured.

The national policy direction for electromobility in Malta was provided in 2013 through the Malta National Electromobility Action Plan (MNEAP). Since then, different government entities in Malta have developed other policies and strategies related to electric vehicles and charging infrastructure, including the development of the first National Policy and Regulation for Electric Vehicle Public Charging Infrastructure (2021). This policy provides a framework for transitioning to EVs by ensuring that adequate charging infrastructure is in place.

The recently updated Renewable Energy Directive[9] (RED III) reinforces the EU's commitment to reducing carbon emissions in the transport sector by setting more ambitious targets. It offers Member States flexibility in achieving these goals, with a stronger focus on sustainable biofuels. Malta has already integrated biofuels into its transport energy mix and is actively aligning its national framework to meet the updated EU requirements. These efforts contribute directly to the NECP's decarbonisation targets and support the broader transition to cleaner mobility .

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[8] *Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the deployment of alternative fuels infrastructure, and repealing Directive 2014/94/EU*

[9] *Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652*

While the national policy and fresh EU legislation will play a pivotal role in guaranteeing that new vehicles emit fewer pollutants, it is equally crucial to focus on reducing the environmental impact of Malta's current transportation fleet. To do this, it will be essential to lower the average age of vehicles in Malta. Recent trends in vehicle age do not appear to be favourable, with the average motor vehicle age rising. While based on the polluter-pays principle, the current fiscal regime is not adequately addressing the age of vehicles. In 2023, the average passenger car age was 15.73 years compared to 13.89 in 2015[10]. EU country comparisons may not be particularly useful, given the sharp differences between the average annual distance travelled by car in Malta and much higher average distances travelled in larger countries in the EU. However, for environmental reasons, these elements clearly illustrate that further efforts are needed to improve the quality of road rolling stock by reducing the average to be in line with the EU average.

Improving air quality

Malta has witnessed several instances where the air quality has surpassed the limit values for atmospheric pollutants. Despite the enhancements brought about by cleaner vehicles, the expanding size of the fleet counteracts these improvements. The National Health Systems Strategy (2023-2030) underscores the current situation in Malta, where there is a significant and rising number of asthma-related hospital admissions deemed as preventable. Consequently, initiatives aimed at improving air quality are paramount for enhancing the entire population's health. The EU's most recent transport strategy, the Sustainable and Smart Mobility Strategy from 2020, paves the way to reduce transport's CO_2 emissions by 90% by 2050, which is in line with the EU's climate neutrality commitment. This will imply a significant increase in the take-up of climate-neutral technologies for most transport modes and an increase in the use of other zero-emission alternative fuels. In early 2023, Member States and the European Parliament agreed to make all new cars and vans registered in Europe zero-emission from 2035.

In response, the Environment and Resource Authority (ERA) is taking proactive measures by developing a national air quality plan to mitigate the negative impacts associated with transport and related infrastructure developments. Released in 2025, the Air Quality Plan for Malta aims to address the pressing air quality concerns and promote healthier living conditions for the population of Malta.

[10] *Source NSO: https://nso.gov.mt/themes_publications/transport-statistics-2022-2/*

Managing transport demand

The COVID-19 pandemic enforced lockdowns, leading to a widespread shift to remote working. This experience has shed light on the potential benefits of maintaining such practices, including reduced travel needs, alleviated peak travel congestion, and decreased GHG emissions from the transport sector. Across Europe, businesses have embraced remote working, a move supported by government initiatives. This arrangement is particularly advantageous for parents. Public consultations and surveys reveal a strong interest in such work arrangements among the population. Indeed, the Maltese Public Service launched a Manual on Work-Life Balance in 2023. Workers in the extended public sector (such as government agencies) tend to have separate collective agreements and work policies.

Resilience of the transport network to a changing climate

The impact of climate change on the road network also requires attention. The NECP outlines Malta's commitment to reducing emissions through electrification of transport, expansion of renewable energy sources, and infrastructure upgrades, while the Biennial Transparency Report (BTR) submission details Malta's policy assumptions and projections for the EU Reference Scenario 2025, ensuring alignment with Union-wide climate modelling efforts, highlighting that the transport sector is highly vulnerable to climate change. Transport nodes and links such as ports, airports, bus interchanges, and roads are affected by weather events, which can cause closures and damage over time. These weather events tend to shorten the lifespan of infrastructure, increasing cost and potential structural failure during extreme events. Research at the Institute of Climate Change and Sustainable Development, University of Malta, has long shown that risks from climate change could affect coastal areas and areas prone to flooding as the frequency of extreme weather events (e.g. flash flooding) is set to increase. Attard (2015)[11] identified that over 6% of the main arterial and distributor network would be affected by sea level increases following a 2m increase in sea level, whilst 10% of arterial roads, 6% of distributor roads and 7% of rural roads would be prone to flooding during rain events. The road network has increased in length through infrastructure funding in the years since the study was carried out, and it may be that the number of 'at risk' sections of road infrastructure has increased.

The 2021 Low Carbon Development Strategy (LCDS) sets out various measures aimed at enhancing the adaptability of the transport sector and its associated infrastructure. One notable aspect is the continuous assessment of flooding pathways to optimise their management. Moreover, there is a focus on modifying road material standards to ensure they can endure higher temperatures and extreme precipitation events. Additionally, the Strategic Plan for the Environment and Development (SPED) emphasises the commitment to integrating rainwater management infrastructure into road networks. This integration can bolster the sector's ability to cope with heavy precipitation and fluvial floods.

[11] *Attard, M. (2015). The impact of global environmental change on transport in Malta. Xjenza, 3(2), 141-152.*

Malta actively considers climate impacts when planning and executing major infrastructural projects. It is important to recognise that infrastructure supporting the adoption of electric vehicles, including charging stations and powerline connections, shares the same vulnerabilities as the existing transport system unless it is specifically designed to withstand climate-related risks. Additionally, various government agencies and departments are managing and implementing projects aimed at enhancing stormwater management to address these challenges.

Data collection in road transport is an extensive, time-consuming process, but nonetheless, a vital process required to fully understand the functioning of the road transport system. Traditionally, the collection of data has been localised, labour-intensive, fragmented and often not updated. The development of the National Transport Model supporting the Transport Master Plan has involved significant time and resources. The National Transport Model is now available as a planning, policy, research and educational tool and can be enhanced by linking to data automatically being electronically collected through roadside camera equipment, automatic vehicle location devices and electronic ticketing data in public transport, many of which operate in real-time. More efforts to integrate and store data and to make it available across different departments and entities would enhance transport planning.

Challenges with managing and processing road permits result from a disconnect between the Transport Authority, which manages the major roads, and the local councils, which manage the local roads. A lack of coordination creates problems in the road network, such as blocked or diverted routes. Efforts are being undertaken to improve coordination between the different agencies, with plans to integrate the system to support the coordination of planning and permitting.

1.3 MOTORISED ROAD TRANSPORT

Motorised road transport forms the backbone of Malta's transport system, carrying the vast majority of daily trips by passengers and freight alike. With no railway or inland waterways and only a limited but increasing role for domestic maritime transport, almost all internal mobility depends on the road network. Cars, vans, buses, and trucks, therefore, play a pivotal role in sustaining economic activity, connecting communities, and enabling the delivery of goods and services across the islands.

Given its dominance, road transport is also the sector where Malta's most acute challenges and opportunities arise. Issues of congestion, parking, air quality, safety, and carbon emissions are all strongly linked to motorised road use. At the same time, targeted investments, policy reforms, and technological advances offer the potential to improve efficiency and sustainability. The following sub-chapters examine the three main dimensions of motorised road transport in Malta — public transport, private transport, and freight and logistics — each of which is central to shaping the performance of the wider mobility system.

1.3.1 Public Transport and Shared Mobility Services

Malta's public transport is primarily road-based and comprises scheduled (Regular) services, which follow pre-determined routes and set times of day, and unscheduled (Occasional and Special Regular) services using minibuses, coaches, and taxis, which tend to offer a more flexible transport service.

A high-level summary of the SWOT analysis for road-based public transport is presented below. This is followed by a more detailed review of the current situation, covering the current services available, planned improvements, utilisation and user experience, efforts to decarbonise the sector, and the current organisational framework.

PUBLIC ROAD TRANSPORT

Strengths

The successful deployment of the Tallinja card, the free bus services and high bus service usage are some of the main achievements of the present public transport service. The concession contract contains the necessary provisions to bring about significant improvements to the bus service's operational performance over time and the necessary flexibility to adapt to changes in travel patterns and behaviour over the medium term.

Weaknesses

In most residential areas, resource and planning issues prevent the timely upgrading of public bus infrastructures, such as adequate bus shelters.

Opportunities

There is an opportunity to develop the new park-and-ride infrastructure at other strategic points on the network, which, with the right support could enhance the bus service and disincentivise the use of private cars.

Continued improvement to the network and quality of bus services will support increased modal share by public transport.

Different forms of transport, including 'demand responsive transport', which matches the customers' needs, could be further explored and expanded.

EU funding to further invest in public transport infrastructure upgrades over the next few years.

Threats

The decreasing usage of unscheduled public transport services by the Maltese travelling public challenges the sector's sustainability.

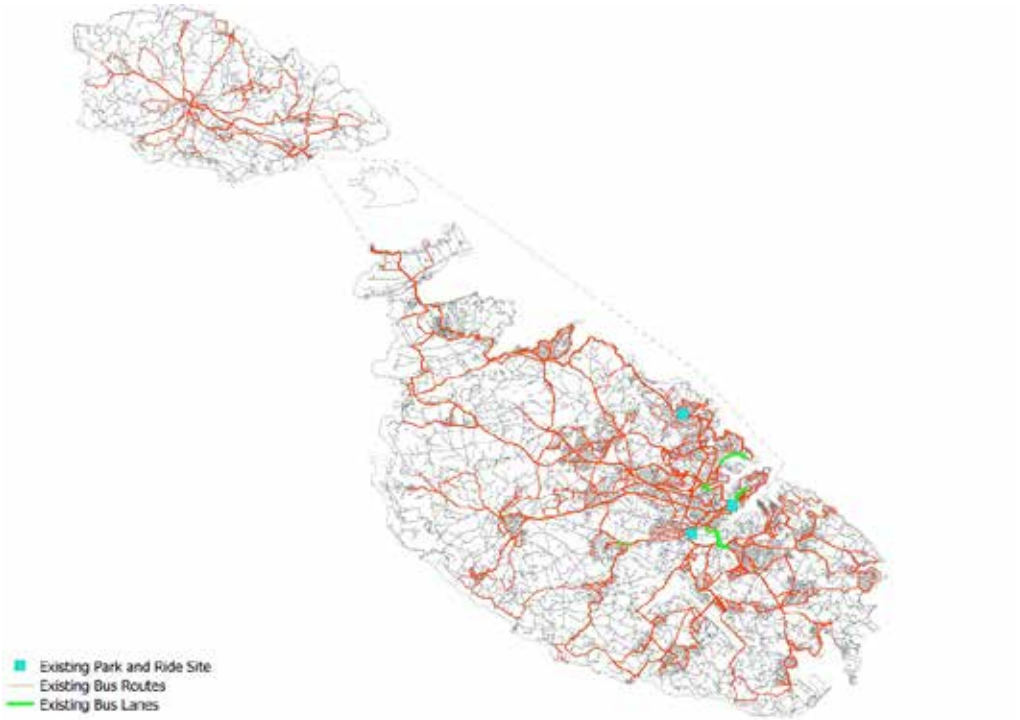
The poor integration of spatial planning of land use development with existing and future public transport infrastructure poses a significant threat to the sustainability of the road transport sector.

Policy inertia could significantly increase traffic congestion and challenge the sustainability of bus service operations.

Benefits of public transport

The Maltese government has underscored public transport as a pivotal policy area. A significant initiative was the launch of a complementary travel scheme, effective from October 2022, via the 'Tallinja Card'. Indeed, free public transport is also one of the key transport measures in the NECP, this policy has aimed to stimulate increased utilisation of public transport and alleviate road congestion. Public transportation, capable of moving larger groups of people while utilising less road space compared to individual cars, is a vital strategy for managing congestion. This is particularly true for off-road systems like metros and surface rail systems that require no road space. However, for public transport to effectively mitigate congestion, travellers must perceive the service quality and coverage as sufficient to choose it over personal vehicles, especially during peak hours.

Figure 3: Malta's Existing Land-based PT Network



Promoting a shift towards public transport involves addressing perceived user costs, travel comfort, reliability, safety, and security. While service extensions, fee structure adaptations, and operational improvements can enhance the appeal and performance of public transport systems, they come at a cost and may not be enough as standalone solutions for congestion management. It is also worth noting that urban areas with high public transport usage often still experience significant road traffic.

In less densely populated or peripheral urban areas, public transport services, even when supplemented by unscheduled public transport services, may not match the level of service that car users are accustomed to. However, introducing high-quality bus services along main corridors leading to busy centres, coupled with extensive service within these centres, can encourage a shift from private cars to public transport in the outskirts of built-up areas.

The provision of scheduled public bus transport

Scheduled public transport services in Malta and Gozo were historically comprised of two distinct networks of bus routes. In Malta, bus services are broadly divided into services operating to and from Valletta and between other interchange hubs, park-and-ride services, express routes and night-time services. In Gozo, the service network follows a more conventional hub and spoke layout, with Victoria serving as a central hub.

Following a radical reform of the bus service, which was started in 2011, the densest level of bus services is provided around the main urban agglomeration, which then spreads out along the main roads to connect outlying towns and villages and with good levels of convergence along most strategic corridors. The bus network in Malta also provides good levels of public transport access to most new development growth areas, and new public transport hubs have been developed at these locations, which are now becoming highly patronised. However, Malta's lack of dedicated bus lanes (Figure 3) results in increased bus travel times and reduces punctuality in peak-hour periods.

The current bus fleet includes 510 modern, low-emission buses equipped with Euro 6-compliant or EV engines. These buses have enhanced accessibility, including low-floored chassis and passenger information systems and vary in size to suit different operating environments. For instance, smaller buses are deployed in villages with narrow roads and on routes with lower demand. Each bus is fitted with closed-circuit cameras for security and incident reporting, passenger announcement systems, Wi-Fi and safety equipment.

Several Park & Ride sites have been strategically introduced at the peripheries of the inner harbour region and are mainly used by car drivers whose final destinations are localities where parking is difficult or where strict on-street parking control measures are in place. In general, Park & Rides have been underutilised. The Floriana Park & Ride operates quite well, but the Pembroke and Marsa sites have not maximised their potential as multimodal interchanges. While there are opportunities to develop the new park-and-ride infrastructure at other strategic points on the network, these would need to be supported by complementary actions that both enhance the bus service and disincentivise the use of private cars.

Decarbonising Malta's public buses

In an effort to curb carbon emissions and air pollution, there are ongoing plans to transition the bus fleet to electric power. The updated NECP 2021–2030, submitted to the European Commission in January 2025, incorporates a number of initiatives, including the electrification of transport and active mobility schemes, which are now central to Malta's decarbonisation pathway. As of 2023, 42 out of the 510 buses in the fleet are electric, and a 3MW charging depot has been established in Floriana.

Gozo's development in public transport electrification is ongoing. Currently, six electric buses are operating in Gozo, which are used en route between the Park and Ride and Mġarr harbour. An 'eBussed' project for Gozo that aims to electrify the fleet has also been completed. The Gozo Regional Development Strategy published in September 2023 highlights the need to transition to electrify public transport and encourage multimodal mobility.

Unscheduled public transport, taxis and private hire vehicles

The unscheduled public transport system includes a range of services. Special regular services such as free school transport and home-work transport organised by certain major employers, typically operate during the morning peak. Other unscheduled services operate as occasional services aimed at the tourist market, often outside of peak hours. These include coaches, minibuses, open-top buses, trackless train transport, taxis and mini-cabs. Over the last few years, ride-hailing services have rapidly expanded. These platforms have gained significant popularity through providing alternative transportation options, but unfortunately, they have also contributed to an increase in vehicle traffic on the roads.

In Malta, Government provides free school transport to students in compulsory schooling and kindergarten, attending State, Church, and Independent Schools. While the free school transport service is available and widely used, a significant portion of students still do not use it. The reasons for this could be varied, including factors such as proximity to schools, availability of alternative transport options, or personal preferences. With more parents opting to take children to school by car for reasons of convenience and an increased number of employees using their car to go to work rather than the alternative collective transport organised by their employers, the positive impact that unscheduled public transport once had on peak hour congestion is becoming less and less significant. The decreasing usage of unscheduled public transport services by the Maltese travelling public is a challenge to the sector's sustainability.

Malta Public Transport has demand-responsive transport services operating in certain areas. Indeed, unscheduled services are feasible if there is a demand, but commercial viability is a key challenge. Services that address transport requirements in rural areas where demand is unreliable may require subsidisation from the government.

Utilisation and efficiency of the public transport system

The overall public transport modal share was around 16% in 2010. However, this fell significantly to 5.6% in 2021, with over a third of respondents to the National Household Travel Survey (NHTS) (2021) stating that they no longer use passenger transport for work, retail or supermarket trips. While the NHTS data is reflective of a reduction in confidence in collective transport due to personal health concerns caused by the COVID-19 pandemic, bus patronage has since strongly recovered. The Maltese government has prioritised public transport as a critical policy focus and has introduced a free travel scheme through the 'Tallinja Card' to encourage greater use of public transport and reduce road congestion. This has supported the recovery of patronage levels, with 19% of NHTS respondents stating that they would consider switching to public transport from October 2022, when passenger transport became free to use. Continued improvement to the network and quality of bus services will support increased modal share by public transport.

According to the results of the NHTS 2021, the most common concerns about the quality of service of public transport for both users and non-users were punctuality (24%) and long journey times (21%). Without any dedicated bus lanes, the buses must share road space with general traffic, which significantly impacts the functionality of the service each day. Unlike other traffic, buses cannot take shortcuts to bypass congestion. Most congested European cities provide clear priority for buses in traffic through bus priority measures (such as bus-activated traffic signals, bus-only streets, bus lanes, etc.) as buses use existing limited road space much more efficiently than other traffic. In Gozo, congestion levels are much lower than in Malta, typically only occurring on the final stretch approaching Victoria terminus. The pilot testing of traffic signal controls that favour buses is underway, with two signals implemented initially. This pilot aims to assess the effectiveness of prioritising bus traffic and determine if this approach can be expanded in the future.

The average vehicular speed of public transport buses during peak hours is 23.15km/h compared to 23.9km/h for cars. While this is only marginally slower when considering walking, waiting, and transfer times, the average duration of a bus trip (44 minutes) is over three times as long as a car trip (14 minutes). Traffic model forecasts highlight that by 2030, average bus speeds will reduce to 21.3km/h during peak hours unless there are transport policy changes. Indeed, it is also forecasted that the total distance driven by vehicles during peak hours will rise by about 2% per year to 2030 if no new infrastructure, demand-management policies, or bus-priority measures are introduced. Bus journey times will increase, bus service reliability and punctuality will deteriorate, and an undesirable modal shift from the bus back to the car will likely result. Along with this deterioration, policy inertia would significantly increase traffic congestion and challenge the sustainability of the bus service operation.

As bus routes approach and traverse critical urban areas, they often intersect with other routes, forming bus corridors. This convergence amplifies the frequency of bus services along these corridors, significantly reducing waiting times. However, in sparsely populated peripheral areas, it is common to encounter infrequent bus services and lengthy, winding routes.

To address these challenges, preparatory works on a rapid link will start. This could be an opportunity to explore different forms of transport in rural areas including 'demand responsive transport.' While the public transport operator currently provides an existing demand responsive service (Tallinja On Demand), it only serves urban areas.

The user experience

The bus ticketing system was radically overhauled in 2015 through the introduction of the pre-paid 'Tallinja' travel card. This pre-paid ticketing system reduced cash handling on board the buses, improved boarding and journey times, simplified travel planning and significantly reduced the incidence of fare theft. The uptake of the 'Tallinja' card has been very high, with over 422,579 cards now in circulation in Malta and Gozo across all the main bus user categories. Its deployment is one of the main achievements of the present public transport service.

Bus users are able to access route and schedule information and can plan their journeys in advance of travel through a user-friendly website and app. Real-time information on buses on their routes is available on the app (including live tracking of buses along their route), which supports multiple languages and is functioning effectively.

Travellers are also informed in advance of any major permanent operational changes through the distribution of information brochures to households, on any temporary disruptions to the service through the various media and during their travel, through accessible timetable information at bus stops and real-time information displays at main bus stops and on-board the buses. The use of roadside Real-Time Information (RTI) displays indicating the estimated time of bus arrival at bus stops has now been launched on around 5% of the bus stops.

Bus stops are strategically dispersed throughout Malta, with the average distance to the nearest stop being approximately 450m. Around 75% of the population surveyed can reach their nearest bus stop within a 5-minute walk, while only about 3.4% experience a walk longer than 15 minutes. The placement and frequency of bus stops are thoughtfully designed in relation to the layout of major urban areas, favouring regions with higher population and employment densities. This well-planned distribution is a notable strength of Malta's public transport system.

The infrastructure is not always suitable for the needs of persons with reduced mobility. Footpaths which provide pedestrian access to bus stops are often discontinuous and unsafe, which has a direct impact on the usage of public transport. Furthermore, at the end of 2022, only 29% of all bus stops had adequate shelter from the elements. Bus shelters are provided and maintained by a private company under contract with Local Councils, and safe footpath provision also falls under the responsibility of the Local Councils.

In most residential areas, resource and planning issues exist, impacting the timely upgrading of these infrastructures.

Improvements to the physical bus network

The quality of the facilities (comfort, safety, security and convenience) used for waiting and changing buses needs to be of the highest standard for public transport to be considered a viable alternative to the private car. The principal public transport hubs (Valletta, Buġibba, the Malta International Airport, University of Malta, Ċirkewwa, Mġarr and Victoria) were fully re-planned and designed to enable improved bus access, safe segregation between vehicles and bus users, shelter from the elements, seating and clear travel information. Secondary hubs at the Mosta Techno Park, Paola Square, Attard, and Rabat were upgraded similarly, with improved pedestrian provision for crossing busy roads and room for further enhancement. The Malta Public Transport is leading updates to the network to increase capacity through route and frequency adaptation in response to demand changes.

Integration between spatial and developmental planning and transport network

A key issue is the poor integration of spatial planning of land use development with existing and future public transport infrastructure, which poses a significant threat to the sustainability of the road transport sector. A specific example that highlights this issue is the SPED, which received approval in 2015 and is currently being revised.

It is important that this document integrates public transport provision and requirements fully into medium- to long-term land use planning.

There is an opportunity to adopt a more comprehensive approach by utilising a cross-sectorial Master Plan process. This would involve the strategic planning of transport infrastructure requirements and transport services in specific growth areas, considering the long-term sustainability and efficiency of the road transport sector. This would involve careful consideration of factors such as the location of residential and commercial areas, the proximity of public transport networks, and the accessibility of various modes of transportation. A holistic Master Plan approach could provide a framework for effective collaboration among relevant stakeholders, including urban planners, transportation authorities, and environmental agencies. It would enable them to align their goals and work towards a shared vision of sustainable development, promoting efficient land use and reducing reliance on private vehicles.

Organisational framework, governance and enforcement of scheduled bus public transport

Scheduled bus public transport in Malta and Gozo is organised under a 15-year concession agreement between Transport Malta (the authority) and Malta Public Transport, which runs from 2015 until 2030. The agreement outlines the operator's public service obligations, including operating unprofitable routes (such as to small, remote rural areas), maintaining service during off-peak hours and holidays, and setting maximum passenger fares and concessionary fares for disadvantaged groups. The operator is compensated for these obligations in line with Regulation (EC) No. 1370/2007[12]. The agreement also establishes requirements for bus services, fares and ticketing, route adjustments, use of bus infrastructure (e.g., termini, P+R sites, etc.), service performance requirements, employees, and penalties for non-compliance.

The concession contract contains the necessary provisions that can bring about significant improvements to the operational performance of the bus service over time and the flexibility to adapt to changes in travel patterns and behaviour over the medium term. As explained, this flexibility has been leveraged to enable a more timely response to demand changes through route and frequency adjustments. The concession contract also requires the operator to organise garage, repair and cleaning facilities for buses, which marked a radical departure from operations before the public transport reform in 2011, in which the 400 or so individual bus owner-operators would house their large vehicles overnight in private garages (commonly located in unsuitable, narrow village core or residential areas), often with little or no system in place for carrying out routine maintenance and repair.

In recent years, Malta has significantly invested in upgrading and refurbishing its public transport infrastructure, focusing on improving the passenger experience and promoting sustainability. There is a continued need for further investment in public transport infrastructure upgrades over the next few years, and the government is exploring opportunities to secure additional funding through EU programmes and other financial instruments to augment national funding.

[12] *Regulation (EC) No 1370/2007 of the European Parliament and of the Council of 23 October 2007 on public passenger transport services by rail and by road and repealing Council Regulations (EEC) Nos 1191/69 and 1107/70.*

1.3.2 Private Transport

Private road transport is the dominant mode of travel in Malta, reflecting high levels of car ownership and a strong cultural preference for private mobility. It provides flexibility and accessibility for households and businesses, but also contributes to some of the most pressing challenges in the transport sector, including congestion, parking demand, and environmental impacts. At the same time, the transition toward low-emission vehicles and smarter mobility solutions presents new opportunities to reshape the role of private transport within a more sustainable system.

A high-level summary of the SWOT analysis for road-based private transport is presented below. This is then followed by a more detailed review of the current situation, covering the dependency on private transport, congestion and parking issues, and progress to reduce emissions from private vehicles.

ROAD-BASED PRIVATE TRANSPORT

Strengths

Government EV grants use national and EU funds to purchase EVs and retrofit ICE to cleaner fuels (such as LPG).

Weaknesses

Dependency on private cars for travelling.

The EV charging infrastructure remains a weakness.

Lack of skilled technicians to service electric vehicles (EVs).

Opportunities

Parking spaces that contribute to multimodal travel rather than encourage car use.

Threats

A limitation of available financing to support the shift to electromobility.

Rising number of motor vehicles.

Dependency on private transport

The NHTS 2021 indicated that private cars account for over 84% of trips during a typical weekday. While the COVID-19 pandemic caused a temporary accelerated modal shift away from public transport, car ownership was already on an upward trajectory.

Traffic volumes have therefore continued to remain closely tied to the ongoing growth in private vehicles. Between 2020 and 2024, the number of passenger cars per 1,000 residents declined at an average rate of 0.9% per year, as population growth outpaced vehicle growth. Nevertheless, the total stock of licensed passenger cars has continued to expand strongly, rising by about 1.7% annually over the same period.

According to the NTM 2021, the total number of daily car trips performed by drivers in Malta in 2021 was 1.36 million. The number of daily car trips performed by each driver in Malta in 2021 was 2.5, a decrease of 3.20, compared to 2016. This is likely due to increased teleworking, especially as the last NHTS was taken just after the COVID-19 pandemic. Teleworking rates are still comparable but have decreased slightly.

As reported by the last NHTS 2021, around 73.7% of all internal trips are undertaken using private passenger cars. Moreover, when considering trips by car, it is notable that only a small proportion of total trips are made as a car passenger (7.6%). Average car occupancy on a typical weekday has fluctuated over the years, decreasing from 1.33 persons per car in 1990 to 1.25 persons in 2014 and then increasing again to 1.44 persons in 2021.

Motorbikes represented 9.6% of total licensed vehicles in 2022. They allow for faster travel compared to cars and reduced fuel consumption.

Congestion - peak travel events and traffic bottlenecks

Periods of time when there is high demand on the road network are described as peak travel events. These can create significant issues in any transportation system, especially when the infrastructure is not designed to accommodate the maximum traffic flows during a short period of heavy congestion. In 2022, congestion in Malta incurred a cost of approximately 3.6% of the country's GDP, equivalent to €400 million. The National Transport Strategy for 2050 forecasted that this could increase to €1.28 billion annually by 2050. Furthermore, when the peak period is highly disproportionate to the rest of the day, the cost of remedial solutions becomes artificially high, and finding appropriate design solutions becomes increasingly challenging. This poses a threat that must be addressed in the TMP by implementing policies and measures that aim to improve the management of peak-hour travel. These measures should encourage drivers to avoid travelling during peak hours, opt for travel outside of peak hours, and shift to more efficient modes of transportation. By doing so, high levels of mobility can be sustained, and the value for money of investing in new transport infrastructure can be guaranteed, facilitating more efficient utilisation of existing transport infrastructure.

Over the years, the rise in motorisation and reliance on private and commercial transportation has resulted in the emergence of traffic bottlenecks at critical points in the strategic road network. Due to factors such as the high level of urbanisation, historical and environmental development constraints, and limited availability of vacant land suitable for new road provision, traffic bottlenecks have been primarily addressed by widening local roads at junctions, introducing grade separation, and implementing traffic management schemes, rather than constructing new bypass roads.

The distribution of traffic across the dense Maltese road network is mainly concentrated along the central section of the TEN-T Network and connecting roads around the Harbour region. The strategic road network accounts for only 4% of the length of the national road system but accommodates around 64% of the entire vehicular mobility. Several critical sections and nodes on the strategic road network are approaching their practical operational capacities. Between 2021 and 2030, the NTM forecasts a 12.8% growth in peak hour trip movements across the Maltese islands. This takes all strategic roads closer to their maximum capacity, even with infrastructure interventions. The central section of TEN-T network (Triq Aldo Moro, Ħamrun Bypass, Santa Venera tunnels and Tal-Qroqq junction), which already carries high volumes of traffic, will experience an average of 7-8% traffic growth and will suffer significant capacity issues during the AM peak by 2030.

Parking

The management of the supply of parking places for residents is currently inadequate. The distribution of public and private car parking is highly fragmented across Malta, and many areas lack purpose-built public parking infrastructure.
However, it is a planning requirement that commercial developments have minimum parking spaces. While this alleviates parking capacity issues, it concentrates parking provision to areas of high commercial development. Furthermore, of the existing managed parking facilities, very few have convenient walking or public transport links to the principal urban and commercial agglomerations. Parking supply is therefore mainly on-street, and mostly unregulated, free of charge and operating on a first-come, first-served basis. Indeed, statistics from NHTS2021 indicate that on a typical weekday, 98% of all car trips do not pay any charge for parking and 72% of these park on-street. Considerations are being made around reallocating underutilised private parking for public use.

The continued increase in demand for on-street parking in residential areas is negatively impacting traffic circulation through further narrowing road carriageways and introducing one-way systems, which result in longer journeys and pose a greater risk to cyclists. For the last year, short-stay parking near businesses has been promoted to support customer and delivery access. In addition, various measures improving the efficiency of urban logistics (see Chapter 2) are currently being evaluated and will look at optimising access and parking for commercial vehicles.

The lack of a comprehensive policy to determine the optimal number of private and public off-street parking spaces, balanced with the supply of on-street parking spaces, has led to over-provision in many congested town centres and acts to support the continued use of private car transport. This is contrary to what is happening in many urban areas around Europe, where cities are adopting a paradigm of parking maximums rather than minimums, as an oversupply of parking spaces with no restrictions encourages further car use.

Uptake of low-emission vehicles

The low uptake rate of plug-in hybrid and EVs is a challenge that needs to be addressed, given their anticipated contribution to GHG and air pollution reduction targets in the sector. Promoting the use of low-emissions vehicles is identified as one of the key transport measures in the NECP for achieving decarbonisation goals. Therefore, increasing the adoption of such vehicles is essential to realising both national and sectoral climate ambitions. The total number of registered alternative fuel vehicles reached 28,004, primarily due to the support provided through fiscal and tax incentives. As of June 2024, these vehicles account for only 6.3% of the total road vehicles registered in Malta. Therefore, there is considerable potential for further uptake of zero-emission vehicles, particularly given that the average daily travel distance is well within the range of a modern electric vehicle.

The updated NECP reaffirms Malta's commitment to achieving the equivalent emissions savings of 65,000 EVs by 2030. This target forms part of a broader strategy to decarbonise the transport sector and is supported by a suite of policy measures, including substantial investments through the RRP. These include grant schemes for various vehicle categories, infrastructure deployment, and fiscal incentives aimed at accelerating EV uptake. The NECP positions this target as a central pillar of Malta's contribution to the EU's Fit-for-55 objectives, and ongoing implementation efforts are being monitored to ensure alignment with national and Union-wide climate goals. Nevertheless, the Government is committed to electrifying the current fleet, including through the provision of grants for the purchase of private and commercial EVs. The government is driving the electrification of the Public Administration fleet through a revised policy for procuring motor vehicles for use in the Public Service. Furthermore, on 15 May 2024, the Public Service launched a new fleet of 250 electric vehicles using funding under the RRP.

There is a lack of trained technicians to provide maintenance services for EVs being used in Malta, a common issue observed across other countries. While financial incentives and policy measures play a crucial role in encouraging EV adoption, ensuring that the necessary infrastructure and after-sales support are essential. With the increasing popularity of EVs, there is a rising demand for skilled technicians who can effectively diagnose, repair, and maintain these vehicles.

A significant barrier to the widespread adoption of electric vehicles remains the cost disparity compared to ICE or conventionally fuelled vehicles. However, this gap is expected to narrow progressively due to economies of scale in vehicle manufacturing and continued reductions in battery production costs, making EVs increasingly accessible to a broader segment of the population. Furthermore, financial support from the government also helps to reduce the cost differences.

1.3.3 Freight and Logistics

Road-based freight and logistics are essential to Malta's economy, ensuring the flow of goods that sustain businesses, households, and trade. The sector benefits from Malta's strategic position in the Mediterranean, which provides strong international connectivity through the Freeport and the airport. At the same time, Malta's insularity, and the additional "double insularity" of Gozo, creates inherent challenges for domestic distribution, adding pressure to limited space, ageing road fleets, and infrastructural constraints. Nonetheless, digitalisation, more efficient delivery models, and investment in sustainable logistics offer opportunities to strengthen the sector's competitiveness while reducing its environmental footprint.

Below is a high-level summary of the SWOT analysis for road-based freight and logistics. This is followed by a more detailed review of the current situation, covering the importance of logistics in Malta, the growth in this sector, and plans for future developments.

ROAD-BASED FREIGHT AND LOGISTICS TRANSPORT

Strengths

Strong links between Malta's Freeport, the Malta International Airport, and road network support efficient trade and distribution.

The Malta Freeport Terminal and the Malta International Airport are undertaking investments in infrastructure projects.

Weaknesses

A general lack of dedicated infrastructural facilities, including overnight parking for freight vehicles.

Insularity and double-insularity issues related to Malta's size and geographical position. Road freight vehicles are generally old, with little opportunity to replace them with EVs.

Opportunities

The country's geographic location is a gateway for freight traffic between Europe, Africa and the Middle East.

Promoting sustainable transport solutions that minimise environmental impacts and fostering innovation and digitalisation.

Creation of distribution centres to break the bulk into smaller vehicles.

Dedicated route network for large freight vehicles.

Threats

General lack of dedicated infrastructural facilities being provided for this sector.

Importance of the logistics sector in Malta

The Maltese government recognises the importance of the logistics sector as a crucial enabler for economic growth and competitiveness. The country's strategic location in the Mediterranean makes it an essential gateway for freight traffic between Europe, Africa, and the Middle East. Therefore, the government is committed to creating a competitive and innovative logistics ecosystem that can provide efficient and reliable services to local and international clients. The government's policy direction for freight and logistics includes a focus on promoting sustainable transport solutions that minimise environmental impacts, as well as fostering innovation and digitalisation. The government also seeks to improve the integration of the various modes of transport, including road, sea, and air, to create a seamless and efficient multimodal transport system.

To achieve these goals, Malta is implementing a range of measures, including investment in infrastructure from the private sector, such as the infrastructure projects being undertaken at the Port of Valletta (Grand Harbour), Port of Marsaxlokk (Freeport) and the Malta International Airport, and in new technologies, such as automation, digitalisation, and electric and hybrid vehicles. The government is also supporting initiatives to improve training and education in the logistics sector and to develop a skilled workforce that can meet future demands.

Growth in delivery services

To support the growth of the e-commerce sector, the government has developed the "National E-Commerce Strategy" to promote the development and competitiveness of e-commerce businesses. The strategy includes measures to improve the last-mile delivery of goods, enhance the efficiency of customs procedures, and promote the use of digital technologies in the logistics sector.

A 2022 public consultation by the then Ministry for Transport, Infrastructure, and Planning found that operators were willing to explore alternative delivery options beyond peak hours (specifically, between 10 am and 3 pm), provided they are more cost-effective compared to peak-hour deliveries. This has also been included as part of the 'Reshaping our Mobility' strategy pillars. More insights and research are required to support measures that encourage the adoption of these solutions.

Planning and development

Freight distribution and logistics are not as well-regulated as other transport sectors. There has been a general lack of dedicated infrastructural facilities being provided for this sector, and a low level of deployment of logistics in the daily planning of national freight operations and distributors.

1.4 ACTIVE TRAVEL AND MICROMOBILITY

Active travel and micromobility play an important role in creating a more sustainable and accessible transport system in Malta. Walking and cycling are the most space- and energy-efficient modes of travel, offering clear health, environmental, and social benefits. Their uptake, however, remains limited due to challenges such as high traffic volumes, safety concerns, and gaps in dedicated infrastructure. At the same time, Malta's compact urban form, growing investment in pedestrian and cycling facilities, and the rapid emergence of shared micromobility services present significant opportunities to expand the role of these modes within the wider transport network.

A high-level summary of the SWOT analysis for active travel and micromobility is presented below. This is then followed by a more detailed review of the current situation, covering the importance of active travel, efforts to encourage it, and the importance of safety for uptake.

ACTIVE TRAVEL AND MICROMOBILITY

Strengths

Most destinations are within an average distance of 6.1 km, making active mobility possible.

Investment is needed to develop active modes of travel throughout the Maltese islands and further promote sustainable urban travel.

Weaknesses

Fragmented cycling network that does not penetrate urban areas.

Identified safety risks related to the operation of shared micro-mobility scooters within mixed-traffic environments on public roads.

Opportunities

Active travel offers many benefits to the environment, public health, and the economy.

The scope for reducing the speed limit in residential and traffic-sensitive areas to 30km/hr is to encourage greater take-up of active mobility.

Threats

Public resistance to the sharing of road space for active mobility from motor vehicle users.

The limited success of previous active mobility services could deter future investment by the private sector in this area.

Why is active travel important?

Active travel offers many benefits to the environment, public health, and the economy. By promoting cycling and walking, Malta can ease traffic congestion, improve air quality, and mitigate the impact of climate change through reduced greenhouse gas emissions. Active travel can reduce the risk of chronic diseases and improve mental health through increased physical activity.

Active travel is now recognised as an important part of national planning in Malta, as reflected in policy documents such as the Low Carbon Development Strategy (2021), the Road Safety Strategy of Malta (2014-2024), and the existing Sustainable Urban Mobility Plan (SUMP). However, historically, transport infrastructure in Malta has been car-focused, and studies have found that road design in Malta is generally car-oriented and is characterised by the overall lack of space provided for all modes. This has led to a built environment that is generally not pedestrian-friendly and often features an infrastructure layout that is inaccessible to persons with restricted mobility. Over the years, new road designs have recognised the importance of providing safe roads to car users as well as pedestrians and cyclists, with the introduction of dedicated cycle lanes and improved pavement design.

Active Travel in Malta

The uptake of active travel remains low, and the NHTS 2021 indicates that less than 8% of trips (or portion of trips) were made using active travel on National Travel Day in 2021. The figure for cycling is extremely low, accounting for less than 1% of trips. This data highlights that further government effort is required to facilitate a modal shift away from private car use in Malta.

One important characteristic of travel in Malta that lends itself to active travel is journey length, which is, on average, 6.1km. The private car is commonly used for very short-distance trips where, in the past, walking or cycling would have been the preferred mode. With an average travel time of around 13.3 minutes for the private car during the morning peak and unrestricted, free parking available in many localities, car travel has become the preferred modal choice for many travellers at national and inter-regional levels.

A private operator launched a bike-sharing scheme in 2016 but ceased operation in 2022. A similar service offered by the public transport operator was launched by the Maltese government in 2019 as a bike-sharing service in selected areas of Malta. The scheme allows users to rent bikes from automated bike stations and return them to any other station in the network. In 2020, on-demand e-scooters were also introduced to Malta. However, the on-demand scooter service was terminated following incidents of misuse and traffic management issues. Nevertheless, the private ownership of e-scooters is still encouraged.

Efforts to encourage active travel

A key weakness of the cycle network reported in 2015 was that it is fragmented and does not effectively penetrate the main urban areas. Since then, cycle routes have improved but there are still challenges with building routes in local streets where space is more limited, and planning decisions involve more stakeholders.

The first National Cycling Strategy and Action Plan was launched by the Maltese Government in 2018, with the objective of promoting the use of bicycles for both commuting and leisure activities. The policy documents list a number of measures, including the construction of cycle lanes, the installation of bike racks, and the promotion of cycling as a healthy and sustainable means of transport. The Maltese Government is currently working on the revision of the National Cycling Strategy. In addition, subsidies for purchasing bikes and electric bikes have been extended. The €700 million roads upgrade programme initiated in 2019 has also incorporated investments in active travel infrastructure by Infrastructure Malta.

The Maltese Government has recently completed several infrastructure projects to increase the modal share of active travel modes. For instance, the Grand Harbour Regeneration Corporation (GHRC) has invested €4.5 million in finalising the regeneration works at the main entrance to Senglea, known as St. Anne's Gate. Additionally, Infrastructure Malta has completed the €1.7 million project on Difiża Ċivili Road in Mosta, which establishes a continuous and safe pedestrian footpath along the entire route, while also introducing a segregated cycling lane to encourage a modal shift. Three new segregated cycle lane sections covering 4km on the road network have been implemented. The routes connect Attard along Rabat Road on to Mtarfa Junction and Mġarr Junction which leads onto Mosta and joining the outskirts of the town of Żabbar onto Żejtun. Furthermore, pedestrian bridges connect different urban areas of Ħamrun, Blata l-Bajda and Marsa, Luqa and Paola have been implemented to provide improved and safer accessibility to public transport patrons who want to utilise the bus stops in the vicinity of the bridges.

In 2023, the government also announced a substantial investment to develop active modes of travel throughout the Maltese islands and further promotion of sustainable urban travel. The plan aims to establish safer active mobility connections across Malta, focusing on significant infrastructural investments, particularly in urban areas. These active mobility routes will not only facilitate efficient modes of travel by walking and cycling but also seek to connect green spaces and busy nodes, enhancing the overall experience of active mobility within the region.

Green travel plans have started to be introduced more widely in Malta, and recently, the first 'mobility contract' between the property developer and the Government was signed, holding the developer responsible for delivering on their green travel plan proposals. While green travel plans will be an important tool to encourage sustainable travel, there is also a desire to see transport more integrated into the building planning processes. Since 2006, local plans have been less influenced by transport modelling, and the Local Master Plans that were discussed in the TMP 2025 had limited success.

In 2020, under the Slow Streets Initiative, the Local Council Association published traffic management plans for 46 different local councils, which sought to improve road safety and encourage active mobility. Despite this, implementation has been slow. This has now been complemented by the Vjal Kulħadd initiative, launched by Infrastructure Malta, which aims to assist Local Councils in transforming local roads and public spaces into safer, more accessible, and environmentally friendly areas. On the other hand, the SUMP for the Valletta region was published by Transport Malta at the end of 2022. It will be important to ensure that the complementarity between the various sustainable transport planning activities is captured and that there is a clear framework to coordinate these activities.

The importance of road safety for active travel

Promoting and prioritising road safety for active travel is crucial for development and uptake amongst citizens. In alignment with the Road Safety Strategy of Malta (2014-2024), there is a recognition of the need to prioritise the safety of pedestrians and cyclists. The overarching goal of the strategy is to achieve zero fatalities by 2050, and the current focus is on implementing a safe system approach. This involves improving infrastructure to enhance the safety of vulnerable road users, promoting sustainable modes of transport, conducting awareness campaigns, and strengthening enforcement of road safety regulations. A revised Strategy, covering the next ten years, is currently being drafted.

Specific measures are being implemented to support active travel, such as the development of traffic-calming measures, the establishment of pedestrian crossings, and the creation of dedicated cycle lanes. These initiatives aim to create a safer environment for pedestrians and cyclists, encouraging their increased participation in active travel.

1.5 PORTS AND MARITIME TRANSPORT

Maritime transport is a cornerstone of Malta's connectivity and economy, linking the islands to international markets while also supporting domestic mobility between Malta and Gozo. The sector benefits from Malta's strategic position in the Mediterranean, its two TEN-T ports, and a broad range of established maritime services. At the same time, governance and planning face challenges linked to limited space, fragmented responsibilities, and the need to balance growth with sustainability. Ongoing investment in infrastructure, digitalisation, and alternative fuels provides opportunities to strengthen Malta's position as a resilient and competitive maritime hub.

Since the beginning of recorded history, maritime transport and ports have always played a vital role in securing the supply of food and commodities, directly contributing to the survival of world nations. Maritime ports are vital gateways to the rest of the world, and 74% of all goods entering and leaving the EU countries are transported by maritime links.

As an island nation, Malta is an archipelago where maritime transport is essential. It not only connects the islands of Malta, Gozo, and Comino domestically (known as "internal maritime transport") but also links Malta with other Mediterranean countries and beyond (referred to as "external maritime transport"). Located in the heart of the Mediterranean Sea, Malta has always relied heavily on its marine and maritime industries. These industries are crucial to Malta's economy as they ensure the secure supply of energy, food, and commodities. Maritime transport is also the primary means of transport for European imports and exports. The maritime sector contributes about €25 million to the government's revenue. Interestingly, the average value added per employee in the maritime industry is 53% higher than the national average. Furthermore, this economic indicator is growing at a faster rate in the maritime sector (12%) compared to the overall economy (10%). [12]

There are several maritime-related services offered in Malta, such as ship registration, yacht registration, ship repair, transhipment facilities, cruise port, shortsea initiatives, offshore hub and bunkering.

1.5.1 Ports and Governance

Malta's ports form part of the Trans-European Transport Network (TEN-T), which provides a common framework for strategically important transport infrastructure across the European Union. As noted earlier in Chapter 1.2, the TEN-T network is designed to strengthen connectivity, efficiency and sustainability of the European transport system, ensuring that islands and peripheral regions remain fully integrated into the Single Market and wider global supply chains. Maritime ports are identified as critical nodes within this framework because they connect sea transport with land-based networks, facilitate international trade, and sustain the territorial cohesion of member states.

[12] *Malta Maritime Forum: 2023 Budget Proposals: https://mmf.org.mt/wp-content/uploads/2023/01/MMF-2023-Budget-proposals.pdf*

The TEN-T network distinguishes between Core Ports, which are of European strategic importance and are required to provide comprehensive facilities and multimodal connections, and Comprehensive Ports, which ensure regional accessibility and internal connectivity within the overall network. Malta hosts two ports in each category. The following subsection describes the role, functions and challenges of the Core Ports, Valletta and Marsaxlokk, and the Comprehensive Ports, Ċirkewwa and Mġarr, showing how each contributes to both external trade and internal maritime mobility.

A high-level summary of the SWOT analysis for Malta's ports and the governance of the maritime sector is provided below. It highlights the system-wide strengths, weaknesses, opportunities and threats that shape the performance of both the Core and Comprehensive ports within the TEN-T framework. The analysis focuses on overarching issues such as governance, capacity, sustainability and resilience, which affect all port operations regardless of their individual role in external trade or internal connectivity.

PORTS AND GOVERNANCE

Strengths

Strategic Mediterranean location with strong global connectivity through Freeport and Grand Harbour.

Broad range of established maritime services (transhipment, bunkering, repair, cruise).

Established international connectivity through Freeport and Grand Harbour.

Weaknesses

Fragmented governance and overlapping responsibilities between agencies. Space limitations challenge the ability to provide additional quays.

Space limitations restrict opportunities for additional quays and hinterland development.

Limited transparency on operational and maintenance costs across multiple concessionaires.

Opportunities

Capacity upgrades and new quay investments at Valletta and Marsaxlokk.

Deployment of Onshore Power Supply and adoption of e-Maritime solutions.

Development of alternative fuel bunkering facilities to support the green transition.

Digitalisation and the integration of decarbonisation measures can streamline operations and improve competitiveness.

Climate change impacts such as rising sea levels and storm surges.

Compliance costs from EU decarbonisation measures may divert traffic to non-EU ports.

Heritage and land-use constraints around Grand Harbour could limit long-term expansion.

The Port of Valletta (Grand Harbour)

The Grand Harbour at Valletta is Malta's principal multi-purpose deep-water port. It offers a wide spectrum of maritime services including cargo berths, cruise and ferry terminals, specialised grain and cement silos, petroleum installations, bunkering, ship repair and ship-building yards, ship chandelling, reception facilities, and other related services. Warehousing and open storage facilities extend across the port area, adding capacity for logistical flexibility. The harbour covers about 3.6 kilometres inland, protected by a two-arm breakwater, which allows the port to operate year-round, twenty-four hours a day, although access can be restricted during strong easterly winds.

Valletta also serves as a hub for passenger movement. The Valletta Cruise Port, operating under a long-term lease, handles cruise operations on quays such as Pinto 1 through Pinto 5. The international ferry terminal accommodates the Malta–Sicily high-speed catamaran service, providing Malta's main international ferry connection to Italy for both foot-passengers and vehicles. The fast ferry terminal at Lascaris Wharf links Valletta directly with Mġarr in Gozo, offering a rapid foot passenger-only alternative to the Ċirkewwa–Mġarr route. In addition, the Grand Harbour is also home to the Valletta–Three Cities harbour ferry service, which provides an important cross-harbour commuting option. The port further hosts Valletta Gateway Terminals Ltd (VGT), which holds the concession to manage and operate several multi-purpose cargo terminals, including the Deep Water Quay, Laboratory Wharf and Magazine Wharf. VGT handles containers, trailers, break-bulk, vehicles and other cargoes, providing vital connections to Malta's road transport networks.

Recent investment has focused on upgrading berths such as Pinto Quays and Lascaris Wharf, developing new quay capacity, including a projected 335-metre quay, and executing the Ras Ħanżir project involving land reclamation and a 358-metre terminal and quay. Onshore Power Supply (OPS) has been installed on the northern side of the harbour, and planning is underway for a southern-side installation.

Although these works improve operational flexibility, the port still faces limitations in hinterland space, heritage constraints, and capacity bottlenecks at certain quays. Cruise facilities are operating near their limits and unitised cargo has the potential to reach full capacity by 2030. To address vulnerability to climate and weather events, especially storm surges, a programme of breakwaters and revetments near Fort St Elmo is being advanced.

Figure 4: The Port of Valletta (Grand Harbour) and Marsamxett Harbour

The Port of Marsaxlokk

Marsaxlokk hosts the container transhipment terminal and industrial storage facilities operated by Malta Freeport Terminals (MFT). Since its establishment in 1988, the Freeport has experienced remarkable growth and is now a major maritime transhipment logistics centre in the Mediterranean region. There are three main activities: two container terminals, the distripark facilities whose clients benefit from worldwide connections with around 100 ports and an excellent feeder service to over 50 Mediterranean ports, and an oil products terminal that plays a central role in energy supply and bunkering.

In addition to its container and petroleum functions, Marsaxlokk is also Malta's main fisheries harbour, accommodating around 70 per cent of the national fishing fleet. This makes the port significant not only for international trade but also for domestic food security and the livelihoods of coastal communities.

At the MFT, operations are underway to square off the West Quay of Terminal 1 (T1) and Terminal 2 (T2) in order to increase quay availability. Further works include the planned introduction of OPS to reduce emissions from berthed vessels. Key projects involve the extension of the North quay by 176 metres and the West quay by 195 metres, allowing the terminal to handle future LNG-powered mega-container ships with a capacity of up to 23,000 TEU. These upgrades are expected to increase quay throughput by approximately 300,000 TEU.

Operational challenges remain, particularly weather-related downtime which affects container and oil terminals, limited hinterland space, and environmental pressures linked to noise, light and air emissions. These are managed through an Environmental Monitoring Committee, stricter operational protocols, and investments in metocean monitoring systems. Together, these measures aim to maintain the competitiveness of the Freeport while ensuring greater resilience and environmental compliance.

Figure 5: The Port of Marsaxlokk and the Freeport

TEN-T Comprehensive Ports

The Port of Ċirkewwa

Ċirkewwa is the principal terminal on Malta for inter-island services to Gozo and forms part of the TEN-T Comprehensive network because of its role in sustaining internal connectivity rather than international trade. The terminal is the main point of departure for the Gozo Channel ferry service, carrying both passengers and vehicles. It also acts as a multimodal passenger interchange, with bus services timed to ferry schedules and free car-parking facilities that encourage “park-and-sail” travel.

As one of the country's two internal Ro-Ro ports, Ċirkewwa is a critical link for freight transport, ensuring the continuity of goods supply chains between Malta and Gozo. The service carries commercial vehicles, essential supplies, and construction materials, which are indispensable for Gozo's economy. While service frequency and vessel capacity on the Ċirkewwa–Mġarr corridor have improved over time, challenges remain. These include limited late-evening and night operations, road congestion on approaches to the terminal, and weather-related suspensions. Planned measures such improved passenger shelters, clearer wayfinding, and the addition of sheltered berthing would help strengthen resilience and reliability. Ċirkewwa's function is complemented by the fast ferry service operating from Grand Harbour to Mġarr, which provides an alternative for time-sensitive passenger travel. This service does not replace the essential Ro-Ro link, which remains critical for freight and vehicle movements, but it offers additional flexibility for commuters and visitors.

Figure 6: The Port of Ċirkewwa

The Port of Mġarr

Mġarr is Gozo's principal maritime gateway and the counterpart to Ċirkewwa in Malta. As part of the TEN-T Comprehensive network, it plays a vital role in sustaining the island's connectivity and economic resilience. The port handles the arrival of Gozo Channel Ro-Ro vessels carrying passengers, cars, freight and commercial vehicles, and also accommodates the fast ferry service to Valletta, which provides a direct link to Malta's main urban centre.

Beyond passenger mobility, Mġarr is indispensable for Gozo's supply chains, ensuring the regular movement of consumer goods, food products and essential supplies that support the island's daily life. The port also handles commercial vehicles and freight linked to economic activity on the island. In addition, it supports fishing and leisure craft, giving it a diverse economic function that extends beyond transport alone.

Recent improvements have included quay strengthening, dredging, and the reorganisation of marina pontoons to better allocate space between fishing, commercial and leisure uses. To relieve pressure on the immediate port area, a new multimodal hub ihas been developed inland at Ta' Xħajma in Xewkija, offering parking, charging facilities, and shuttle services to the harbour. Planned upgrades to the island's road network will also improve connectivity between Victoria, surrounding localities and the ferry terminal, further reducing congestion and improving access to the port.

Figure 7: The Port of Mġarr

Governance, Management and Decarbonisation of the Maritime Sector

The maritime industry intersects with numerous other sectors, but its size and complexity create challenges to managing it effectively. Fragmentation limits the industry's overall development potential and restricts the benefits that could be gained from optimal synchronisation. An example of fragmentation is the management of land, where there is a lack of coordination or a clear understanding of land and asset ownership.

In 2013, a document was published for public consultation with the aim of overseeing the effective implementation of an Integrated Maritime Policy and fostering the Maritime Economy at local, European, and international levels. This initiative brought together all stakeholders in the Maltese maritime industry with the goal of harnessing synergies and bolstering Malta's position as a significant international maritime hub. However, the current policy framework, which disperses the responsibility of maritime policy among various agencies, Non-Governmental Organisations (NGOs), and industry chambers poses challenges to these efforts.

The regulatory and operational aspects are managed by the Ministry for Transport, Infrastructure, and Public Works through its regulator, Transport Malta. This framework aims to increase government efficiency and operator effectiveness, leading to an improved customer experience. This integrated approach ensures that national policies are implemented effectively within various government departments and entities.

The role of the Authority is to oversee the maritime sector and harmonise the opportunities available, acting as a one-stop shop and first contact point for the maritime sector in Malta by providing necessary support services. The Authority facilitates coordination between relevant government departments to foster the development of the blue sector, simplifying interactions between private sector clusters, the public, and government authorities. The enforcement roles remain the responsibility of the respective entities.

The government has plans to expand the Digital Malta strategy to integrate e-Maritime solutions, which is aligned with the vision for business development in the maritime sector. This integration has the potential to unlock growth opportunities and enhance the performance of the blue economy. The aim is to facilitate efficient coordination and create a promotional platform for the maritime sector locally and internationally. By embracing the EU's e-Maritime initiative, Malta aims to adopt information technologies in the maritime transport sector, simplifying port processes and increasing efficiency. This move can reduce administrative burdens and ensure that marine vessels can operate freely within the EU internal market. In the past years, Malta has shown a positive stance towards EU initiatives such as the National Single Window, the e-Maritime initiative, and the Blue Belt project, aimed at streamlining processes and enhancing port efficiency.

The Malta Freeports Act regulates the activities at the Freeport Terminals to ensure the necessary legislative tools are in place for efficient operations and business growth.

Additionally, government is considering expanding the infrastructural facilities at the Port of Marsaxlokk in line with EU initiatives, such as the 'Motorways of the Seas' concept, the Blue Belt initiative, and the e-Maritime and e-freight initiatives. These initiatives aim to improve short-sea shipping connections, simplify administrative processes, and provide added-value logistics services.

Expanding the capacity of the Port of Marsaxlokk will create opportunities for new strategies to explore added value opportunities, and the government will seek to develop multimodal transport operations through the creation of an efficient and flexible network. In relation to this objective, the National Single Window has been developed to facilitate business-to-business information exchange, aiming to attract foreign direct investment in the logistics sector and improve Malta's ranking in the Global Logistics Performance Index.

Maintaining the security of Malta's ports

All ports in Malta are certified by the International Ship and Port Facility Security (ISPS). Transport Malta is responsible for ensuring the security of Malta's designated ports, including the Valletta Grand Harbour and Port of Marsaxlokk, as well as the general security of the country's marina areas.

The security operations are being streamlined with other functions within the Ports and Yachting Directorate in Transport Malta and further supported by the Armed Forces of Malta for monitoring offshore and coastal areas and the Police Force for carrying out port security operations.

To regulate port security, Malta adheres to Regulation (EC) No 725/2004[13] and Directive 2005/65/EC[14] which aim to enhance ship and port facility security. Over the years, Malta has maintained high port security standards and is committed to further enhancing safety practices through infrastructure investments and expertise development.

Decarbonisation of maritime transport

The decarbonisation of maritime transport remains one of the most pressing challenges for the shipping industry. The FuelEU Maritime Regulation[15] promotes the uptake of renewable and low-carbon fuels and the deployment of clean energy technologies on board vessels, forming a key pillar of the EU's maritime decarbonisation strategy. Complementing this, the extension of the EU Emissions Trading System (ETS) to maritime transport introduces a carbon pricing mechanism that applies to emissions from voyages within the EU and at berth. While this measure is intended to incentivise emissions reductions, it also presents significant operational and economic challenges for Malta's maritime sector.

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13 *Regulation (EC) No 725/2004 of the European Parliament and of the Council of 31 March 2004 on enhancing ship and port facility security*

14 *Directive 2005/65/EC of the European Parliament and of the Council of 26 October 2005 on enhancing port security*

15 *Regulation (EU) 2023/1805 of the European Parliament and of the Council of 13 September 2023 on the use of renewable and low-carbon fuels in maritime transport, and amending Directive 2009/16/EC.*

These include increased compliance costs for ship operators, risks of carbon leakage, and potential re-routing of transhipment traffic to non-EU ports in the Mediterranean. Malta has consistently raised concerns about the competitive disadvantage this may pose to EU ports, particularly in the context of its strategic reliance on transhipment. As such, the NECP and associated national strategies are being updated to reflect these developments, including the need for mitigation measures, infrastructure upgrades such as shore-side electricity, and support mechanisms for affected operators.

The global introduction of alternative fuels and new technologies are essential elements when considering the level of emission reductions that could be delivered within a set timeframe. OPS systems are particularly important in this regard, as they enable vessels at berth to switch off auxiliary engines and draw power directly from the grid, cutting emissions of CO_2, sulphur oxides and particulates in densely populated harbour areas. Shore-side electricity has already been installed at the northern side of Valletta's Grand Harbour, with works underway to extend it to the southern side, and similar investments are planned at Marsaxlokk to reduce emissions from container and petroleum terminals.

Maltese ports already welcome mega-carriers and cruise liners that run on Liquid Natural Gas (LNG), which is classified as a clean fuel because it does not emit soot, dust or particles and produces insignificant amounts of sulphur dioxide, mercury and other compounds considered harmful to the earth's atmosphere. These positive developments undertaken by responsible ship owners are complemented by continuous investment locally to ensure a more comprehensive green transition in the wider maritime industry. In order to accommodate these new generation mega-carriers, the Malta Freeport invested €20m in six new-technology MegaMax quay cranes, which, besides the necessary stacking capability, are more energy efficient and less noise polluting.

1.5.2 Internal Maritime Transport

A high-level summary of the SWOT analysis for internal maritime is presented below. This is then followed by a more detailed review of the current situation, covering domestic use of maritime transport for passenger and freight transport, limitations of Malta's internal maritime infrastructure and efforts to improve services.

INTERNAL MARITIME

Strengths

Reliable Ro-Ro services at Ċirkewwa and Mġarr ensure continuity of passenger and freight flows.

Interchange hub at each port with feeder and direct express services to serve ferry passengers between Gozo and Malta.

Fast ferry links between Valletta and Gozo provide direct access to the urban core.

Weaknesses

Although harbour ferry services are now free for Tallinja card holders, land-based public transport continues to challenge the government's efforts to reduce traffic flows at peak times by encouraging seaborne travel.

Space limitations that challenge the ability to provide additional quays.

The land connection from the Port of Ċirkewwa and the core urban areas around the Ports of Valletta and Marsamxett continues to challenge the end-to-end journey times for commuters between the islands.

Limited operational hours and unforeseeable inclement weather discourage modal shift and use of the ferry services.

Opportunities

The water taxi market will need to be assessed in more detail, noting the relevance and requirement of a network of landing places, which is currently being studied under a different project.

Expansion of inner-harbour ferry routes and new landing sites.

Threats

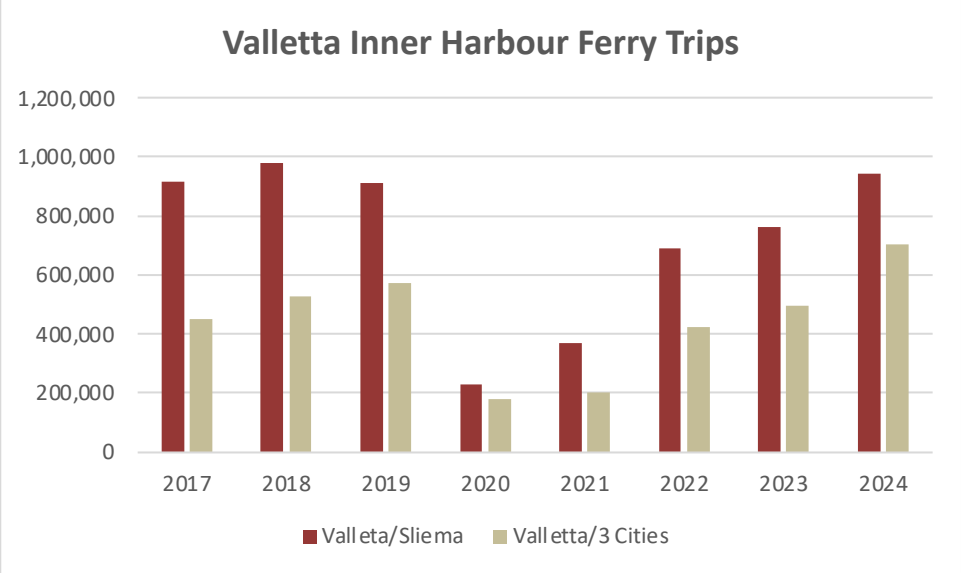
Sudden short influxes of demand place significant pressure on the infrastructure at the ports and their approaches in the Ċirkewwa and Mġarr ports.

Climate change poses risks of rising sea levels and more frequent extreme weather events, making internal maritime transport services and supporting infrastructure increasingly vulnerable to disruption.

Utilisation of internal maritime transport services

Although the improvement of higher capacity vessels in 2014 resulted in increased utilisation of harbour ferry services compared to previous years, the service remains underutilised by commuters and is mainly used by tourists. Indeed, following the COVID-19 pandemic, use of the service is recovering at a slower rate than land-based public transport. The introduction of free bus travel before free ferry travel was introduced in January 2024 is likely to have contributed to this trend. Between January and November 2024, over 1.5 million passenger trips were made using the harbour ferry service.

Figure 8: Inner Harbour Ferry Trip Patronage 2017-2024



There is new interest in using Water Taxis in the Valletta harbour area. Discussions are being held to reassess this market and create another market promoting another form of multimodal transport, similar to the success of various private land-based on the call taxi operators. This market will need to be assessed in more detail, noting the relevance and requirement of a network of landing places, which is currently being studied under a different project.

While tourism forecasts indicate long-term growth and, therefore, an opportunity for internal maritime transport, buoyant flows at off-peak times are likely to challenge these transport links. However, the revenues generated by these trips could support the service provision for commuter trips in the morning and evening transport peak hours.

The Malta-Gozo service has been registering year-on-year growth in passengers and vehicles. The pricing strategy of the ferry, supported by free car parking at the Ports of Ċirkewwa and Mġarr, encourages travellers to leave their vehicle behind and travel to the other island by public transport. This is complemented by an interchange hub at each port with feeder and direct express services to serve ferry passengers. However, the land connection from the Port of Ċirkewwa and the core urban areas around the Ports of Valletta and Marsamxett continues to challenge the end-to-end journey times for commuters between the islands. A fast ferry passenger service between the Grand Harbour in Valletta and the Mġarr Harbour in Gozo was introduced in 2021, which created a direct link between Gozo and Malta's principal urban area.

Transport of freight between the two islands has also been characterised by positive trends during recent years. However, systems for inter-island demand management to spread peak demand (pricing mechanism or booking mechanisms) have not yet been implemented. Sudden short influxes of demand place significant pressure on the infrastructure at the ports and their approaches.

Limitations of Malta's internal maritime infrastructure

From a supply perspective, the capacity of Malta's internal ports is restricted by space limitations that challenge the ability to provide additional quays rather than limitations of the terminals themselves.

The Port of Ċirkewwa is equipped with three quays on the North side and one quay on the South. In effect, the North Quay is mainly used for daily operations. During inclement weather from the North/East, operations switch to the South Terminal. This provides the operator with operational quays to mitigate weather and thus maintain the service. The South Terminal, known as South Quay, requires immediate attention in terms of maintenance and regeneration.

At peak times, vehicles travelling between the islands spill over and occupy the road while waiting to board due to insufficient landside space for marshalling.

The situation at the Marsamxett ferry landing place in Valletta is different; capacity is not limited due to the lack of space, but is limited by inadequate facilities (shelters and seats) for the passenger service. The same holds for the fast ferry service linking the port of Valletta and the port of Mġarr, Gozo, on the port of Valletta side.

The role played by the domestic ferry service linking the capital city of Valletta to Sliema and Three Cities has proved its worth, with high demand. Still, it may be restrictive due to the limited operational hours and unforeseeable inclement weather during the winter months, which may discourage use, as the final trip may be too early for some commuters. This service has recently been made free of charge for Tallinja cardholders.

Securing funding for the routine upkeep of infrastructure continues to pose a significant hurdle for Malta's internal ports. This issue is especially pronounced at the Ċirkewwa port, which is frequently subjected to severe weather conditions, including potent winds and sea currents. In the Port of Mġarr, there is an urgent need to enhance preventive maintenance measures, including the management of fenders. Recent efforts at the port have encompassed maintenance dredging, quay upgrades, and a reorganisation of the marina pontoons allocated for fishing and commercial vessels. Prioritising preventative maintenance is of utmost importance.

Finally, the inadequacy of facilities at the landing places in Comino is challenged by the environmental sensitivities of the area. However, safer infrastructure is needed to enable more resilient transport links.

Improvements in internal maritime services and infrastructure

The investment in Malta's inner-harbour vessels has been complemented with appropriately configured landing places that facilitate their optimal turnaround. Modern and improved ferry landing places have been established at Cospicua and Sliema, significantly reducing berthing time and overall journey duration. These upgraded landing sites are expected to boost the appeal and usage of sea transportation among the general public, particularly for travel between the major cities around the Grand Harbour and the Port of Marsamxett. This enhancement is anticipated to extend even further once the Harbour Ferry Service expands to additional locations across the island, such as Buġibba.

Figure 9: Inner Harbour Ferry Routes

The Harbour Ferry serves as a crucial component of a multimodal passenger transport system which also successfully integrates buses and lifts. The objective of such systems is to streamline the overall transportation process by leveraging the strengths of each mode and compensating for their limitations. Multimodal systems can mitigate environmental impact by optimising transportation routes and modes through more efficient resource use.

Discussions are underway regarding new intra-island links and landing places within harbours and around the island, with the commercial and physical feasibility of these currently under review. Establishing additional landing places near land-side public transport could further improve intermodal mobility and enhance the efficiency of non-road transport systems in the harbour regions. Infrastructural investment is ongoing to develop a new ferry landing site in Buġibba. The aim is to provide an additional ferry service within the Islands as an extension to the current Harbour ferry service.

Numerous improvements were implemented in 2020 and 2021 as part of the Mġarr Port and Marina projects in Gozo. These include the reconstruction of a slipway and quays, port cleaning, the installation of several demountable pontoon systems, and the addition of new facilities for the removal and separation of fishing waste. Consideration is also being given to a project to expand the port.

1.5.3 External Maritime Transport

Below is a high-level summary of the SWOT analysis for external maritime transport. This is followed by a more detailed review of the current situation, covering the importance of this sector, operations and maintenance activities, efforts to maintain and improve safety at ports, and the limitations of existing infrastructure.

EXTERNAL MARITIME

Strengths

Malta's location positions it as a hub for transhipment, cruise, petroleum, and bunkering services.

Significant private investment in Freeport and Valletta facilities has enhanced operational capacity.

Designated bunkering zones with established business networks and strong reputation.

Environmental Monitoring Committee helps address local community concerns.

EXTERNAL MARITIME

Congestion and capacity constraints in cruise and unitised cargo operations, particularly in Valletta.

Lack of logistics centres and limited hinterland space reduces operational efficiency
High dependence on external demand cycles exposes operations to volatility.

Opportunities

Valletta Grand Harbour Waterfront Strategic Plan to reorganise and optimise port activities.

Diversification into green bunkering and alternative fuel operations to attract new markets.

Threats

Vulnerability to external shocks such as pandemics, geopolitical crises, and global supply chain disruption.

Potential carbon leakage and traffic diversion linked to the EU ETS.

Demand analyses have shown that freight and passenger movements can be complex to forecast due to various external factors such as the COVID-19 pandemic, the Red Sea crisis and the war in Ukraine.

The importance of external maritime transport in Malta

External maritime transport plays a crucial role in ensuring a secure supply of energy, food, and commodities and is the primary means for importing and exporting goods in Europe. In Malta, the maritime sector has been a driving force behind economic development and prosperity. The Port of Valletta and the Port of Marsaxlokk are the two primary ports, which are core ports in the TEN-T Network. Over 99% of all goods that enter or leave Malta pass through these ports which anchor Malta's role as a regional logistics hub.

The Port of Valletta is a natural deep-water harbour in the Mediterranean, and it provides a range of maritime services, including cargo berths, cruise liner/ferry terminals, specialised grain and cement silos, petroleum installations, bunkering facilities, ship repair and building yards, as well as warehousing and open storage facilities. Although container facilities are available, they are mainly located at Laboratory Wharf, operated by VGT.

The Port of Marsaxlokk, on the south-eastern coast, accommodates several major operators, including the MFT, petroleum storage facilities and the Delimara power station. It also serves as the base port for the majority of the Maltese fishing fleet. The Freeport has grown into one of the Mediterranean's leading trans-shipment hubs, though it is now operating close to capacity, highlighting the need for careful management and future expansion.

Petroleum product trans-shipment is another essential economic activity in Malta, taking place at various berths in the port of Marsaxlokk. Malta's strategic location has historically attracted international traders to use its storage and handling facilities, such as oil tanking, to supply petroleum products to customers in North Africa and the Middle East. Malta has established an excellent reputation as a reliable and efficient partner in the international market. While Malta's strategic location is a key strength, demand analyses have shown that freight and passenger movements can be complex to forecast due to various external factors such as the COVID-19 pandemic, the Red Sea crisis and the war in Ukraine. While the ETS had a desirable impact on the environment, it also resulted in some rerouting of trans-shipment to non-EU ports in the Mediterranean.

Bunkering is yet another economic activity that has experienced significant growth in Malta. Bunker operations occur primarily onboard vessels via a bunker barge and road tankers, which supply fuel or oils to larger vessels. Local suppliers maintain business relationships with various European bunkering brokers operating in the Mediterranean, supplying all types of vessels, including cruise liners and tankers. Designated bunkering zones have been established to create the right conditions for this business activity to flourish. It is crucial to note that bunkering procedures must include adequate preventive measures to minimise environmental pollution and mitigate the risks associated with oil spills.

External Maritime - Operations

The Port of Marsaxlokk, which is located at the southernmost point on the Scandinavian-Mediterranean Core network Corridor, provides container trans-shipment facilities and handles around 3 million TEUs per annum. In the last 20 years, the operating company MFT has invested over €320 million to boost the efficiency and environmental standards of port operations by enhancing the Freeport's capability to accommodate 23,000 TEU container vessels, by increasing the capacity for container stacking to allow for faster vessel turnaround times and, more recently, by planning an Onshore Power Supply system that will provide clean energy to vessels berthed at the Freeport.

Goods handling is a complex process that necessitates considerable warehousing space. However, the absence of logistics centres and warehousing activities within the confined port area leads to operational congestion. A previous ECORYS (2007) study underscored the need for a logistics centre with warehousing facilities, ideally situated between Valletta and Marsaxlokk. Such a centre would alleviate space constraints at the ports and enhance their capacity.

External Maritime – Maintenance

In terms of costs and maintenance, information on operational expenditures and the quality of routine and extraordinary works is limited, as many concessionaires treat such data as confidential. This lack of transparency complicates long-term policy and investment decisions, underscoring the need for a comprehensive economic overview. Clearer information would also help the government ensure more efficient management and prioritisation of maintenance works.

Major dredging and renovation projects are ongoing across Malta. At Marsaxlokk, the Freeport Corporation has carried out quay upgrades, although further works such as improvements to the quay wall between Terminals 1 and 2 remain necessary to increase throughput. Weather-related challenges persist, with the container terminal facing downtime of around ten days annually due to high winds and the oil terminal around 22 days due to rough seas. Monitoring of wave climate has been enhanced with new weather stations, while noise and light impacts remain under review. An Environmental Monitoring Committee, bringing together ERA, TM, Freeport operators, the local council and NGOs, plays an important role in addressing residents' concerns.

In Valletta, limited land and quay space continue to constrain growth, but investment opportunities remain. Facilities such as Fuel Wharf, Magazine Wharf, Ras Ħanżir and the Southwest Extension require continued upgrades to keep Malta's external cargo links competitive. The Deep Water Quay, catering to both cargo and passengers, also requires further investment. The outer section of the Grand Harbour has become a growth area for passenger services, with the introduction of fast ferry connections to Gozo, and there is scope for further expansion in volumes and new routes.

Resilience of the External Maritime Sector

Resilience is another pressing challenge. Climate change and forecast growth increase the risk of bottlenecks, making the refurbishment of harbour breakwaters essential. In Valletta, planning and technical studies are underway for a new breakwater, berm and revetments at Fort St Elmo to improve safety and climate resilience.

Capacity pressures at Malta's two core ports also have direct consequences for daily operations. In the Port of Valletta, the facilities for cruise liners reached capacity in 2014, while those for unitised cargo are expected to reach capacity in 2030. This is due in part to a number of factors, including the required extensive upgrade of Deep-Water Quay, which will restore the current capacity from 50% back to 100%. However, the limited availability of rail superstructures-cranes at Laboratory Wharf and the general lack of hinterland space for freight handling operations are also factors. On the passenger side, the potential volatility of the cruise liner business also hinders investment in long-term infrastructure. In 2024, the ship-to-shore project was completed, which aims to provide shore-side electricity to cruise vessels, thereby allowing them to switch off their engines and use shore-side power when berthed at port.

Indeed, one of the most notable challenges at the Port of Valletta is the scarcity of land-side space near the quays and the existence of historic structures. While representing a valuable heritage that needs preservation, these structures also pose physical limitations to the much-needed development of port infrastructures. Many of the quays, dating back to the 1500s, have configurations that do not align with the modern requirements of maritime transport at the port. At the Port of Valletta, warehousing and related operations on the surrounding roads frequently lead to temporary congestion. This congestion intensifies during peak cruise days, creating bottlenecks due to high demand and competing operations. Additionally, the sporadic dredging of the port's inner part could lead to environmental and archaeological concerns if undertaken for capacity enhancement.

To address these challenges, the 2021 Valletta Grand Harbour Waterfront Strategic Plan set out a framework to rationalise activities, expand passenger capacity, and integrate port development with the surrounding urban and heritage fabric. Careful sequencing of works will be required to ensure that regeneration projects strengthen operations without causing disruption.

At Marsaxlokk, MFThas led to a rapid growth in containerised traffic using the port of Marsaxlokk. However, their functionality is currently limited due to insufficient facilities to manage the existing demand. MFT signed an agreement with the Government in April 2023 that will allow the expansion of facilities at the Port of Marsaxlokk. This agreement will allow larger ships to berth while reducing noise nuisance for nearby residents.

1.6 AIRPORTS AND AVIATION

Air transport is one of the key transport sectors linking Malta to the rest of the world, together with the "external" maritime transport. The aviation industry plays a crucial role in Malta's economy, contributing around €600 million through direct, indirect, and induced aviation activities, with over 5,500 people employed in the sector. In addition to this, air travel contributes strongly to the tourism industry in Malta, as well as providing Malta's burgeoning services businesses with efficient links across Europe and via hubs to the rest of the world.

A high-level summary of the SWOT analysis for airports and aviation is presented below. This is then followed by a more detailed review of the current situation, covering the importance of this sector, passenger and cargo movements, governance of the sector and efforts to decarbonise fuels.

AIRPORTS AND AVIATION

Strengths

The aviation sector has not only recovered from the COVID-19 crisis but is also experiencing even higher passenger and freight movements than before the Pandemic.

An ambitious six-year infrastructure investment programme totalling €250 million has been announced by Malta International Airport (MIA).

Weaknesses

The lack of space in the aerodrome limits airport expansion and creates encroachment and conflicts by non-aviation interests.

Opportunities

The Apron X project, currently underway, will improve capacity for various aircraft sizes and provide improved manoeuvring for wide-bodied craft.

Creating an airstrip in another area of the country for short take-off and landing (STOL) craft would reduce operational conflicts at MIA and serve as a testbed for research and innovation in the aviation sector.

Threats

MIA has only one terminal, which has almost reached operational capacity.

The MIA aerodrome is not only reserved for civil aviation but is also shared by general aviation, thus resulting in conflicts and safety risks.

There is a threat to future expansion of the capacity of the airport and the promotion of aviation activities as a result of competing demands for the land around the periphery.

1.6.1 Infrastructure and Operations

Malta International Airport (MIA)

The Republic of Malta is served by one international airport (MIA), providing the main gateway for people's movements to and from abroad. MIA has one passenger terminal, which has almost reached its maximum capacity. In 2023, the MIA unveiled an ambitious six-year investment programme totalling €250 million. The three-pillared programme will allow the MIA to operate more efficiently and safely, whilst reaching its environmental targets and continuing to develop the airport campus.

To alleviate this capacity issue, the MIA Masterplan commits a €40m investment to the Apron X project. Situated between Aprons 8 and 9, the new Apron X will encompass an area of 100,000 sq. metres and offer additional parking spaces for 7x Code C and 4x Code E/F aircraft. This would provide unrestricted operations for wide-bodied aircraft, thus alleviating capacity issues for mixed-fleet operations during peak periods and meeting growing demand over the next 15 years. Moreover, the new Apron X project also includes the construction of new ground handling and support infrastructure, thus improving and centralising ground handling operations.

Unfortunately, there is a lack of space within the aerodrome and little room for expansion as MIA boundaries are encroached upon by non-aeronautical business interests. This impacts airport operation, especially due to the existing physical constraints of the areas surrounding the airport, including the road network.

Various aeronautical interests may impede each other's operations even within the aerodrome itself. The use of a strategic TEN-T airport by general aviation is not without risk. Any accident on the runway by a recreational aircraft would delay commercial airlines and impede access to Malta by air. This could potentially be alleviated by the construction of airfield for STOL aircraft elsewhere in Malta.

Passenger movements

The COVID-19 pandemic posed unprecedented challenges to the global aviation industry between 2020 and 2022, and Malta was no different, with closed borders, quarantine restrictions, and depressed travel demand. However, the industry has shown resilience and has not only recovered but, in many cases, exceeded pre-pandemic conditions. Aircraft movements in 2024 were back up to 58,773; 13.2% higher than 2019 totals, up from lows of 18,982 in 2020 and 24,516 in 2021[18].

[16] *Malta Airport Business Report 2025 - https://www.maltairport.com/wp-content/uploads/2025/04/MIA25-AR-Book-Financials-WebVersion.pdf*

Passenger movements grew to 9 million annually in 2024, compared to 7.3 million in 2019, equating to 22.5% higher than pre-pandemic figures.[17] Most movements came from low-cost carriers (64%), followed by 34% from flag carriers. Chartered carriers made up 2% of passenger movements. From the demand point of view, the main markets for passenger air traffic in 2023 were Italy (23%), the United Kingdom (19%), Germany (9%), France (7%) and Poland (6%). Passenger demand has increased steadily in recent years, albeit with some problematic political tensions just south of Malta. Even with this growth in passenger numbers, overall satisfaction levels remain high and above the European airport average and the average for the airport size category of 5 to 15 million. A key contributor to this was the strong performance of the indicators, including waiting time, courtesy of the airport security staff, terminal cleanliness, ease of making connections, and the availability of washrooms. In 2021, Malta International Airport also became the first airport in Europe to reach the Airports Council International MIA's Airport Customer Experience Accreditation Level 3, an accreditation renewed in 2023. In addition, the MIA has won the Airports Council International's 'Best Airport in Europe Award' (5-10 million passengers) for its performance every year from 2019-2024.

Freight (cargo) movements

Freight movements have followed a similar, albeit less extreme, trend of decline and recovery as a result of the COVID-19 pandemic. In 2024, cargo movements reached 23.6 million kilos, up from 17 million in 2020 and 16 million in 2021. These figures are even higher than pre-pandemic levels (18.5 million kilos). To support the continued growth of cargo operations, MIA launched the Cargo Village expansion project in 2018, and the initial construction of a new warehouse was finalised in early 2023. Going forward, there is an opportunity for this space to be made available for lease to logistics and shipping companies.

MIA is strategically positioned close to Malta Freeport, one of Europe's busiest container ports. While this presents a possible opportunity to turn Malta into a leading air-sea cargo hub, this requires the removal of legal, bureaucratic, and physical hurdles. Nonetheless, there is undoubtedly scope to explore the feasibility of improving the intermodality of freight operations in Malta.

Other aviation services

The Air Navigation Service Provider, Malta Air Traffic Services Ltd, provides good-quality navigation services to both aircraft overflying Malta and those landing in Malta. No other domestic air transport exists apart from flights involved in training, aerial photography, surveys, and similar activities.

[17] *Malta Airport Business Report 2025 - https://www.maltairport.com/wp-content/uploads/2024/04/Business-Report-2023.pdf*

1.6.2 Governance and plans for development

Malta's Civil Aviation Policy: Prioritising Sustainability and Growth

The Maltese government's goal is to achieve sustainable growth in the aviation sector by finding a balance between economic, social, and environmental factors as set out in the Civil Aviation Policy (2023-2030) five strategic pillars: capacity building, economic benefits, stakeholder collaboration, legal and regulatory compliance, and sustainability targets. This will involve creating opportunities that generate high-quality employment while improving Malta's global aviation industry position.

The aviation sector has contributed to Malta's economic growth in recent years, and it is now essential to further strengthen it to consolidate its contribution to the economy, create wealth and employment opportunities, and promote high-value-added employment opportunities. The civil aviation policy aims to explore opportunities to synergise aviation with other sectoral policies, such as tourism, and promote emerging niches, such as digitalisation and drones. The policy also looks to enhance connectivity by increasing flight points and promoting business development and foreign direct investment. It also seeks to ensure that air passenger rights are protected under EU legislation. Malta's focus on stakeholder collaboration aims to create synergy among aviation stakeholders to promote connectivity, increase flight points, and facilitate business development and foreign direct investment while complying with EU legislation.

For Malta's aviation ecosystem to progress, it is crucial to establish an efficient and effective legal and regulatory framework that aligns with international, regional, and national aviation law.

This framework should protect the State's interests and policies as well as the interests of aviation undertakings and individual consumers. On 1 January 2024, the Air Navigation Act came into force, which reflects Malta's commitment to maintaining a robust and comprehensive framework to support its growing aviation sector, ensuring alignment with international standards and best practices.

To support this, Malta's civil aviation policy identifies the need for investment in technical and professional training, research, and innovation to create a cyber-resilient aviation sector, improve governance functionality and efficiency, and increase aviation safety and security. Capacity-building is an integral part of the policy, as it seeks to enhance Malta's ability to survive, innovate, adapt, and prosper in the rapidly changing aviation industry.

The regulatory responsibilities of air transport lie within the MTIP, through which the Transport Authority for Malta, mainly the Civil Aviation Directorate (CAD), is the regulator; passenger and freight terminal operations and maintenance are part of the concession agreement with the Malta International Airport plc (regulated by Transport Malta). Some spaces in the airport boundary fall within the responsibility of Malta Enterprise or INDIS Malta. This complex policy and responsibility framework has scope to be simplified.

For the aviation sector to effectively respond to challenges and opportunities, there is an Aviation Advisory Committee (AAC), representing the Ministry responsible for aviation, that facilitates the coordination and supports the work of all public entities involved in the aviation sector. This should ensure the sector's long-term success. Additionally, responsible entities conduct surveillance and periodic reviews of stakeholders' operations and infrastructure to ensure compliance with national regulations and international standards.

Malta has been developing a research and innovation capacity in the aeronautical sector, and the opportunities arising from these technologies are expected to support the increased efficiency and effectiveness of aviation.

The limitation of air transport to having only one airport is considered a challenge that needs to be carefully managed to safeguard the efficient and effective mobility to and from Malta, especially by passengers. The capacity of the runways and aprons is not always readily available, making estimates of the ability of the runways to cope with future demand difficult at best.

There is increased pressure for the intensification of land use development within the Public Safety Zones on the critical runway approaches to the airports. This increases third-party risks for people in the vicinity of the airport to be involved in an aircraft accident or incident.

The possibility of an air connection to Gozo was the target of a Regional Impact Assessment in 2022. The construction of an airfield in Gozo has several advantages, including alleviating the island's double-insularity, providing a dedicated site for General Aviation, and providing a testbed for the development of eVTOL (electric vertical take-off and landing) services and technology.

Decarbonisation of the aviation sector

International aviation plays a key contributory role in GHG emissions from the transport sector and falls within the scope of the ETS. In the coming years, it must adapt accordingly to ensure that economic growth does not come at the expense of the environment and climate change.

GHG emissions from the aviation sector have increased since the early 1990s at the EU and global levels and are expected to grow further by 2050. In the EU, EFTA, and the UK, emissions increased 119% from 1990 to 2018 and 23% between 2005 and 2018. By 2050, they are expected to increase by a further 27% compared to 2005.

There are increasing global and European-scale efforts to accelerate the decarbonisation of the aviation sector to meet ambitious climate targets for 2030 and 2050. To encourage further GHG reductions from the aviation sector, in 2023, the European Parliament agreed to amend the ETS Directive (Directive 2003/87/EC) covering intra-EEA flights and flights to and from Switzerland and the United Kingdom and integrating with CORSIA to cover extra-EEA emissions from aviation. Free EU ETS emissions allowances for the sector will be phased out from 2024.[18] In addition, the European Commission is proposing a revision of the Energy Taxation Directive (currently Council Directive 2003/96/EC of 27 October 2003) to establish a minimum tax on fossil kerosene for intra-EU passenger flights.

[18] *https://www.europarl.europa.eu/RegData/etudes/ATAG/2023/745712/EPRS_ATA(2023)745712_EN.pdf*

Sustainable Aviation Fuels (SAF) have the potential to contribute significantly to GHG reduction targets. To improve the market for SAF and promote uptake of SAF, the European Commission has proposed, via the RefuelEU Aviation initiative, a target for renewable fuels in aviation to be introduced via a blending mandate requiring the minimum proportion of SAF in aviation fuel to be increased every 5 years from 5% of SAF in 2025 to 63% by 2050. EU airports are also required to supply the necessary infrastructure for the storage and blending of SAF to enable both fuel suppliers and airlines to meet their commitments. There are also provisions to tackle fuel tankering problems.

In addition, the new EU Regulation on the deployment of alternative fuels infrastructure has set targets for supplying electricity to stationary aircraft, which must be implemented in Malta.

Malta aims to provide SAF and blending mandates in line with EU-level regulations, incorporate renewable energy in airport operations, and prioritise flight efficiency by operators and navigation service providers.

The government maintains active communication with MIA to monitor adherence to EU regulations on decarbonisation. In 2024, MIA published its Net Carbon Zero Plan, which outlines a roadmap to reduce greenhouse gas emissions from its terminal operations by 65% by 2030, with the goal of achieving carbon neutrality by 2050. This plan focuses on building-related interventions, including the installation of photovoltaic systems, electrification of remote stands, and a suite of energy efficiency upgrades targeting lighting, Heating, Ventilation, and Air Conditioning systems, and overall building performance. These measures align with national objectives under the NECP and contribute to Malta's efforts towards the EU climate target, including emissions generated by buildings.

1.7 MULTIMODAL TRANSPORT

A high-level summary of the SWOT analysis for multimodal transport is presented below. This is then followed by a more detailed review of the current situation, covering its importance to a sustainable and efficient transport system, freight and passenger multimodal transport in Malta, the importance of technology to facilitate multimodal travel, and the required improvements to encourage multimodal travel.

MULTIMODAL TRANSPORT

Strengths

The Tallinja App provides real-time information about the bus service and can be used to plan and pay for journeys and book on-demand services.

Free public transport is available to all personalised Tallinja card holders. This includes all scheduled bus routes as well as ferry crossings between Sliema and Valletta and Valletta and Bormla.

Weaknesses

The use of private cars is still widespread and remains the predominant mode of transport.

Limited data is available on freight movement patterns across the Maltese islands.

Opportunities

Maltese multimodal transport may benefit from additional multimodal transport hubs to increase the efficiency of the transport network.

The Tallinja app is focused on bus travel and does not fully integrate other modes of transport yet.

With the development of new active mobility routes, it is also important that cycling, walking and micromobility are included in journey planners, including information on bicycle and scooter infrastructure at public transportation hubs and clear guidance regarding bicycle carriage on public transport.

Threats

The underutilisation of the P&R could lead policymakers to underestimate the potential for the development of multimodal hubs.

Importance of multimodal transport

Multimodal transport refers to the movement of people or freight using more than one mode of transport. However, it can also be used to describe journeys that involve a different carrier operating each leg of the journey. In the transport of goods, the term intermodal is also used and refers to multimodal transport in which the goods involved are not directly handled[19]. These two terms are often used interchangeably, but this document only refers to multimodal transport.

Multimodality is a fundamental part of any sustainable and efficient transport system and is facilitated by the deployment of suitable transport services, interchange infrastructure and systems that effectively integrate different modes and transport operators/carriers. As a cross-cutting transport topic, some of the points discussed below may have already been discussed under respective modal sections.

Multimodal transport of freight

International multimodal transport for freight is only provided at the main cargo terminals for both ports and the airport; however, no direct sea-air interchange exists. Limited data on freight movement patterns across the Maltese islands is available, which makes it challenging to analyse and suggest potential policy options to improve the use of maritime transport to move freight between the islands.

Multimodal transport for passengers

There are several examples of multimodal passenger travel in practice across Malta. Park & Ride hubs aim to facilitate the combined use of private and public road transport. The Floriana Park & Ride is functioning well, and there is good demand for the minivan shuttle service to Valletta. However, Marsa is mainly being used to park cars, while Pembroke is not being used as planned.

Multimodal transport involving domestic ferries and buses is being supported by interchanges at the quaysides in Cospicua, Lascaris, Marsamxett, and Sliema. The GHRC is installing another lift at Marsamxett Landing Place (similar to the one in the Valletta landing site) to improve accessibility, but in general the landside connectivity at landing sites can be improved. This new lift will take passengers up to Piazza Mattia Preti, Valletta.

The Harbour Ferry is an integral part of a multimodal transport system involving the use of multiple modes of transportation, in this case, ferries, buses and a lift. The aim of multimodal systems is to optimise the overall transportation process by taking advantage of the strengths of each mode while compensating for their respective limitations. By optimising transportation routes and modes, multimodal systems can contribute to reduced environmental impact through more efficient resource utilisation. Inter-island multimodal transport is also supported at the Mġarr and Ċirkewwa ports.

[19] *Eurostat 2019: Glossary for Transport Statistics (5th Edition)*

The main international transport terminals facilitate multimodal travel for passengers arriving from overseas. Passenger terminals at the Port of Valletta and the MIA represent interchanges that connect maritime and aviation with land public transport. Furthermore, the airport and International Cruise Terminal are connected, although the transfer is indirect via the Main Bus Terminus in Valletta. Private tourist taxi services are also available.

Required improvements and opportunities to encourage multimodal travel

There is considerable opportunity to improve travel cards and travel applications in Malta through more accurate and synchronised timetables and incorporating additional modes. With the development of new active mobility routes, it is also important that cycling, walking, and micro mobility are included in journey planners, including information on bicycle and scooter infrastructure at public transportation hubs and clear guidance regarding bicycle carriage on public transport.

While a number of ferry landing places have been upgraded and customer experience enhanced, others still need to be improved in terms of accessibility, which would, in turn, encourage the use of alternative modes of transport beyond road transport. As far as the general level of functionality is concerned, Maltese multimodal transport may benefit from additional multimodal transport hubs to increase the efficiency of the transport network as well as better integration of ferry transport with journey planners.

Harnessing technology to support multimodal passenger transport in Malta

An integral feature of multimodal travel is the ability to plan and pay for journeys and access reliable, real-time information to support a seamless user experience. Currently, in Malta, the main application that facilitates multimodal travel is provided by the public transport operator. While extremely useful, the app is focused on bus travel and has not yet fully integrated other modes of transport.

The Tallinja App provides real-time information about the bus service and can be used to plan and pay for journeys and book on-demand services. Various Tallinja cards are available for visitors to Malta that provide unlimited travel on bus services. Both cards can be used for the bus and ferry services and the Valletta lift. It can be integrated with other transport modes to make it a multi-modal journey app. Malta now has a National Access Point, which facilitates the access, exchange, and reuse of transport-related data and is working to ensure that other modes are included as per EU regulations.[20]

[20] *Delegated Regulation (EU) 2017/1926 and its revision 2024/490 establishes the obligation for EU Member States to provide multimodal travel information services to end users covering a variety of travel modes via their National Access Point (NAP)*

2

Defining the operational objectives

2.1 Process followed to set the operational objectives and to identify the measures

The six Strategic Goals and the eight Guiding Principles in the National Transport Strategy 2050 remain relevant for developing the different transport sectors over the longer term.

The SWOT analysis outlined in the previous Chapter objectively identifies the Strengths, Weaknesses, Opportunities and Threats currently facing each of the transport sectors in Malta, taking into account significant socio-economic, environmental and demographic developments that have an impact on transport and mobility.

2.1.1 Operational Objectives

In determining the Operational Objectives, an "issues-oriented" approach has again been adopted. This approach has involved the exhaustive qualitative identification of problems and issues facing each transport sector, which has been based on the invaluable input of various internal and external actors who are directly or indirectly involved in the operation, regulation, planning and management of the different transport sectors. This was followed by an extensive analysis and quantification (where possible) of the extent of these problems today and in the future, should Malta adopt a 'business as usual' approach.

Having different actors involved gives rise to different perspectives on the nature and extent of the problems and issues facing each transport sector and diverging views on the possible solutions needed to tackle these problems and issues. Sometimes, views are conflicting, and often, solutions overlap. At its mid-term, a review was carried out on the current NTM 2025 to ascertain the status of implementation contained in that plan. 58% of the measures were completed or were in the process of being completed. Several measures were being planned to be implemented, and in the case of certain measures, a decision was made not to proceed with the implementation because of changing needs. The mid-term review, combined with the National Transport Travel Survey in 2021, also provided the opportunity to take stock of measure implementation and identify the challenges facing the country in achieving the strategic goals set out in the vision for 2050 in the national transport strategy.

During the period of 2022 and 2023, the Ministry for Transport, Infrastructure and Public Works and Transport Malta embarked on an extensive public consultation on the key themes with the support of Ricardo, a global consultancy firm specialising in strategic, environmental and engineering solutions related to transport, energy and global climate. National conferences, stakeholder workshops, and an attitudinal survey, with a thematic focus on the main transport issues facing Malta were undertaken. The "issues-oriented" approach to developing the Operational Objectives has been based on the following logical framework process.

The measures include studies, works (infrastructural interventions), operational improvements, and policy, regulatory, and any institutional changes needed to achieve each Operational Objective. The second part of this chapter describes these in detail.

2.1.2 Modelling Framework

As part of the review of the national transport master plan, a new modelling exercise utilising the NTM has been undertaken based on the same modelling framework adopted in past transport master plans. While other methods are used to estimate travel demand in urban areas, travel demand forecasting and modelling remain decisive tools in analysing transportation plans, projects, and policies. Modelling results are valuable for individuals making transportation decisions and for analysts supporting the decision-making process. These results aid in system and facility design, operations, and the development of transportation policy

Years of experimentation and development have resulted in a general structure called the classic transport model, commonly referred to as the Four-Stage Model. Four-stage models are built on a sequential process of four distinct steps for estimating transportation demand, namely: trip generation, distribution, modal split and assignment. Four-stage transport models have been widely used in transport planning since the 1960s, following their institutionalisation through early urban planning legislation. They remain a foundational tool for forecasting travel demand and informing infrastructure decisions. Modelling software has, on the other hand, changed drastically with advances in computer technology.

In summary, the analytical approach used in the four-stage transport model for Malta first considered the extent of the study area and defining the multimodal network operating within that study area i.e. road network, public transport network and internal maritime connections (supply side).

The transport sector is highly dynamic, and over the years, the NTM has been periodically updated to accurately represent Malta's transport network and system. Of particular importance is the updating of the model with the latest travel demand and supply data. In the latest version of the NTM, extensive travel and traffic surveys were carried out in 2021 and 2022, and Malta's transport network was updated with new infrastructure and services that have been implemented. This includes changes to the road network as well as changes to land-based and sea-based public transport networks. In addition, throughout successive updates, the NTM has also been improved and perfected and is now more accurate than earlier versions.

2.2 STRATEGIC PLANNING POLICY AND FRAMEWORK

2.2.1 Put in place and maintain a strategic framework for the integrated, long-term planning and design of Malta's transport network

Issues

This objective remains a priority to ensure strategic long-term planning in Malta when it comes to transport planning and policy. Long-term planning based on solid analysis with clear objectives and targets is crucial to ensuring a strategic, forward-looking plan.

Personal vehicle usage is somewhat ingrained in Maltese society and thus efforts are required to instigate change in the right direction. Additionally, there is a general lack of awareness amongst Maltese society regarding the impact which travel behaviour has on economic, environmental and health issues.

Different planning priorities and timelines exist for transport planning, land use planning, and utilities and services infrastructure planning. Therefore, long-term planning would not only benefit Malta's future sustainable development but also aid the visibility of planned investment, thereby supporting the construction market.

An essential outcome of the analysis is that Malta's growth patterns create the opportunity to see Malta as a city-state with one main urban area similar to a dense city centre. This main urban agglomeration spreads around the Harbour Regions towards the centre of the island. The SPED (2015) has defined this as the Principal Urban Area (PUA) as illustrated in Figure 10. This is broadly the same as the City Area of the Functional Urban Area (FUA) of Valletta as defined by Eurostat (Figure 11). It can be said, therefore, that Malta has one main centrality, but it can also be seen as polycentric due to further growth of local hubs in other parts of the island.

Figure 10: SPED Strategic Proposals (note PUA in brown)

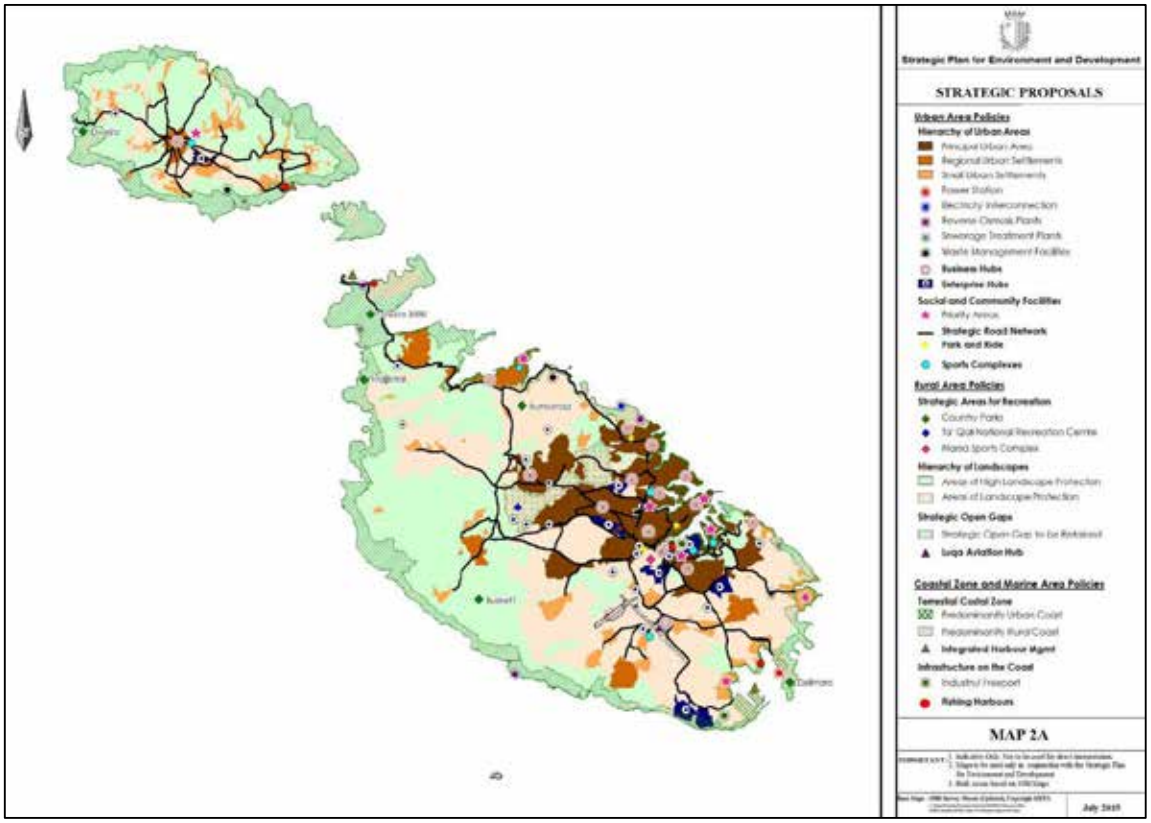
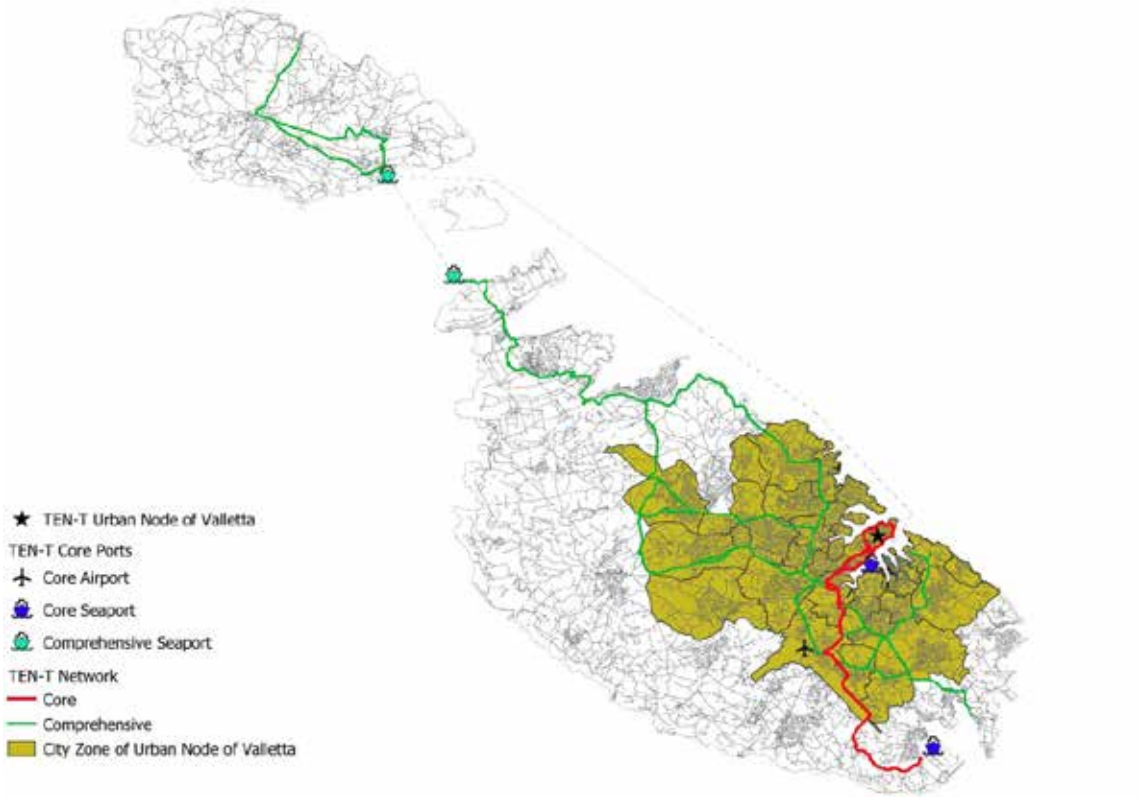


Figure 11 : TEN-T Urban Node of Valletta and its City Area



Specific issues which have been identified due to a lack of integrated and long-term planning include:

- Trend of increased spatial separation between homes, workplaces, places of education and places of entertainment, resulting in decentralisation, highly complex travel patterns and increased levels of car dependency.
- Space constraints often preclude the possibility of providing infrastructure for all road users.
- Increasing urbanisation has led to capacity problems with service infrastructure.
- This urbanisation has also led to a decrease in soil cover and results in flooding during storms, which affects the transport network.
- Lack of coordination of property development leads to individual trenching interventions for service utility provision in roads to the detriment of road condition.
- Project delays often occur due to archaeological discoveries during excavation works.
- Legal, financial and technical constraints to new road infrastructure provision resulting from environment and heritage protection laws.
- Increased urban development along the strategic road network has resulted in practical difficulties in increasing road capacity due to challenges in expropriating private property.
- Contracting companies are small, and economies of scale cannot be easily achieved in terms of onward procurement and expertise.
- Lack of coordination of road works has potential negative consequences on traffic management and road safety.

Measures

In response to these issues, the following measures have been identified:

2.2.1.1
Set up a monitoring framework to ensure the successful implementation of the Plan

The revised Transport Master Plan 2030 is a comprehensive document that extends the timeline of the original Transport Master Plan by another five years. As part of the revised document, a monitoring mechanism will be introduced to ensure the plan is implemented adequately.

A practical framework would involve setting up a more permanent body led by the MTIP, which would include representatives from various directorates within Transport Malta, Infrastructure Malta, and other relevant stakeholders.

Evaluation is a crucial element of the monitoring framework. Given that the TMP spans multiple years, it provides an opportunity to assess the ease of implementing various measures throughout its lifecycle. This analysis can help identify barriers and success factors, thereby enhancing the effectiveness of subsequent measures. Following the plan's finalisation, a comprehensive evaluation of the TMP is necessary to extract valuable lessons. Within this context, the design guidelines regarding infrastructure on local streets are being updated.

2.2.1.2

Transport Malta and MTIP to work in collaboration with key stakeholders to implement and monitor a framework within the spatial planning process in order to promote greater transit-oriented development.

Concentrating land use development around transport hubs and urban centres encourages active mobility, enhances public transport efficiency, and reduces trip distances.

The Transport Master Plan 2030 outlines several measures to support transit-oriented development, such as identifying potential multi-modal hubs, improving active mobility infrastructure, and reviewing the public transport system. In this regard, supporting spatial planning policies is necessary to ensure their effectiveness.

This initiative envisions creating a framework for strategic communication between the Planning Authority, Transport Malta, Infrastructure Malta, and Local and Regional Government. The Planning Authority, as the lead on spatial planning, must support this framework. It will involve establishing a body or task force that meets regularly to ensure that strategic planning policies (in the form of Master Plans and Local Plans) fully integrate transport requirements into the spatial planning process and that these policies are aligned across institutions and Ministries.

Incorporating monitoring procedures into this framework is essential to ensure its effectiveness. This will help achieve common goals, milestones, and projects across institutions.

2.2.1.3

Conduct, collate, and analyse a National Household Travel Survey and publish a report every five years to help identify the travel and transport trends of the national population

The travel patterns and characteristics of the Maltese population are rapidly changing, reflecting the introduction of new technologies, changes in spatial development, and changes to the demographic profile of Malta and Gozo. Conducting a more frequent NHTS would allow policymakers to develop a transport policy that is effective and better suited to changing reality.

As originally proposed in the TMP 2025, the NHTS is now being carried out every 5 years with the latest one being carried out in 2021. More frequent NHTS allows Transport Malta to keep more up to date with changing travel patterns and therefore better assist authorities to monitor compliance with strategic goals in the National Transport Strategy, transport indicators and EU targets for the transport sector.

2.2.1.4

Conclude development of design guidelines for infrastructure on local streets, including those to promote a balanced approach to different modes

The Maltese Design Manual for Roads and Bridges does not distinguish between standards for roads and local streets. This distinction is necessary as the strategic road network serves a different function from streets in residential areas. While the former is designed mainly for the movement of motor vehicles, infrastructure in urban areas often has many uses and can play a crucial part in forming sustainable neighbourhoods.

2.2.2 Identify new and sustainable financing mechanisms

The financing of transport infrastructures and services is often invisible to the user. Most government revenues from transport are collected and form part of the consolidated fund, necessitating specific claims on an annual basis for any planned costs or investments. Large-scale projects undertaken by entities or local councils responsible for providing transport resources often require multi-annual allocations. This requires exploring new and sustainable financing mechanisms to support and enhance the current budgetary system.

Measures

In response to these issues, the following measures have been identified:

2.2.2.1 Carry out a Transport System Public Finance Review to understand the efficiency, effectiveness and equity of public spending in the transport sector

Transport is one of the most important sectors of any country and requires a substantial amount of investment, both in capital and operational costs. This includes construction and maintenance costs for infrastructure (over €500 million from 2019 to 2022), as well as fees for the operation of public transport (approximately €72 million a year in 2023). While significant government investment is being directed toward the transport sector, achieving the sectoral GHG reduction targets outlined in the National Transport Strategy 2030 remains challenging under the current policy scenario. However, the updated NECP and this Master Plan reaffirm Malta's commitment to decarbonisation, with a strengthened policy mix and enhanced modelling tools to support more effective implementation and monitoring of emissions reductions. Therefore, conducting a public finance review of the transport system would be beneficial to ensure that Malta optimises financial resources to achieve its transport sector goals.

A Transport System Public Finance Review (TSPFR) will examine the current and future budget process, revenue generation mechanisms, expenditure controls and financial reporting to understand the application of financial resources within the transport sector. It aims to determine whether resources are allocated efficiently and effectively to achieve desired outcomes, evaluate the cost-effectiveness of projects and policies, analyse the financial decisions related to transport service quality and accessibility, and identify opportunities for optimising resource utilisation.

This review will examine spending, revenue generation, and the coherence of existing taxation-related policies, charges, subsidies, and public-private partnerships. The TSPFR will, therefore, recommend policy decisions and areas of improvement, inform policy decisions, and support evidence-based financial planning to ensure the efficiency, effectiveness, and long-term viability of the transport system. This also includes climate change mitigation analysis and climate change resilience considerations.

2.2.3 Incorporate climate adaptation and mitigation in the long-term planning and design of Malta's transport network

Over the last 50 years, the mean temperature of the Maltese Islands has increased by 0.23°C every ten years (in total: +1.15°C), changing the climatic environment for transport infrastructure and rolling stock. Long-term climate change effects, such as increased rain intensity, sea level rise, and extreme weather events, could significantly impact the operation and deteriorate the transport infrastructure in Malta and Gozo.

Between 1990 and 2022, GHG emissions from Malta's transport sector more than doubled—from 351.1 kt to 723.2 kt CO_2e—driven by rapid population growth, increased tourism, and a continued reliance on private vehicles. These trends underscore the urgency of implementing the enhanced policy measures outlined in Malta's updated NECP, which targets a 30% reduction in road transport emissions by 2030 through electrification, modal shift, and infrastructure upgrades. Within this context, Malta is obliged to pursue climate change mitigation and adaptation policies under obligations agreed jointly with its EU partners at both regional and international levels.

Measures

In response to these issues, the following measures have been identified:

2.2.3.1 As part of the Transport System Public Finance Review, analyse how considerations at the planning and design stage can reduce retrofitting costs and aid in climate change adaptation and resilience

Carbon dioxide remains in the atmosphere for many lifetimes, meaning climate change would persist even if all GHG emissions ceased immediately. Existing and projected climate change poses a significant threat to Malta's transport system, which is crucial for the economy and society. Malta's transport infrastructure is particularly at risk from flooding around coastal zones and low-lying areas, such as valleys. Therefore, it is essential to analyse the resilience of the transport system and ensure it can withstand both short—and long-term disruptions caused by extreme weather.

Government has recently concluded the Climate Vulnerability and Risk Assessment (CVRA) of the Maltese economy. This measure would, therefore, entail taking on board the recommendations of the CVRA and, following analysis during the TSPFR (see Measure 2.2.2.1), this will entail to implement measures designed to alleviate the risks and costs associated with climate change.

It is important to note that transport is a sector with many stakeholders. These may include:

- Central and local government
- Engineers, architects and planners of infrastructure
- Public and private sector providers, including operators within the transport system
- Public and private users of the transport system.

This analysis will establish a comprehensive approach to climate change adaptation and resilience at both the systematic and operational levels. It will ensure that relevant standards and policies are implemented while mainstreaming and adopting adaptation and resilience strategies across all sector stakeholders.

2.2.3.2
Monitor the share of GHG emissions from transport that could be mitigated by the measures recommended in this Master Plan and, therefore, fairly contribute to climate change targets

Malta's NECP commits to a 2030 target of a 19% reduction of ESR GHG emissions from 2005 levels. The transport sector is a large contributor to emissions; indeed, in 2023, it contributed to 34% of total national GHG emissions and approximately 49% of ESR emissions.

Over the years, Transport Malta has collaborated with the Energy and Water Agency (EWA) and the Climate Action Authority (CAA) (previously the Maltese Resources Authority) to calculate projected GHG emission figures using data from the National Transport Model forecast scenarios. This measure further commits to this cooperation, and indeed, it should be integrated into the general monitoring of the implementation of the Transport Master Plan. outcomes, evaluate the cost-effectiveness of projects and policies, analyse the financial decisions related to transport service quality and accessibility, and identify opportunities for optimising resource utilisation.

This review will examine spending, revenue generation, and the coherence of existing taxation-related policies, charges, subsidies, and public-private partnerships. The TSPFR will, therefore, recommend policy decisions and areas of improvement, inform policy decisions, and support evidence-based financial planning to ensure the efficiency, effectiveness, and long-term viability of the transport system. This also includes climate change mitigation analysis and climate change resilience considerations.

2.2.4 Establish and maintain a framework (strategic and procedural) for research and innovation in transport

Issues

Local research into road transport construction materials and maintenance techniques is still in its early stages. It reflects the lack of resources allocated to infrastructure inspection, data collection and testing new materials and technologies.

Moreover, there is a project-based relationship between Infrastructure Malta and education and research establishments (e.g. MCAST, University of Malta, etc.) and the transport authorities, leading to gaps between policy needs and research carried out by these institutions. For example, Infrastructure Malta and the University of Malta have established a collaborative relationship, mainly through the Department of Spatial Planning and Infrastructure within the Faculty for the Built Environment. This partnership has enabled student placements at Infrastructure Malta, providing students with practical experience in various sections of the agency.

However, the piloting and testing of new materials, technologies, and work methods are hindered by cumbersome procurement procedures that require conformity with published standards.

Measures

In response to these issues, the following measures have been identified:

2.2.4.1
Set up a transport research and innovation body to improve links with research institutions and encourage research, testing and piloting of innovative technology and solutions in the transport sector

Research and innovation are important components of the transport sector, in which improvement in the quality and efficiency of how we travel is continuously sought. Although bodies and funds supporting general technological innovation exist on the national level, there is no dedicated framework or organisation supporting research in the transport sector and assisting in testing, piloting, and funding transport technology.

This measure involves the setting up of a body within Transport Malta or the Ministry responsible for Transport, dedicated to research and development in the transport sector. This body would have representation from different stakeholders in the sector, especially those related to innovation and research. Importantly, this body will seek to ease the practical implementation of research and pilot projects, assisting research applicants in identifying the correct stakeholders and bringing parties together for collaboration.

This body could also identify priority areas of research for academic institutions to focus on and support researchers and students both financially and practically in their research. A new internship programme could be developed in collaboration with research institutions, offering work experience-based internships for graduate students and research-focused internships for postgraduate students.

The body may either directly fund projects or seek co-funding in collaboration with other bodies such as Xjenza Malta or Malta Government Investments. This body would also assist and direct applicants in seeking EU funds.

Looking ahead, such a body could collaborate with willing local or regional councils to serve as candidates for demonstrations, testbeds, or even living labs. These specific geographic areas, with clearly defined stakeholders, would provide a collaborative ecosystem for medium- and long-term testing of innovative solutions in the transport sector.

2.2.4.2
Develop Transport Malta's in-house capability for data analytics

The capture of geospatial data and the integration of location intelligence in the business and decision-making process require additional investment and capacity building. This includes investing in additional human resources, equipment, training, and commitment to re-engineering the dynamic capturing of spatial data and increasing capacity for standard and big data analysis.

This measure also involves expanding existing and new sensing equipment and technology across the network to observe statistically representative flows and conditions at both national and regional scales. This would, therefore, see further use of AI (artificial intelligence) for data collection and analysis. Transport Malta has already applied AI to analyse static imagery exercises such as parking capacity analysis. However, further AI deployments are planned, such as analysing CCTV camera feeds for traffic counting, classification, and incident response.

2.2.4.3
Set up and maintain a centralised open database for transport data and statistics

Data is a powerful tool, and its publication enormously benefits citizens, businesses, and governments. However, Malta lags behind other EU countries in terms of open data provision from the public sector. According to the EU's Open Data Maturity Ranking, Malta is lagging behind other countries, with a rating of 51% in 2023 compared to the EU average of 79%[21].

A dynamic National Access Point (NAP) for Transport is currently underway to address this. Although Transport Malta already collects spatial data, setting up a NAP would allow more accessible data collection, analysis, and exchange in accordance with EU regulations and standards and ensure interoperability with NAPs of other member states. This measure would entail creating an open central repository for data in the transport sector containing static and live data, as appropriate.

[21] *https://data.europa.eu/en/publications/open-data-maturity/2023#country-overview*

2.2.5 Explore the establishment of a single transport accident safety investigation entity covering all modes

Transport accidents cause personal injury or loss of life, as well as property damage. Appropriate transport accident investigations that identify causes and propose measures to address the cause can reduce these hidden costs to society.

The government is a critical player in providing and regulating transport in all modes. Established practice and experience in aviation and maritime transport investigations have shown that independent transport safety investigations can significantly improve transport safety. The maritime and aviation sectors have established highly developed accident analysis mechanisms and are benefiting from the results of their investigations. On the other hand, the road transport sector, which has by far the highest number of accidents each year, does not yet benefit from the systematic methods of accident analysis and their resultant proposals for improvement.

Measures

In response to these issues, the following measures have been identified:

2.2.5.1 Establish a Transport Safety Investigation Commission

The transport sector encompasses three main realms: air, land, and sea transport. Safety in all three can be maintained by proactively implementing national and international regulations and standards through rigorous inspections, surveys, and other enforcement activities. However, transport investigations are crucial in analysing incidents where risks have led to accidents. The findings from these investigations contribute to research that enhances these regulations and standards, thereby improving overall safety.

Air accidents in Malta are investigated by the Bureau of Air Accident Investigation (BAAI), whilst maritime accidents are investigated by the Marine Safety Investigation Unit (MSIU). However, the two share a different reporting and organisational structure in that the BAAI is an independent body within the portfolio of the MTIP, whilst the MSIU falls within the organisational structure of Transport Malta, even though the latter reports to MTIP and is functionally independent. Both entities focus exclusively on determining the causes of accidents rather than addressing civil or criminal liabilities. All their reports are made publicly available.

On the other hand, Malta does not have a dedicated road safety investigation regime, but road accidents may be investigated by the police or through magisterial inquiries. The primary purpose of these investigations is to establish civil or criminal liability. In addition, the findings of these investigations are not required to be revealed to the public.

This fragmented framework makes it impossible to create synergies between different investigative bodies, identify common factors, and share information on best practices.

This measure would, therefore, see the setting up of a unified Transport Safety Investigation Commission (TSIC), comprising three safety investigation Bureaux:

- Bureau for Air Safety Investigation (assuming functions of BAAI)
- Bureau of Maritime Safety Investigation (assuming functions of MSIU)
- Bureau for the Investigation of Road Collisions and Safety.

The TSIC will operate autonomously and independently, maintaining functional, financial, and legal separation from the regulatory bodies it may investigate. Each of the three bureaux will focus on analysing the causes of current and potential accidents without assigning blame or determining civil or criminal liabilities. The Commission's findings will help policymakers better understand why accidents occur and assist in their prevention. Additionally, the TSIC will build on its investigative reports and recommendations by contributing to educational campaigns and research studies on transport safety.

2.2.5.2
Task the Transport Safety Investigation Commission to contribute to the action plan for response to national disasters and accidents on strategic infrastructure

The TSIC is set to play a pivotal role in developing and implementing a comprehensive action plan to improve the nation's response to disasters and accidents affecting strategic infrastructure. This initiative underscores the importance of a coordinated and robust approach to safeguarding critical transportation networks and ensuring public safety. The TSIC will focus on expert analysis and recommendations, as well as collaboration with stakeholders, among other things.

Through these efforts, the Transport Safety Investigation Commission will significantly enhance the nation's resilience and ability to respond effectively to emergencies involving strategic infrastructure. Their proactive approach will not only protect lives and property but also ensure the continuity of essential transportation services.

This review will examine spending, revenue generation, and the coherence of existing taxation-related policies, charges, subsidies, and public-private partnerships. The TSPFR will, therefore, recommend policy decisions and areas of improvement, inform policy decisions, and support evidence-based financial planning to ensure the efficiency, effectiveness, and long-term viability of the transport system. This also includes climate change mitigation analysis and climate change resilience considerations.

2.2.6 Develop and Maintain a High-Quality Road Network in line with the EU TEN-T Policy

Issues

The Trans-European Transport (TEN-T) Network is a network of road, air and water infrastructure that connects EU Member States and is integral for the efficient transfer of goods and people across the Union. By completing the TEN-T network, the European Union aims to close gaps between Member States' transport networks, remove bottlenecks that still hamper the smooth functioning of the internal market, and overcome technical barriers such as incompatible railway traffic standards. It promotes and strengthens seamless transport chains for passengers and freight while keeping up with the latest technological trends.

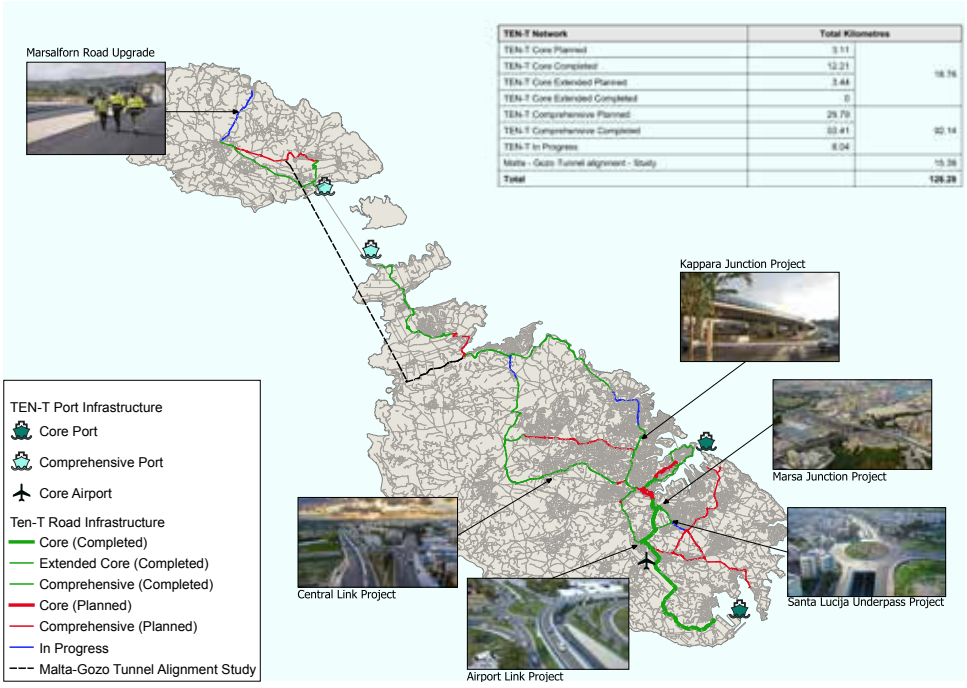
The TEN-T Network comprises of two main layers: the Core network (including Extended Core) and the Comprehensive network. The Core network includes the most critical connections between major cities and nodes and must be completed by 2030 (with Extended Core by 2040). The road infrastructure along the TEN-T Core and Extended Core network must be of high quality and meet express road standards.

The second layer is the Comprehensive network, which aims to connect all regions of the EU to the Core network. It shall comprise a conventional strategic road (not a motorway or express road) that is still of high quality. It shall be upgraded to improve road safety, improve road efficiency using ITS, mitigate congestion, and improve urban area connectivity to the Core Network. This network needs to be completed by 2050.

The TEN-T Road Network in Malta and Gozo is almost 111km long. It comprises 18.7km of Core network, 3.3 km of Extended Core Network, and 92.1km of Comprehensive Network. The whole length of Malta's Core and Extended Core Road Network forms part of the European Transport Corridor Scan-Med, a corridor that extends from the North of Finland, Sweden, and Norway through Denmark, Germany, and Austria to the Mediterranean coast of Southern Italy and Malta.

Over the past 10 years, there has been significant investment in both the TEN-T Core and TEN-T Comprehensive Road Networks. Major investment in the grade-separation of intersections where there were traffic bottlenecks has taken place at critical bottlenecks on the TEN-T Core Road Network in Marsa, Kirkop and Luqa, and several critical sections on the TEN-T Comprehensive Road Network have undergone major investment to improve road safety for motor vehicles and vulnerable road users have been upgraded from single carriageways to dual carriageways with some grade-separation (e.g. Mrieħel-Attard, Luqa-Santa Luċija and Rabat-Marsalforn).

Figure 12 : TEN-T Network status as of 2024 and recent major projects



TEN-T Network	Total Kilometres	
TEN-T Core Planned	3.11	
TEN-T Core Completed	12.21	18.76
TEN-T Core Extended Planned	3.44	
TEN-T Core Extended Completed	0	
TEN-T Comprehensive Planned	29.70	
TEN-T Comprehensive Completed	53.41	82.14
TEN-T In Progress	8.04	
Malta - Gozo Tunnel alignment - Study		15.39
Total		126.29

Despite this investment, it should be noted that in Malta, several sections of the conventional strategic roads pass through busy urban areas that act as bottlenecks. It is sometimes difficult to increase motor vehicle capacity by road widening or new road building here, so the general approach, in this case, is to increase road capacities through measures to enhance the number of travellers passing through the link rather than the number of vehicles.

Measures

In response to these issues the following measures have been identified:

2.2.6.1
Completion of the TEN-T Core Road Network by 2030 and Extended Core Road Network by 2040

Regulation (EU) 2024/1679 (EU) on Union guidelines for the development of the trans-European transport network entered into force in July 2024. As a result, there have been minor changes to the TEN-T Core Network, resulting in the Ring-Road around Valletta being reclassified as part of the Extended Core Road Network.

The Regulation also sets out new standards for road infrastructure on the TEN-T Core Road network, which require the physical separation of carriageways and grade separation of a TEN-T road from other crossing roads, pedestrian footpaths and bicycle paths. Member States, in duly justified cases, can request an exemption from these requirements, which would be implemented through a Commission Implementing Act.

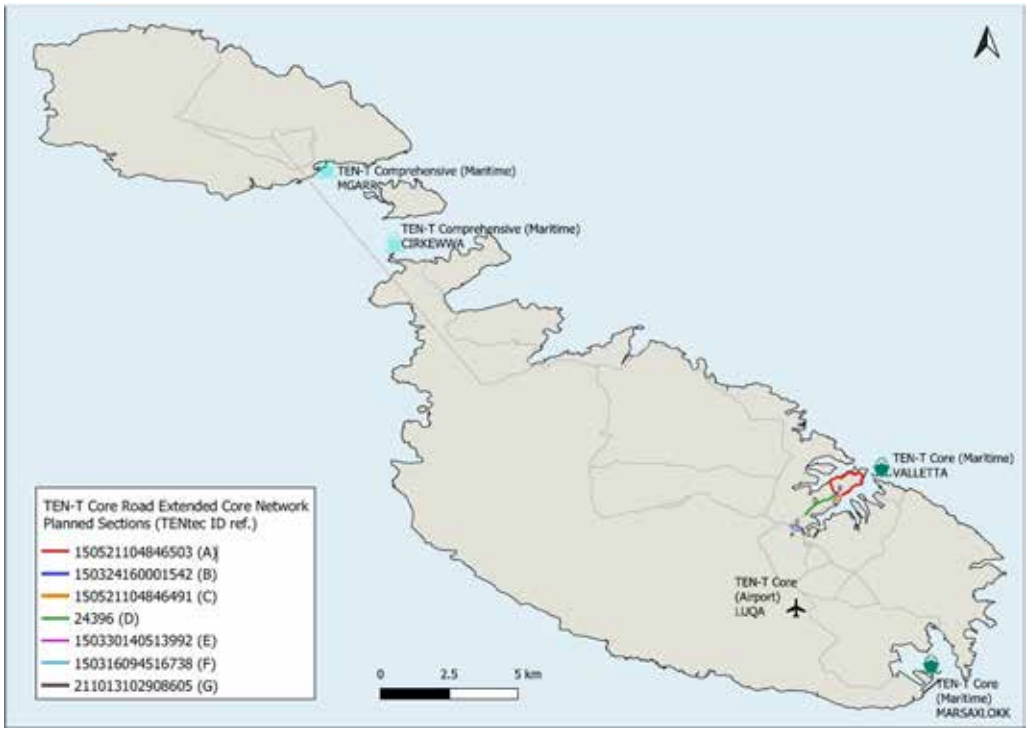
In this respect, Malta shall submit its request for exemption of several sections of its TEN-T Core Road network on the permitted grounds of physical constraints, economic feasibility and low traffic densities. Consequently, Malta's TEN-T Core Road Network can be considered as being 84% complete, with the following major transport infrastructure project remaining to be completed.

A list of planned projects to remove bottlenecks on the TEN-T Core Network is presented in the table below and visualised in the accompanying map:

TENtec ID	TEN-T Section Description	TEN-T
150330140513992 (D) 150316094516738 (E) 211013102908605 (F)	Remove traffic bottleneck and reduce severance between urban communities [Nodes EA20a-EA7a] -December 13th Road, Marsa (Match Factory Project)	Core
24396 (D)	Make more efficient use of road space and reduce severance on Route 6 [Node EA7a-EA6] from Blata l-Bajda to Valletta	Core
150521104846491 (C) 150521104846503 (A)	Upgrade road quality and improve safety at Valletta Ring Road [Nodes EA6-EA6]	Extended Core

Note: Further projects may be included or prioritised when project pipelines mature and the financial allocation to the transport sector in the post-2027 European Union's Multiannual Financial Framework (MFF) becomes clearer.

Figure 13: Remaining TEN-T Core and Extended Core road sections to be completed



TEN-T Road sections legally required to complete the TEN-T network (Core and Comprehensive)

The following projects relate to the provision of alternative fuel infrastructure on the TEN-T Core Network by 2030:

Project Description	TEN-T
Regulation (EU) 2024/1679 and Regulation (EU) 2023/1804 stipulate the number of charging stations that should be deployed with access to the TEN-T Network. Government has committed to bringing the total number of charging pillars on the entire national road network to 6500 points by 2030. This has been described in further detail in measure 2.6.3.3.	Entire road network

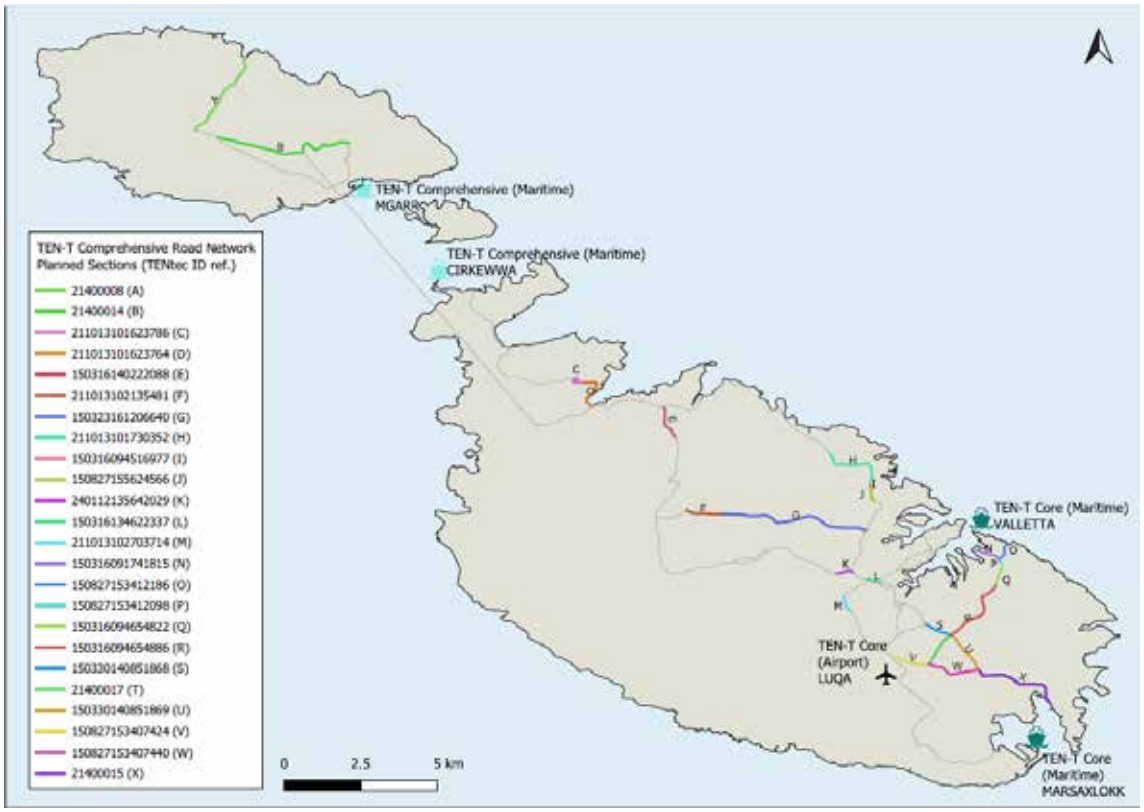
2.2.6.2
Completion of the TEN-T Comprehensive Road Network by 2050

Under Regulation (EU) 2024/1679, there were minor changes to the TEN-T Comprehensive Road Network. These included the removal of a section of network through Mosta centre, where pedestrians are now given priority over motor vehicles at certain times of day, and the construction of new road links and rerouting of the TEN-T in Attard, resulting from the completion of the Central Link project. As a result, the TEN-T Comprehensive Road Network in Malta and Gozo is now 92.1 km in length.

The new Regulation also introduced new transport infrastructure requirements for the TEN-T Comprehensive Road Network, including the provision of environmental protection (such as noise reduction measures and the collection, treatment and release of water run-off) where applicable and the installation of weigh-in-motion systems to identify vehicles exceeding the maximum authorised weights.

By the end of 2024, approximately 58% of the TEN-T Comprehensive network had been completed. The remaining sections are indicated in the figure overleaf.

Figure 14: Remaining TEN-T Comprehensive sections



A list of planned projects to remove bottlenecks on the TEN-T Comprehensive Network is presented in the table below and visualised in the accompanying map:

TENtec ID	TEN-T Section Description	TEN-T
150330140851868 (S)	Removal of bottleneck and reduce severance between urban communities [Nodes SA12-SA11] - Triq Tal-Barrani, Tarxien	Comprehensive
211013101730352 (H)	Removing bottleneck and reduce severance between communities at Regional Road (Nodes NA11-EA13] - White Rocks Complex to Manuel Dimech Bridge, St Andrew's	Comprehensive
150330140851869 (U)	Remove conflict between high traffic flow and urban activity [Nodes SA12-SA12a] and major junction improvement - Triq Tal-Barrani, Bir-id-Deheb to Bulebel	Comprehensive
150323161206640 (L)	Removal of traffic bottleneck along Route 1 and improving connectivity between TEN-T Core and Comprehensive Road networks [Nodes WA19-WA19a] - Ħamrun / Marsa	Comprehensive
21400008 (A)	Upgrading of road infrastructure quality on Marsalforn Road [Nodes GA32-GA41] - Victoria to Marsalforn, Gozo	Comprehensive
150316094654822 (P)	New Link Road to Smart City Malta	Comprehensive
211013102703714(M)	Removal of traffic bottleneck by upgrading intersection [node WA13] between Triq Ġuże Duca, Triq Manuel Dimech and Triq L-Imdina, Qormi	Comprehensive

Note: Further projects may be included or prioritised when project pipelines mature and the financial allocation to the transport sector in the post-2027 European Union's Multiannual Financial Framework (MFF) becomes clearer.

The following sections are planned to be upgraded post-2030 (and by 2050):

TENtec ID	TEN-T Section Description	TEN-T
211013101623764 (D) P/O 211013101623786 (C)	Resolve Functional conflict between high traffic volume and urban activity and improve road safety at Xemxija Road [Nodes NA6-NA7] - Xemxija Bypass, Xemxija (Note: this project is to be seen in combination)	Comprehensive
P/O 240112135642029 (K)	Removal of bottleneck WA6 to WA18, Mrieħel / Qormi	Comprehensive
150323161206640 (G)	Removal of bottlenecks between Birkirkara Bypass, Mosta Road, Valletta [Nodes EA16-NA22] – Birkirkara – Lija -Mosta	Comprehensive
150316094654886 (Q)	Improvement of link and construct missing link from Tal-Barrani to Smart City Link road [Nodes SA12-SD8a], Fgura and Żabbar	Comprehensive
150316140222088 (E)	Improving the link between Burmarrad, St. Paul's Bypass and Qawra area at [Nodes ND2-NA8], St. Paul's Bay	Comprehensive
211013102135481 (F)	Upgrade of road infrastructure quality [Nodes ND11-NA22 Independence Avenue, Mosta	Comprehensive
150827153407424 (V) 150827153407440 (W)	Improve road infrastructure quality and reduce functional conflict between high traffic flows and urban activity on Għaxaq Bypass [Nodes WA24-SA12a] - Għaxaq	Comprehensive
150316094654886 (R)	Improvement to the link from Tal-Barrani to Smart City Link Road [Nodes SA12-SD8a]	Comprehensive
21400015 (X)	Improve road infrastructure quality of Distributor Road (Route 30) to Marsaxlokk Bay and reduce traffic impact in village centre on Marsaxlokk road Nodes SA13-SD17]	Comprehensive
21400014 (B)	Upgrading alternative link from Victoria to ferry port [Nodes GA34-GA44-GD8], Nadur Road, Gozo	Comprehensive
Studies	Malta-Gozo Fixed Link	Comprehensive

Note: Further projects may be included or prioritised when project pipelines mature and the financial allocation to the transport sector in the post-2027 European Union's Multiannual Financial Framework (MFF) becomes clearer.

The following projects relate to the provision of alternative fuel infrastructure on the TEN-T Comprehensive Network by 2030:

Project Description	TEN-T
Regulation (EU) 2024/1679 and Regulation (EU) 2023/1804 stipulate the number of charging stations that should be deployed with access to the TEN-T Network. Government has committed to bringing the total number of charging pillars on the entire national road network to 750 poles (1500 points) by 2030. This has been described in further detail in measure 2.6.3.3.	Entire road network

2.2.6.3
Completion of other strategic road Infrastructure projects – Non-TEN-T

Other major projects are planned, which will complement connectivity to the TEN-T Core Network and the Urban Node of Valletta. These include:

TENtec ID	TEN-T Section Description	TEN-T
N/A	Msida Creek grade-separated intersection [Nodes EU9-ED3a] - Triq Marina, Msida	No

2.2.6.4
Complete and publish a review of the road classificationsystem that is currently underway

Malta has one of the densest road networks in the European Union and increased urbanisation and motorisation have led to roads no longer serving their original function. This has implications for traffic, safety, and environmental considerations, and might necessitate a change in classification and/or infrastructural or policy intervention.

However, streets, particularly in urban areas, may not only be conduits of movement but may also be destinations and may often host vibrant mixed-use activities. There are various examples of Local Access roads in Malta with relatively high flows, yet converting them to higher classification roads might create conflicts in their environment or indeed serve as physical barriers to non-motorised traffic.

The objectives of this measure are two-fold:

- Review the road classification hierarchy and evaluate whether there should be changes to design characteristics or the inclusion of new classes;
- Review the current classification of roads using this new classification system and re-classify roads as necessary.

2.3 ACTIVE TRAVEL AND MICROMOBILITY

2.3.1 Develop a safe, accessible network of infrastructure for cycling, walking and micro-mobility

Developing a safe and accessible infrastructure network for cycling, walking, and micro-mobility in Malta presents several challenges. These issues stem from a combination of historical urban planning, geographic constraints, and societal habits.

Malta is a small, densely populated island with limited space for expanding road infrastructure. Many roads, especially in urban areas, are narrow and not designed to accommodate vehicular traffic and safe cycling or walking paths. There is a scarcity of dedicated cycling lanes, and where they exist, they are often not continuous or separated adequately from vehicular traffic, making safe cycling challenging.

Malta has one of the highest rates of car ownership in Europe. The heavy reliance on cars, even for short distances, contributes to traffic congestion, making roads less safe for cyclists and pedestrians. There is also a societal preference for cars, making it harder to shift to alternative modes of transport like cycling or walking. Indeed, the move towards more sustainable transport methods, including cycling and walking, often faces resistance from those who are accustomed to the convenience of personal vehicles. Culturally, cycling has not been widely embraced as a mode of daily transport in Malta, being viewed more as a recreational activity. Encouraging cycling as a viable commuting option requires a significant shift in mindset.

Some drivers in Malta exhibit aggressive driving behaviour with little regard for cyclists and pedestrians. The lack of awareness about sharing the road with non-motorised traffic poses a serious safety risk.

In some areas, infrastructure such as cycling lanes or pedestrian paths exists, but it is often fragmented and not part of a well-integrated, continuous network. This makes journeys on foot or by bike less convenient and potentially unsafe when moving between different areas. Where infrastructure exists, it is sometimes poorly designed or maintained, resulting in safety hazards such as potholes, uneven surfaces, or poorly lit pathways.

Malta's geography, with its many hills, can make cycling and walking challenging in certain areas, especially for those not accustomed to such physical exertion. The hot Mediterranean climate, especially in summer, can discourage walking or cycling, notably when appropriate infrastructure like shaded walkways is lacking.

Much of Malta's urban infrastructure was built before cycling and micro-mobility were considered. Retrofitting existing roads to accommodate these modes of transport is complex and requires significant planning and investment.

There is currently limited integration between cycling infrastructure and public transport systems. For example, there are few facilities for securely parking bicycles near bus stops, and buses are not equipped to carry bicycles, making it harder for cyclists to rely on a combination of cycling and public transport for their commute.

Measures

In response to these issues, the following measures have been identified:

2.3.1.1
Publish the National Cycling Strategy

Supporting the development of cycling, walking, and micro-mobility alleviates traffic congestion and promotes public health, environmental sustainability, and community building. Malta aims to foster an eco-friendly and health-conscious shift in transportation modes.

In July 2025, the first draft of the National Strategy for cycling was launched for public consultation. This holistic strategy will provide guidelines, objectives, and actionable items for promoting the safe use and the development of safe infrastructure for non-motorised modes of transport.

2.3.1.2
Develop and implement a Pedestrian and Cycling Infrastructure Plan and define and implement active mobility routes across the Maltese Islands

This measure focuses on developing and implementing an integrated infrastructure plan to promote pedestrian and cycling activities, initially focusing on the area around Malta's urban node. The plan will aim to alleviate traffic bottlenecks, reduce carbon footprints and air pollution, and promote a culture of health and wellness. Recognising the importance of sustainable and active transport in modern urban planning, this initiative seeks to elevate the transportation landscape by creating dedicated, safe, and efficient routes for pedestrians and cyclists.

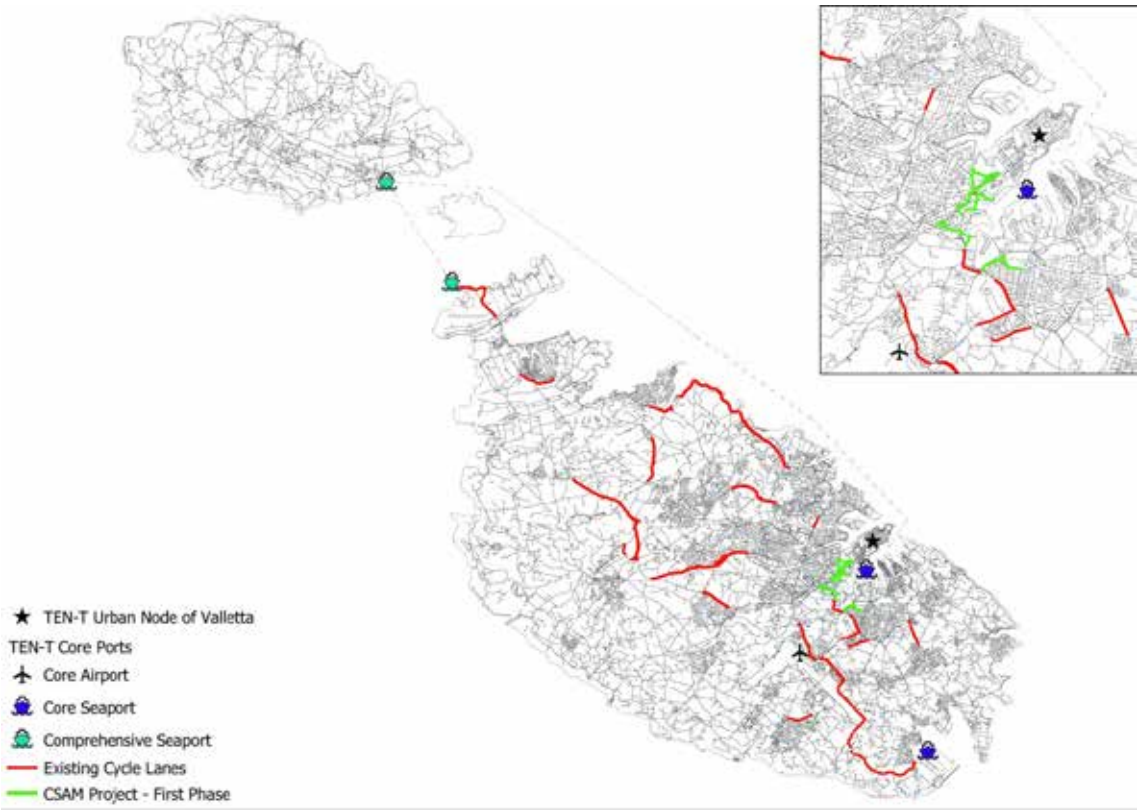
This measure seeks to design and implement a robust infrastructure plan prioritising pedestrian and cycling needs. The infrastructure plan could incorporate strategies to:

- Identify routes across the Maltese Islands that can be transformed into or upgraded as dedicated active mobility routes.
- Address key concerns such as safety, accessibility, connectivity, and user-friendliness.
- Integrate walking and cycling routes with existing public and private transport nodes, ensuring seamless transitions for users between various modes of transport.
- Promote the use of sustainable transport modes, such as e-scooters and e-bikes, within these routes, backed by the required infrastructure and introduce mobility hubs along particular routes.

After finalising the Pedestrian and Cycling Infrastructure Plan, phased implementation will start. Public campaigns can be used to educate residents about the plan's new features and benefits. Regular evaluations will be useful in aligning the infrastructure with transport trends and stakeholder feedback.

The C-SAM (Connection for Safer Active Mobility) project, in which the first phase will focus on connections between Msida, Pietà, Blata l-Bajda, Valletta and the Valletta waterfront, has already been launched.

Figure 15: Malta's active mobility network by 2030



2.3.2 Promote the use of cycling, walking and micro-mobility as alternatives to private car journeys

2.3.2.1 Develop design guidelines for active travel infrastructure, parking, and storage

As Malta aims for sustainable urban mobility, it is vital to establish and uphold design guidelines for safe and effective infrastructure for active travel. Incorporating international best practices ensures these infrastructures' functionality and safety, longevity, and adaptability to future changes.

This measure involves finalising and maintaining guidelines for active travel infrastructure, parking, and storage solutions. This may include strategies such as:

Active Travel Infrastructure: Set clear standards for designing and building pathways for walking, cycling, and micro-mobility, prioritising safety and efficiency.

Parking and Storage: Define standards for safe, easy-to-access parking and storage for bikes, e-scooters, and other micro-mobility vehicles, including design criteria for bike racks and parking zones.

Safety Protocols: Implement stringent safety requirements and signage to ensure that all active travel modes can operate without conflict, both among themselves and with vehicular traffic.

Climate Resilience: Prioritise climate-resilient designs, integrate green solutions, establish emergency protocols for extreme weather events, and undergo regular assessments with environmental experts.

2.3.2.2
Set minimum level of provision of active travel facilities required at government offices and commercial developments

With urban spaces continuously evolving and expanding, integrating active travel facilities into new developments is pivotal. Ensuring that all new constructions are equipped with the necessary provisions promoting sustainable transport from the outset. This proactive measure minimises the need for future infrastructural alterations and provides a high service quality to pedestrians and cyclists.

This measure mandates that all new developments, regardless of their nature, incorporate a predefined set of active travel facilities. These could include provisions such as:

- Inclusive infrastructure with pathways, entrances and facilities that are wheelchair-friendly and accessible for individuals with various disabilities.
- Secure bicycle storage areas.
- Pedestrian pathways that are safe and accessible.
- Charging facilities for electric bikes and scooters.
- Shower and locker facilities in commercial buildings to encourage active commuting.
- Adequate signage directing to nearby public transit and active travel routes.

The stipulated requirements can be determined based on the size, location, and purpose of the development. They are intended to ensure that residents, workers, and visitors have convenient options to choose sustainable travel modes.

A detailed guideline outlining the minimum provision requirements will be developed. Feedback from urban planners, developers, and the public will inform this guideline. Public campaigns promoting the benefits will be essential for gaining support and driving use.

2.3.2.3
Ensure Integration of the Malta Road Code

The updated Malta Road Code, published in July 2025, has introduced important reforms aimed at improving road safety and supporting sustainable mobility. The revised framework strengthens the protection of vulnerable road users, clarifies road-sharing protocols, and ensures that the needs of pedestrians, cyclists, and micro-mobility users are better addressed.

Key updates to the Road Code include:

- Enhancing the rights and safety of vulnerable road users.
- Revising road-sharing protocols to reflect the nuances of newer micro-mobility devices.
- Introducing clearer guidelines on road etiquette, ensuring pedestrians, cyclists, and micro-mobility users are prioritised at intersections, crossings, and high-traffic areas.
- Providing specific guidance on safe parking and stopping practices that do not obstruct active travel pathways.
- Clarifying guidelines on how road users should respond to Blue Light (Emergency) Vehicles.

Following its publication, the priority has shifted towards ensuring effective integration of these reforms into Malta's regulatory and educational framework. This includes:

- Updating driver training programmes and ensuring that both theory and practical driving tests reflect the new requirements.
- Conducting awareness and information campaigns to familiarise all road users with the revised rules.
- Partnering with law enforcement agencies to promote and enforce compliance.
- Undertaking regular reviews of accident data to monitor the impact of the changes and support evidence-based adjustments when necessary.

This approach ensures that the Road Code does not remain a static document but becomes a living framework, shaping safer and more inclusive mobility across Malta.

2.3.2.4
Review and implement an enforcement regime to prevent other road users from using active mobility infrastructure

With the growth of active mobility infrastructure, safeguarding its proper use is essential. Any unauthorised use of designated areas risks safety and undermines the system's benefits. A strong enforcement regime is key to ensuring these spaces are utilised appropriately, allowing for a balanced coexistence of various mobility methods.

This measure proposes a systematic review and subsequent implementation of an enforcement regime to prevent the misuse of active mobility infrastructure. Key areas of focus could include:

- Identifying zones vulnerable to misuse by unauthorised vehicles or individuals.
- Implementing clear signage and visual markers that detail permissible usage, along with surveillance systems to monitor offences and enforce these appropriately.
- Collaborating with law enforcement agencies to ensure a rapid response to violations and appropriate penalisation.
- Raising awareness among road users about the importance and benefits of respecting active mobility zones (including penalties for non-compliance).

After the initial rollout, continuous engagement with the public will be essential. Feedback systems will be put in place to capture challenges and suggestions from active mobility users. Routine evaluations will gauge the success of enforcement, allowing for adjustments as needed.

2.3.2.5
Run an awareness campaign onthe benefits of active mobility

Promoting active mobility as a viable and beneficial mode of transport plays a vital role in shaping a city's transport dynamics. Encouraging individuals to walk, cycle, or use micro-mobility options reduces congestion and carbon emissions while also providing multiple health benefits. To support this transition, it is essential to articulate and amplify these advantages to the wider public through an awareness campaign.

This measure outlines a comprehensive campaign to highlight the benefits of active mobility. These benefits span from personal health gains to broader societal benefits, which the campaign can focus on to:

- Highlight health benefits, emphasising improved cardiovascular health, mental well-being, and a reduction in certain lifestyle diseases.
- Showcase the environmental impact, particularly reducing air pollutant emissions and traffic congestion.
- Provide safety tips for active mobility users, especially for those new to these modes of transport.
- Share inspiring testimonials and stories from individuals who have incorporated active mobility into their daily lives.

The campaign will use diverse communication platforms, such as social media, billboards, radio spots, and community events, to reach a broad audience.

2.3.2.6
Promote active travel at schools

Schools significantly influence the habits and values of young people. Introducing and endorsing active travel within educational institutions positively impacts the present community and establishes a foundation for successive generations to embrace sustainable travel methods. Cultivating an appreciation for active travel from an early age has the potential to solidify lifelong habits that are beneficial to health, the environment, and societal cohesion.

This measure emphasises the ongoing effort to promote active travel within school environments. Key components of this initiative may include:

- Introducing and refining school travel plans which prioritise walking, cycling, and other forms of active travel.
- Organising 'Walk to School' and 'Cycle to School' weeks to encourage active commuting.
- Collaborating with schools to provide secure bicycle storage facilities, ensuring safety and convenience for student cyclists.
- Delivering educational sessions and workshops focused on the benefits of active travel, road safety, and the environmental implications of transport choices.
- Engaging with parents and local communities to support and endorse these initiatives, creating a unified approach to active travel promotion.

To keep the momentum and ensure the measure is successful, these initiatives will be evaluated as necessary. Partnerships with local organisations and businesses could be explored to sponsor events or provide resources, such as cycling safety gear. Additionally, celebrating success stories from schools can inspire other initiatives.

2.3.2.7
Plan and implement an annual programme of active travel days and promote active mobility activities

Celebrating and promoting active travel through dedicated events and activities amplifies the message of its benefits to the public. An annual programme of active travel days symbolises Malta's commitment to developing a healthier, environmentally conscious, and community-centric transport culture.

This measure will designate a specific day or days to highlight the importance and benefits of active travel, with activities ranging from community rides and walks to educational workshops on the advantages of active mobility. Collaborative efforts with local businesses might see them providing special offers or promotions for individuals participating in active travel on this day. Furthermore, a widespread promotional campaign will ensure that every citizen knows about the event and its significance.

Feedback will be gathered from all stakeholders, encompassing participants and businesses. Based on this feedback, plans for subsequent events will be refined to enhance participation and influence.

2.3.2.8
Explore further financial incentives for the purchase of bikes, electric bikes and e-scooters

Electric bikes and e-scooters are environmentally friendly alternatives to motorised vehicles. Encouraging their adoption through financial incentives is a proactive step towards transforming Malta's transport landscape.

This measure seeks to continue to provide financial incentives to individuals and businesses seeking to purchase bicycles, electric bikes and e-scooters. The aim is to reduce the financial barriers often associated with transitioning to these sustainable mobility options. This measure seeks to stimulate an increase in their use by recognising the potential of bicycles, electric bikes and e-scooters to alleviate urban congestion, decrease carbon and air pollutant emissions, and promote healthier lifestyles.

Direct Subsidies: Offering immediate reductions on the purchase price, making the purchase of electric bikes and e-scooters more affordable.

Targeted Grants: Specifically designed for particular demographics such as students or lower-income individuals, these can cover a significant portion or even the entire cost of an e-bike or e-scooter, ensuring equity in access.

Rebate Programmes: Encouraging upfront purchases by promising a subsequent partial refund, making the initial investment more attractive for citizens.

Employer-purchase Incentives: These enable businesses to buy e-bikes or e-scooters in bulk and pass on the cost benefits to employees, either through discounts or monthly stipends.

To enhance the measure's impact, information campaigns can promote the financial incentives and broader benefits of e-bikes and e-scooters, further incentivising uptake.

2.3.2.9
Improve the vertical and pedestrian connectivity between the Sliema - Valletta ferry service at Valletta and the city centre

Valletta's elevated topography presents distinct challenges for connecting the waterfront to the city centre. Strengthening pedestrian and vertical connections between the Sliema-Valletta ferry terminal and the city will enhance accessibility and transit fluidity. Leveraging this connectivity is crucial for the overall efficiency of the urban transport system, promoting sustainable mobility and enhancing the experience for both residents and tourists.

In this regard, a lift from the Marsamxett Ferry Landing site to Peacock Gardens in Valletta is currently under construction. In addition, this could potentially be further augmented by other solutions, such as pedestrian-friendly pathways. Each of these solutions will be assessed for its feasibility, cost-effectiveness, and impact on the surrounding urban fabric. The focus will be on creating an integrated, user-centric, and aesthetically appealing transit corridor that complements Valletta's historic character.

2.4 PUBLIC TRANSPORT AND SHARED MOBILITY SERVICES

2.4.1 Improve service quality and modal share along strategic routes by introducing public transport quality corridors

Issues

Today, the reliability and punctuality of bus services are considered the most important issues that need to be addressed to encourage further growth in public transport patronage and a modal shift away from the private car.

The specificities of Malta's mobility structure highlight a much lower average trip distance of 6.1km compared with other EU countries. This translates to an average journey time on the bus of 22 minutes compared to 14 minutes by private car. However, when the time taken walking to and from bus stops and the time taken waiting for a bus and transferring between buses are taken into account, the average duration increases to 40-45 minutes.

As most bus stops are within a five-minute walk from most parts of the urban area, the main variable journey component is the waiting time. Low frequency of service mainly occurs in the last section of a route in the outlying parts of Malta and Gozo. However, as these routes approach and pass through the principal urban areas, they often converge with other routes and form bus corridors. The combined frequency of different bus services along the bus corridors increases, and waiting time is reduced substantially. A low frequency of bus service and long routes in sparsely populated outlying areas are common features in most public transport systems.

Transport modelling analysis clearly indicates the main road links where journey delays occur during peak periods on typical weekdays. The most critical sections of the bus network exhibit bus speeds that are less than one-third of average free-flowing traffic speeds due to congestion and the high frequency of bus stops. Short journey lengths and heavy delays experienced by bus services on main bus corridors approaching the central area, coupled with the availability of free, unrestricted parking, result in a higher perceived 'generalised cost' of travelling for a bus user compared with a car user—thus reinforcing the cultural car dependency preference.

Sharing the same road space with general traffic increases the problem of unreliability of bus service. Unlike cars, buses cannot bypass localised congestion as service routes are fixed. Public transport average trip times are generally two to three times as long as those of cars when including waiting, idling and transfer times. The allocation of segregated road space through bus lanes to assist buses in getting through congested road sections during peak hours has, so far, been quite limited in its extent and not without strong public reaction.

To date, most bus lanes have been implemented on dual carriageway roads, where there is more space for their implementation and where it is possible to retain on-street parking. However, the sections of bus corridors on which buses experience the most delay today are mainly single carriageways with on-street parking. Measures facilitating buses to bypass congestion here would necessitate the removal of on-street parking at peak hours.

Using the transport model, the opportunity now exists to accurately identify strategic sections of the bus network with high patronage (see Figure below). Additionally, the model can be used to identify the top origin-destination matrices showing the predominant movements and their model split, thus providing useful information for bus service, road infrastructure, and route development.

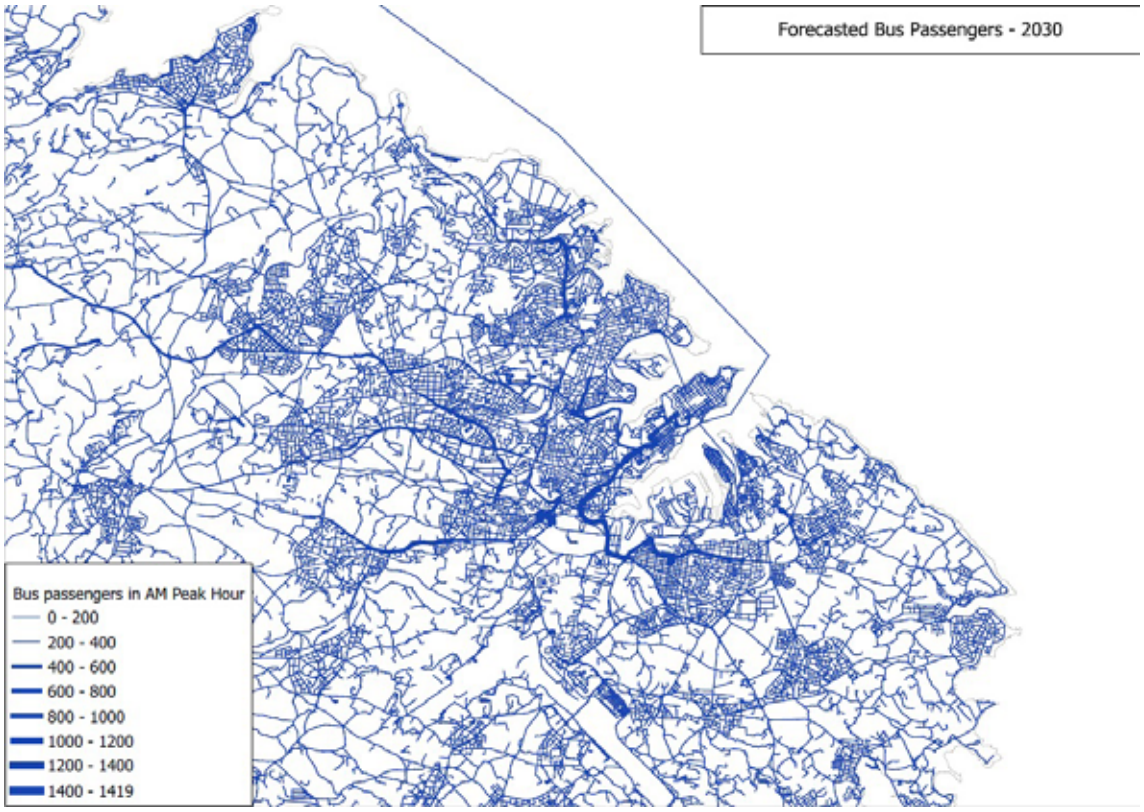
Regional mobility analysis provides further insight into the origination of trips for the various regions. This illustrates the peak commuting movements from the outer-lying regions of Malta to the TEN-T Urban Node of Valletta (which includes Valletta and the Northern and Southern Harbour Regions). Analysis of movements between the North and South Regions as a whole illustrates the high volume of trips interchanging between the two regions during the morning peak hour. Such trips result in the concentrated congestion being experienced by the Strategic Network at critical sections such as Triq Aldo Moro and Regional Road.

The model has also allowed spatial mapping of demographic data to identify major employment nodes and residential areas with the highest densities. Public transport service frequencies should also respond to these nodes. Valletta, Qormi and Floriana have been identified as existing primary employment nodes, with each node having more than 6% of the employees. San Ġiljan and Birkirkara are considered to be secondary nodes with between 5-7 % of employees. Tertiary nodes include Msida, San Gwann, Marsa, Luqa, Sliema, San Pawl il-Baħar, and Mosta, each with between 3% and 5% of employees. A review of the planning policy has also identified other future nodes being targeted for further development: St. Julians, Mrieħel, Smart City, Marsa, and the airport's surroundings.

Residential areas with the highest densities are Msida, Birkirkara, Sliema, Fgura, St. Julians, Pieta' and Qormi. Some local councils that are less dense but have large populations include St. Paul's Bay and Marsaskala.

The predominant movement of people is therefore identified to occur between the North Outer Harbour and both the North Inner Harbour and Peninsula. There is also a strong movement between South to North and vice versa. In these latter cases, it should be noted that much of the population remains concentrated around urban centres within the localities themselves.

Figure 16: Forecasted Bus Passengers 2030 (using current bus route configuration)



The main Public Transport movement corridors are noted at:

- Mosta, Birkirkara, Ħamrun, Valletta
- Mosta, Birkirkara, Msida, Valletta
- Naxxar, Birkirkara, Msida, Valletta
- St. Julians, Sliema, Gzira, Msida, Valletta
- Fgura, Paola, Marsa, Valletta
- Qormi, Ħamrun, Valletta

Significant data is automatically collected through bus tracking devices and bus ticketing information. This data could be more effectively utilised to identify local areas of congestion more accurately—on the road, on the bus, and at bus stops. Such data can be used to plan and justify bus corridor interventions.

National guidelines for the design layout of bus stops were published in 2009, establishing geometrical standards that allow buses to safely pull into and out of stops parallel to the kerb. However, many bus stops still do not meet these standards and are too short for proper docking, often causing buses to obstruct traffic. Moreover, bus lay-bys cannot be introduced in new projects if strategic decisions prevent road widening to protect agricultural land. Additionally, implementing lay-bys in densely built urban areas is challenging.

Currently, only 29% of bus stops have shelters and just 4.5% feature real-time information displays. The installation of bus shelters at key locations has been hindered by limited space, requiring narrower and more flexible designs that are difficult to implement universally. Illegal parking at bus stops in busy commercial streets and poor enforcement further impact the operational performance of the bus service.

Measures

In response to these issues, the following measures have been identified:

2.4.1.1
Draft a new national public transport strategy for the Maltese Islands, with periodic reviews

Malta's evolving transport demands, and the unique challenges posed by its combination of climate, geography and topography, require a public transport framework that meets the needs of its growing population. In this regard, efforts will be undertaken towards a seamless transition between the two modes of transport with a view to ensure greater efficiency.

The National Public Transport Strategy will lay out Malta's vision and objectives for the next decade, to ensure an efficient, sustainable, and inclusive public transport system. This strategy is expected to adopt a multifaceted approach, ranging from infrastructure and fleet upgrades to service frequency and coverage. It is envisaged that such a strategy will be monitored and updated on a regular basis to ensure that its relevance and effectiveness are maintained.

2.4.1.2
Evaluate and redesign the current public transport network

Malta's transport system has undergone significant changes due to shifting demographics, urbanisation patterns, and evolving commuter preferences. To ensure public transport remains responsive, efficient, and aligned with these dynamics, it is crucial to re-evaluate and adapt the network design continuously.

This comprehensive assessment will cover both scheduled services, such as regular buses, and unscheduled services, including demand-responsive transport and school buses. The aim is to identify gaps, optimise routes, and ensure the network meets the population's evolving needs and the seasonal influx of tourists. Based on the insights from this review, a subsequent redesign may be initiated to address gaps, enhance connectivity, and ensure the network adequately serves both urban and rural communities. The goal is to provide a public transport service that aligns with current and future demands, delivering efficiency, punctuality, and user satisfaction.

2.4.1.3
Begin preparatory work on a rapid-link transport system for Malta

Trip analysis using the National Transport Model shows that there is a large number of trips bound for the Northern and Southern Harbour areas (Figures 17 and 18). The patterns are understandable, as they the areas mentioned are major employment hubs, resulting in congestion along key arterial routes such as Regional Road and Triq Aldo Moro. At the same time, localities such as St. Paul's Bay, Mosta and Marsascala generate high levels of travel demand despite being relatively distant from the main urban core. This reinforces the need for a fast, reliable mass-transport system that can meet citizens' expectations. In this context, preparatory work will commence on a rapid link to provide a high-capacity, efficient connection across the Islands. This will be complemented by a high-quality bus network designed to strengthen local and regional accessibility, ensuring seamless integration with the rapid link.

Figure 17: Trips Generated in Local Councils AM Peak Hour 2030

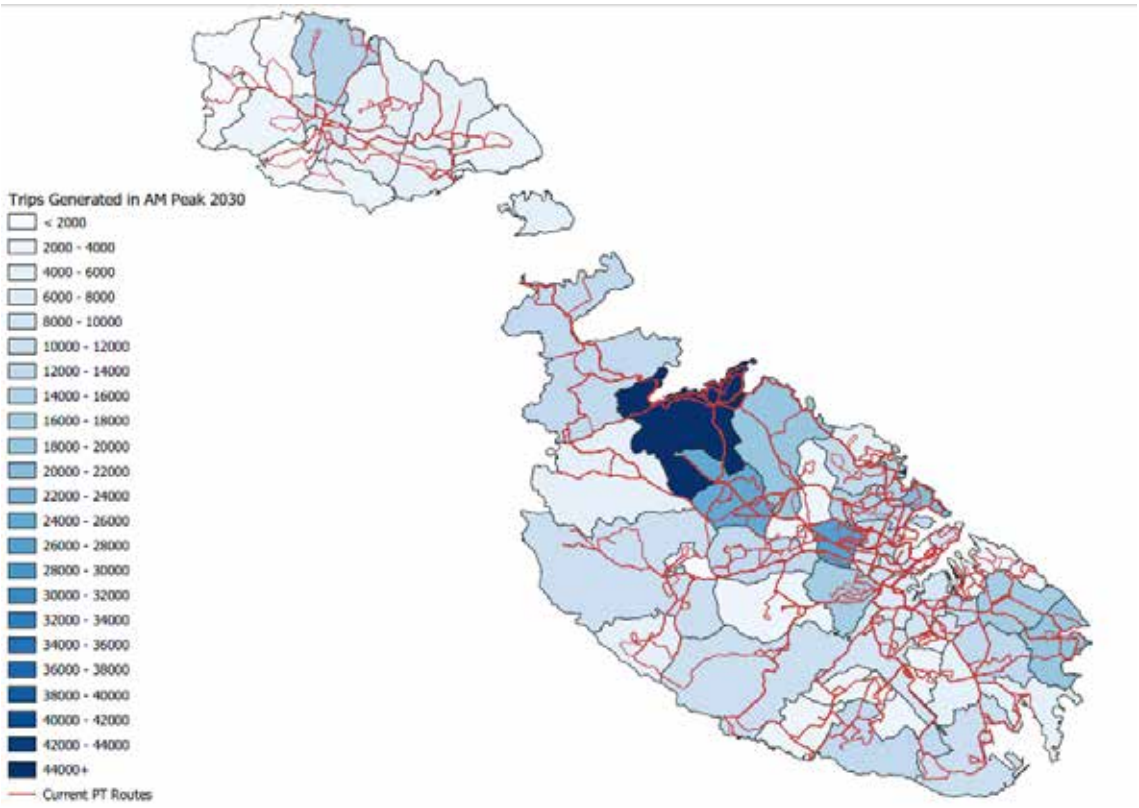
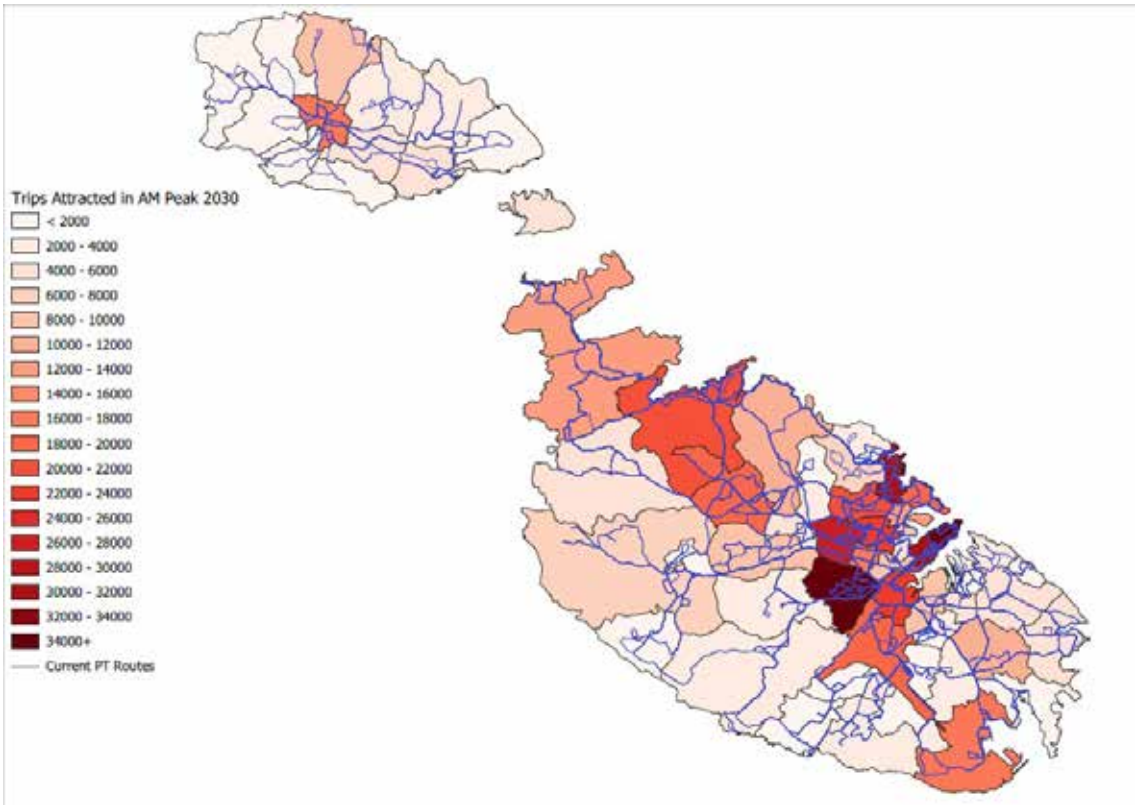


Figure 18: Trips Attracted to Local Councils AM Peak Hour 2030



2.4.1.4
Carry out an in-depth analysis on the prioritisation of public transport over other motorised modes

Malta's dense urban landscape and unique road structure necessitate efficient traffic management. With a rising population and increased tourism, prioritising public transport is fundamental for ensuring sustainable urban mobility.

This measure will analyse the implementation of dedicated lanes, and other priority measures, specifically for public transport and its implications within the Maltese context.

Based on the comprehensive transport modelling and spatial analysis conducted in conjunction with the latest Transport Master Plan, several crucial bus corridors have emerged as priorities. These corridors have been identified due to their significance in regional movement, instances of slow bus travelling times, and consistently high patronage and frequency levels.

Observations from 2020/2021 amidst the COVID-19 pandemic, when road traffic was markedly reduced, underscored the potential of prioritising buses. During this period, a significant upswing in bus punctuality was noted, with delays becoming negligible. Such insights underscore the value of prioritising bus corridors and should be explored further to develop strategies for improving public transport connectivity across Malta.

Post-implementation, monitoring mechanisms will be set up to analyse the effectiveness of the priority infrastructure. Feedback from public transport operators, passengers, and the wider public will be crucial for continual improvements. Collaborative workshops with stakeholders, including businesses, local councils, and transport operators, will be organised to gather insights and refine the infrastructure. Promotion and awareness campaigns will also be crucial to inform and encourage the public about the enhanced efficiency of the public transport system.

2.4.2 Improve public transport service quality to and between strategic employment nodes, services outside the inner harbour regions and peripheral residential areas

Issues

Areas that are served by routes with high bus frequencies tend to be areas with high employment and residential densities. However, peripheral residential areas do not receive the same level of service. While this is understandable from a financial feasibility perspective, public transport also serves a social function by ensuring peripheral communities are not isolated from essential facilities. Therefore, exploring feasible ways to improve service quality in peripheral residential areas is necessary.

Service quality does not only relate to bus frequencies; the number of routes servicing strategic facilities / major trip attractors is also essential, as this will determine how easy it is to access that location from different parts of the island.

Overlaying the bus network routes with strategic employment nodes reveals that major employment hubs, such as Mrieħel, Smart City, Qormi, and Bulebel, are underserved. Generally, places of interest and major trip attractors outside the harbour areas tend to have lower levels of accessibility. The model also allows for mapping of access times to popular locations such as the Airport, Mater Dei Hospital / University and St. Julians /Paceville. The mapping shows that such locations can generally be reached within 45 minutes by car from most locations; however, these journey times are comparatively much longer for many locations when using public transport.

Measures

In response to these issues, the following measures have been identified:

2.4.2.1
Implement Intelligent Transportation System technologies across the public transport network to support the efficiency and punctuality of public transport services

Adopting ITS technologies is expected to positively contribute towards the improved efficiency of the public transport network and increase its utilisation.

The deployment of ITS technologies encompasses a range of digital solutions tailored to optimise public transport operations. Key initiatives under this measure can include:

Real-time Traffic Management: sensors and advanced data analytics can provide real-time insights into traffic flow and congestion, allowing dynamic route adjustments to bypass delays. A digital road permits system is also currently being planned which will enable the operator to adapt more quickly to planned road closures and road works (see Measure 2.7.2.2).

Predictive Maintenance: through sensors on vehicles and infrastructure, maintenance issues can be detected in advance, reducing unexpected downtimes and ensuring consistent service.

Enforcement: ITS can be used to detect infringements and improper use of bus lanes and bus bays (see Measure 2.7.4.2)

It is expected that this initiative will build upon the existing infrastructure network, which includes additional enforcement cameras linked to the Malta Traffic Control Centre.

2.4.2.2
Use electronic data collected by public transport operators to quickly adapt route timetables

As urban movement patterns shift and the number of public transport users fluctuates, the Maltese public transport system must be agile and adaptive. Leveraging electronic data offers an innovative solution, allowing the system to respond quickly to these changing dynamics, thereby enhancing service reliability and commuter satisfaction.

This measure seeks to proactively use electronic data passively collected on-board buses during their service operations. Amassed data provides valuable insights into bus usage patterns, congested stops, peak times, etc. By meticulously analysing this data, authorities can optimise bus operations, ensuring regular intervals between bus services and recalibrating the frequency based on real-time demand. Beyond immediate operational tweaks, this data can also help determine the necessity for additional public transport quality corridors based on detected shifts in movement patterns or escalating demands.

An ongoing analysis approach will be essential. As the data collection continues, periodic reviews and route timetable adjustments will occur. Collaboration with public transport operators will play a pivotal role in refining data collection processes, ensuring the insights gained lead to practical improvements in service delivery.

2.4.2.3
Run a public awareness campaign to promote bus travel and feeder services as an alternative to private cars

The increasing pressures of urbanisation and environmental concerns necessitate a shift from Malta's reliance on private cars. The goal is to steer a cultural change in transportation choices towards sustainable alternatives by elevating the profile of bus travel, including feeder services like Demand Responsive Transport (DRT) and Park and Ride services.

This measure entails an all-encompassing public awareness campaign that underscores the primary bus network and the supporting feeder services. Utilising multimedia platforms, community outreach, and partnerships with local stakeholders, the ongoing campaign will highlight the practicality of feeder services like DRT in connecting residents to the main bus network and the overarching benefits of choosing buses over cars. These include less congestion, economic savings, and less environmental damage due to fewer emissions.

2.4.2.4
Evaluate the use of parking facilities integrated with the public transport network to manage congestion in dense urban areas

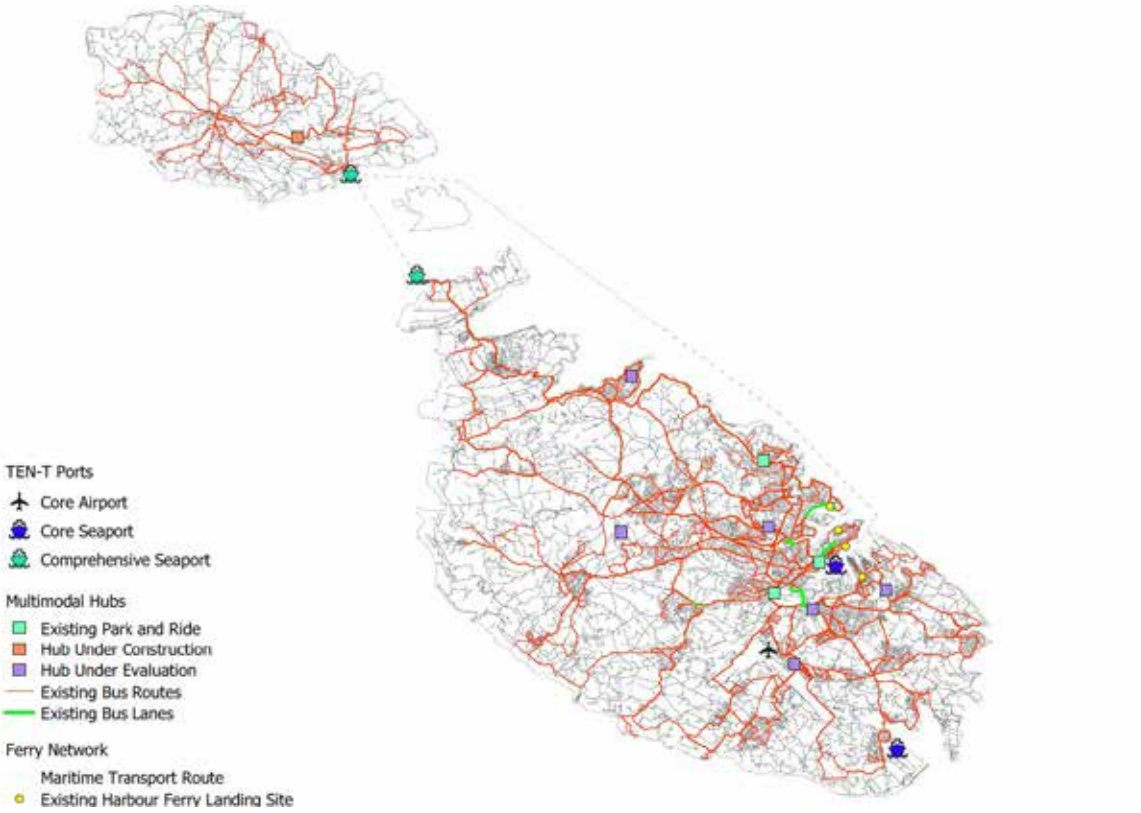
To address the complexities of urban transport within densely populated areas, multi-modal hubs and park and ride facilities are an important tool in managing congestion and promoting sustainable transport options. The overarching ambition is to develop infrastructure that addresses immediate transport challenges and aligns with Malta's vision for a sustainable, efficient, forward-thinking transport system.

In alignment with this, an in-depth assessment will be carried out to identify new parking facilities and areas where potential multi-modal hubs or park-and-ride facilities may be implemented to support a more sustainable transport network. The immediate objectives of this measure are threefold: evaluate the current state of potential locations for these facilities, identify areas of improvement for parking in urban areas, and implement strategic refinements in traffic management and parking solutions. Key areas of focus for this review are:

- Assessing the strategic placement and capacity for new parking facilities and solutions.
- Gathering and analysing user feedback to understand preferences and challenges/barriers to using these potential new facilities/solutions.
- Assess the feasibility of operating such new facilities and explore potential expansions or relocations to serve urban centres better.

Following the completion of the assessment, an action plan will be developed, setting out public awareness campaigns that will be required later in the process to promote the improved Park & Ride network and encourage its use by members of the public. This measure will go hand in hand with other parking management measures. It is essential that this measure is evaluated in line with creating a sustainable balance between on-street and off-street parking as necessitated in Measure 2.6.1.3.

Figure 19: Malta's multimodal public transport network



2.4.3 Improve the physical accessibility of public transport services

Issues

Notwithstanding significant investments having been made in recent years in accessible buses and infrastructure (termini, hubs and park and ride), access to many of the bus infrastructures, particularly on streets in residential and commercial areas, remains problematic for several user groups such as the elderly, persons with reduced mobility or impaired vision, amongst others.

Public transport waiting facilities need to be accessed on foot, and in this respect, footpath quality, continuity and width, as well as safe pedestrian crossing facilities, all form part of the overall travel experience by bus.

Measures

In response to these issues, the following measures have been identified:

2.4.3.1
Ensure requirements in the EU Accessibility Act 2019 (EUAA) are reflected in relevant national standards and policies

The EUAA is an EU law setting new minimum accessibility requirements for a range of products and services in EU Member States. The intention is to harmonise accessibility requirements and bring benefits to businesses, people with disabilities and the elderly[22]. While physical accessibility is already covered by Regulation (EU) No 181/2011[23] the EUAA goes further by allowing easy access to ticketing machines, payment terminals, touch screens, websites, and apps.

This measure will assess the EUAA's impact on public transport and propose an update to the Accessible Public Transport Infrastructure Policy if deemed necessary at the conclusion of the review.

Transport Malta will discuss the outcomes of this review with public transport operators and the Commission for the Rights of Persons with Disability, with a view to enhancing ticketing/ preboarding infrastructure needs, particularly at key public transport hubs.

2.4.4 Reduce the impact of clustering unscheduled public transport particularly in tourism hot-spots and commercial areas

Issues

The intense competition for limited road space in major tourist hotspots among various public transport services and between public transport operators and other road users often results in a lack of coordination and confusion. This frequently leaves tourists with a negative impression of the country's transport organisation.

The issue is exacerbated by the high concentration of tourist activity at these locations, limited space, poor enforcement, and low cooperation between operators. This results in illegal, haphazard parking of public transport vehicles and dangerous boarding and alighting of passengers in busy road sections.

Better public transport organisation in tourism hotspots will require improved liaison between internal and external stakeholders, such as transport operators, tourism, local councils, and enforcement bodies, to determine the optimal level of parking, boarding and alighting space provision. The possibility of introducing ITS technology to manage and enforce the correct usage of designated public transport spaces at busy locations should be investigated in combination with the use of satellite waiting areas from which operators can be electronically summoned in an orderly manner when it is their turn to pick up their passengers.

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[22] *Directive (EU) 2019/882 of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services*

[23] *Regulation (EU) No 181/2011 of the European Parliament and of the Council of 16 February 2011 concerning the rights of passengers in bus and coach transport and amending Regulation (EC) No 2006/2004*

Measures

In response to these issues, the following measures have been identified:

2.4.4.1
Evaluate school transport services

School journeys influence daily traffic patterns, often contributing to peak congestion periods. While around 35,000 students make use of free school transport, NHTS 2021 stated that approximately 43% of eligible households utilise the service. This measure calls for an evaluation of Malta's school transport services, the primary objective being to identify prevalent issues, inefficiencies, and areas of improvement within the system.

2.4.4.2
Facilitate a scaling up of a national car sharing/lift sharing/car club scheme

Introducing efficient, sustainable and communal mobility solutions can be an effective way to address traffic issues in Malta's intricate urban framework. A national car sharing/lift sharing/car club scheme presents a strategic intervention capable of reducing the demands on the road network, reducing emissions, and catalysing a shift towards a more communal and resource-efficient mode of transportation.

Some of these alternative mobility services have been piloted in the past and have been discontinued. Government should therefore carry out an assessment of the feasibility studies (in some cases, ex-post analysis) of rolling out such initiatives within the Maltese context. The aim is to provide residents and visitors with an accessible and convenient alternative to car ownership.

2.5 MULTIMODAL TRANSPORT

2.5.1 Improve intermodal seamless mobility (travel information, journey planning services and multi-modal ticketing)

Issues

Since the publication of the last TMP, significant improvements have been made in providing passengers with travel information and journey-planning services. Indeed, in 2016, the release of the Tallinja App provides users with scheduling information, synchronisation of timetables, and expected vehicle arrival time, among other capabilities. In 2024, capabilities were further expanded with the option to see live vehicle tracking on the network using a map interface.

Route and schedule information are provided to third-party mapping applications (by either operator or authorities) such as Google or Microsoft. However, not every mode or service is currently available. This leads to a lack of coordination and planning by operators for multimodal transport and hinders the use of multimodal transfers by users of the public transport system.

That said, there is some multi-modal integration for ticketing. Since 2017, the Tallinja Card (the contactless smart ticketing card provided by MPT has been usable on the Inter-Harbour ferries.

Measures

In response to these issues, the following measures have been identified:

2.5.1.1 Collect and consolidate all public transport routes and scheduling data into a single platform

Whether urban or otherwise, the contemporary traveller demands convenience, speed, and integration in their transport choices. As the transport network develops, the merging of ticketing and journey planning becomes an essential feature to enhance user experience, encourage public transport adoption, and streamline operations. Effective multimodal platforms in Malta should offer centralised ticketing solutions for all modes, with real-time journey planning and convenient payment.

Delegated Regulation (EU) 2017/1926 and its revision 2024/490 establish the legal obligation for EU Member States to provide multimodal travel information services to end users covering a variety of travel modes via their National Access Point (NAP). Transport Malta is currently developing Malta's NAP.

Therefore, the purpose of this measure is to standardise the collection and format of multimodal travel data and ensure that it is consolidated on a single platform for further use.

2.5.1.2
Facilitate the provision of journey planning and ticketing information at key transport hubs such as ferry ports

Transport hubs serve as essential nodes in the mobility network, where they provide information and act as interchanges between transport modes for residents and visitors. The provision of easy-to-access journey planning and ticketing information at these hubs is crucial, ensuring swift transitions between modes, maximising travellers' convenience, and promoting the overall use of public transport and other sustainable modes.

This measure will introduce comprehensive information points and systems at Malta's key transport hubs, particularly ferry ports. These could include:

- Digital and physical information centres or kiosks detailing routes, schedules, and fare structures for various transport options.
- Interactive screens for real-time journey planning, including estimated times of departure, potential delays, and connections.
- On-site ticket vending machines and counters offering single-use and longer-term transit passes.
- Integration of the information systems with mobile applications to allow travellers to continue their planning and tracking on the go.

2.5.2 Improve the quality of the environment at primary and secondary public transport hubs

Issues

Over the years, improvements have been made to principal public transport hubs (Valletta, Buġibba, Malta International Airport, University, Ċirkewwa, Mġarr and Victoria) and secondary hubs (Mosta Technopark and Paola Square). However, work is still required to upgrade other bus infrastructure facilities, especially those that have experienced increased users over the years. Indeed, even for recently upgraded hubs, it is necessary to evaluate whether further improvements can be made.

Measures

In response to these issues, the following measures have been identified:

2.5.2.1
Carry out an accessibility audit of all transport hubs to improve the environment for pedestrians, cyclists and vulnerable road users, as well as those with mobility impairments

The inclusivity and safety of transport hubs are vital to developing a more sustainable, equitable, and efficient urban mobility system. Ensuring pedestrians, cyclists, and vulnerable road users, including those with mobility impairments, can access and navigate transport hubs quickly and safely directly supports a multi-modal transportation approach. Through an accessibility audit, gaps and potential hazards can be identified to help improve the environment for pedestrians, cyclists, vulnerable road users, and those with mobility impairments (in line with the EU Accessibility Act).

This measure necessitates carrying out an audit of the physical accessibility of all transport hubs in Malta using established assessment tools such as the Pedestrian Environment Review System (PERS) and the Cyclist Environment Review System (CERS). The evaluation will be centred on:

- **Physical Infrastructure:** Assessing the quality and design of pathways, ramps, crossings, and cycle routes.
- **Safety Features:** Examining the effectiveness of safety measures, including signage, pedestrian crossings, and visibility factors.
- **Ease of Navigation:** Considering the simplicity of transit for pedestrians and cyclists within and approaching the hubs.
- **User Experience Feedback:** Receiving insights from users to identify areas of difficulty or potential improvement, including those related to personal security, particularly at night.

The audit's insights will be fundamental in understanding where enhancements are required to make the transport hubs more user-centric and physically accessible.

2.6 Private motorised transport

2.6.1 Reduce the role of the car in urban centres and on congested interurban routes to increase space for other modes

Issues

Malta has the highest road network density and the highest level of urbanisation in all European Union countries.

As a small island state, its geospatial characteristics heavily constrain new road provisions or major road widening in urban areas. Building expropriation is expensive and challenging. Environmental protection and heritage laws often legally preclude providing road infrastructure to bypass the built-up areas.

The modelling results clearly indicate that a number of critical sections of the strategic road network (both TEN-T and roads supporting bus corridors) will be operating at or near their capacities in 10 years' time. Infrastructure project interventions to remove critical traffic bottlenecks on the TEN-T have been undertaken at Kappara junction and Marsa Addolorata Jaunction, amongst others. However, severe congestion problems are also being forecast on other critical sections of the road network where additional road space is not available (for example, Qormi, Sliema and Msida areas and the central section of TEN-T core and comprehensive network between Triq Diċembru 13 and Tal-Qroqq Junction).

The areas with the highest levels of daytime trip attraction are concentrated around Valletta and Floriana, Qormi and Marsa, as well as Msida, St. Julians, and Victoria in Gozo.

According to the NHTS 2021, almost all personal vehicle trips in Malta (98%) do not involve paid parking. Around 72% of trips are parked on the street, while nearly 19% benefit from free parking provided by workplaces or destinations. Only 2% of trips involve a payment, mostly in designated parking facilities, with average fees of around €2 per trip.

Development planning policies that require developers in central areas to provide a minimum number of spaces in new developments and the intensification of on-street parking provision (discussed in previous sections) only temporarily relieved the busy central areas. The increased supply of central area parking spaces has filled up quickly, and the approach roads leading to these areas have inevitably become more congested. Furthermore, such policies can encourage, rather than restrain, car use, further increasing urban congestion.

Private cars account for around 84% of road traffic and generate roughly three-quarters of all mobility movements in Malta. By 2030, the economic cost of traffic congestion—driven by longer journey times for passengers and freight, higher vehicle operating costs (fuel, maintenance, drivers), and related impacts—is projected to reach €917 million per year, up from €770 million in 2025, unless effective measures are put in place.[24]

[24] *This does not include environmental costs such as Co_2 emissions and other air pollutants which are expected to have a an additional to the Maltese economy of 195.4 million euros per year.*

Measures

In response to these issues, the following measures have been identified:

2.6.1.1
Study the feasibility of Green Travel Plans at new and existing developments that are high-volume travel generators

Promoting sustainable mobility through travel plans is a common strategy that aims to reduce car use and, consequently, congestion, air pollution and GHG emissions. Establishing green travel plans as a mandatory component for new developments and incentivising their adoption in existing high-traffic generating sites, like schools, hospitals, offices and commercial development, can effectively encourage a modal shift towards more sustainable mobility. For example, combined strategies may be considered for co-located organisations at business parks.

This measure is expected to study the introduction of mandatory green travel plans for new developments in their development application. The scope of these plans can cover staff travelling to work and on business, the travel of customers or visitors, and fleet management. The plans should include a range of initiatives, activities and actions to encourage change in travel behaviour and reduce car use. Some examples include:

- Provision of storage and showering facilities to encourage cycling.
- Sharing accurate information on public transport options.
- Offering subsidies or securing discounts from transport operators.
- Encouraging flexible working conditions such as teleworking.

2.6.1.2
Implement an awareness campaign around carpooling journeys in connection with green travel plans

With Malta's unique landscape and concentrated urban areas, the efficient use of road space becomes critical. Carpooling offers an immediate solution to some of the island's pressing transport challenges. The goal is to integrate shared commuting into the residents' daily routines and the significant influx of tourists, making it a popular and environmentally friendly option in Malta. Not only does it hold the potential to ease the daily traffic bottlenecks experienced in key hubs like Valletta and Sliema, but it also aligns with Malta's commitment to lower carbon emissions and adopt sustainable mobility solutions.

This measure involves launching an awareness campaign to promote the benefits of carpooling in line with green travel plans. The campaign will highlight the advantages of shared journeys, such as reduced traffic congestion, lower carbon emissions, and savings for individuals.

Government will also seek to establish partnerships with local businesses, schools, and communities to ensure the campaign's reach and impact. The public will be asked for regular feedback to refine the campaign and better address their needs.

2.6.1.3
Carry out an assessment of parking provision in Malta and develop a comprehensive national parking/travel demand management strategy

The primary goal of this assessment is to digitally map the supply and demand for parking across the Maltese Islands. This will support the effective management of parking spaces, with benefits that include more accessible and efficient land use, improved traffic flow, and urban public spaces that are safer and more welcoming for cyclists, pedestrians, and micro-mobility users. The initiative will support the broader goals of the SUMP[25], to enhance the space available for buses, cycling, and walking in urban and inter-urban areas.

The development of a National Parking and Travel Demand Management Strategy will involve:

- A national audit on existing parking across Malta.
- Aligning parking policies with SUMPs to optimise space for buses, cycling, and walking in urban areas and improve inter-urban routes for buses and cycling.
- Incorporating innovative technologies, such as intelligent parking systems, to manage parking spaces and support the broader strategy efficiently.
- In urban regions, evaluating the potential for reducing on-street parking to create more space for pedestrians, cyclists, and micromobility users, as well as for social and community activities.
- Exploring the adoption of innovative parking technologies and systems to enhance the efficiency of parking space usage and management.

Once a strategy has been adopted, it should be continuously monitored and adjusted based on the outcomes of any action. Public awareness campaigns will be crucial to highlight the changes and their benefits and develop community support and participation in the new parking and mobility initiatives.

2.6.1.4
Review and update parking standards to facilitate greater transit-oriented development

Updating parking standards is a crucial step in facilitating transit-oriented development. This involves shifting from minimum parking requirements to maximum limits, encouraging the use of public transport and reducing the dependency on private vehicles. The revision will also focus on integrating sustainable practices, like provisions for electric vehicle charging, into urban development plans. Through this measure, Malta can encourage developments that are more accessible, sustainable, and aligned with modern urban planning principles.

[25] *As per TEN-T Regulation (EU) 2024/1679 - TEN-T Regulation*

The comprehensive revision of parking standards will include, amongst others:

- Analysing current parking requirements for new developments against external best practices.
- Implementing maximum parking limits instead of minimum requirements to discourage excessive provision of parking spaces and promote the use of alternative transport modes.
- Including mandatory requirements for electric vehicle charging points in parking standards, supporting the transition to cleaner transportation options.

2.6.2 Reduce the adverse environmental, social and economic impacts of motorised modes, both in urban areas and on the wider road network

Issues

Road transport is and will likely remain a significant contributor to air pollution in Malta.

Traffic directly contributes to various gaseous air pollutants and suspended Particulate Matter (PM) of different sizes and compositions. It can account for up to 3027% of PM2.5 (particular matter of size less than 2.5µm) and 28% of PM10 (particulate matter of size less than 10µm) in urban areas. From a national emissions perspective, covering the national territory, road transport is also the main contributor to nitrogen dioxide emissions (42%), carbon monoxide (73%), and also one of the main contributors of Volatile Organic Compounds (VOCs), all of which can adversely affect human health.[26]

The adverse effects of road traffic on air quality are much higher in the so-called street canyons, where pollutants are trapped.

Living or working near busy roads (or both) directly affects public health. According to the World Health Organisation, time spent in traffic is also critical for population exposure, with travellers often being exposed to levels three times the background levels. Road transport-related air pollution is associated with health impacts such as premature deaths, respiratory diseases, cardiovascular diseases, cancer, and issues with reproduction.

Air pollution varies in time and space and depends on several characteristics, such as proximity to roads, the composition of the vehicle fleet, traffic patterns, and the presence of other pollution sources.

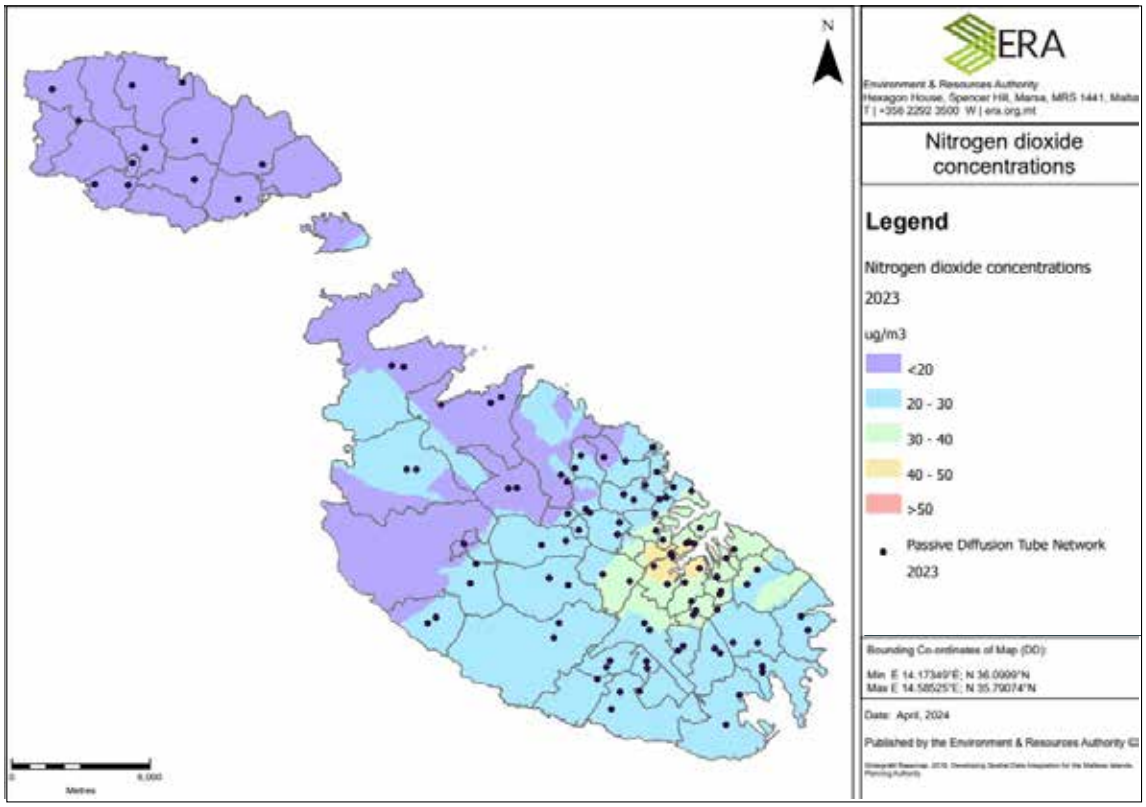
Since 2015, Malta's average motor vehicle stock age has increased from 13.9 to 15.38, significantly higher than the European Union average of 12.3. Older vehicles produce significantly higher levels of pollutants from their tailpipes than newer vehicles. Catalytic converters in vehicle exhaust systems only achieve their design effectiveness after the engine reaches and runs at normal operating temperatures for some time.

[26] *Source apportionment studies carried out at Msida air monitoring station for PM 10 in 2018 (Scerri, M. M., Weinbruch, S., Delmaire, G., Mercieca, N., Nolle, M., Prati, P., & Massabò, D. (2023). Exhaust and non- exhaust contributions from road transport to PM 10 at a Southern European traffic site. Environmental Pollution, 316, 120569) and PM 2.5 in 2016 (Scerri, M. M., Kandler, K., Weinbruch, S., Yubero, E., Galindo, N., Prati, P. & Massabò, D. (2018). Estimation of the contributions of the sources driving PM 2. 5 levels in a Central Mediterranean coastal town. Chemosphere, 211, 465-481) respectively.*

With the average urban trip covering distances of only 6.1km, many vehicles run at sub-optimal temperatures, and therefore, the pollution prevention mechanism is not as effective as designed.

The urban environment around the harbour areas in Malta is characterised by high volumes of road traffic and narrow roads forming street canyons. Air quality in these areas is of great concern, as illustrated by the data in the figures below showing Nitrogen Dioxide concentration (Figure 20).

Figure 20: Nitrogen Dioxide Concentrations - 2023



Charging infrastructure for electric vehicles has been implemented throughout the islands. However, even though this infrastructure is in place, the uptake of hybrid and electric cars is still well behind the European averages, and more efforts are needed to incentivise the uptake of these low and zero-emission vehicles.

The recent adoption of the revised Ambient Air Quality Directive (Directive (EU) 2024/2881) introduces stricter EU limit values for key pollutants such as $PM_{2.5}$ and NO_2, bringing them closer to the World Health Organisation's guidelines. These new standards, which apply from 2030, will shape Malta's future air quality management and underline the importance of continuing efforts to reduce emissions from road transport, particularly in densely trafficked urban areas.

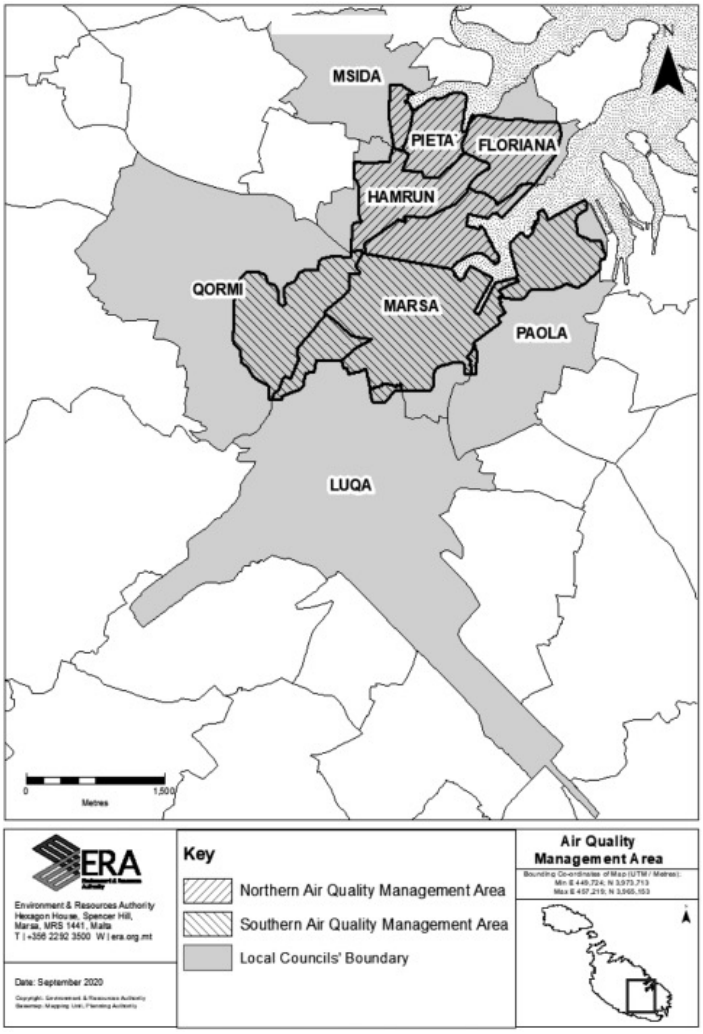
Measures

In response to these issues, the following measures have been identified:

2.6.2.1
Continue contributing to the alignment with air quality plans for areas that will exceed EU air quality standards in 2030

The ERA monitors a network of air quality sensors around the Maltese islands. Exceedances of limit values in the Northern and Southern Harbour Area in 2018 led to the creation of an Air Quality Management Order in 2020, focused on a designated Air Quality Management Area (AQMA). Consequently, an Air Quality Plan for Malta was published in 2023 and updated in 2025, and introduced measures targeting poor air quality and avoiding breaches of daily pollution exceedances. As transport is a key contributor to poor ambient air quality, Government will therefore ensure alignment and coherence between transport and air quality objectives.

Figure 21: The Air Quality Management Area



2.6.2.2
Carry out a feasibility study for a Low Emission Zone within the Northern/Southern Harbour Region

Establishing a Low Emission Zone (LEZ) in the Northern/Southern Harbour region aligns with Malta's goals to reduce air pollution and promote environmental sustainability. A feasibility study, being carried out by the ERA) in line with the measures of the TMP and the NECP, is underway to assess the practicality and potential impact of an LEZ in areas with heavy traffic and poor air quality. The study applies a cost–benefit analysis (CBA) framework to evaluate economic, social, and environmental performance, while also considering complementary measures such as improvements in public transport, modal shift incentives, and demand-side actions.

Beyond air quality benefits, the analysis also examines wider impacts, including congestion, accidents, greenhouse gases, and noise pollution. Based on the study's results, a pilot LEZ will be launched in the Northern/Southern Harbour region to test recommendations in practice and provide insights into effectiveness, challenges, and community impact. The pilot will inform future adjustments and possible expansion of the LEZ, supported by public engagement and education to ensure understanding, support, and compliance.

2.6.2.3
Align transport policies with noise action plans to ensure that Malta will comply with the EU Noise Directive

Adhering to the EU Noise Directive is essential for Malta to manage environmental noise levels effectively. This measure will ensure ongoing alignment of transport policies with Malta's Noise Action Plan, aiming to meet EU standards and minimise noise exceedance periods. It is a critical commitment to safeguard public health, enhance living conditions, and preserve the natural soundscape.

2.6.3 Promote, facilitate and incentivise the purchase and use of zero-emission vehicles to replace internal combustion engine vehicles for passenger use

Issues

Malta's dense road network and high levels of motorisation make the impacts of road transport particularly acute, especially in urban areas where air and noise pollution directly affect health, the environment, and overall quality of life. While improvements in urban design, greening, and traffic management can help to mitigate some of these effects, lasting progress requires tackling emissions at their source. Transitioning away from ICE) vehicles and promoting the uptake of zero-emission vehicles (ZEVs) is therefore central to reducing the negative impacts of road transport.

Encouraging this shift through targeted incentives and supportive measures not only reduces harmful emissions but also helps to lower noise pollution, enhance urban liveability, and contribute to national energy and climate commitments. This measure directly supports the objectives of the TMP and the NECP, while also aligning with the requirements of the revised EU Ambient Air Quality Directive (Directive (EU) 2024/2881), which introduces stricter pollutant limit values to be met by 2030. Together, these efforts will help ensure that Malta's transport system becomes cleaner, quieter, and more sustainable, while maintaining accessibility for residents.

Measures

In response to these issues, the following measures have been identified:

2.6.3.1
Review the current approach to providing incentives that promote Malta's clean vehicle fleet renewal and update as necessary to increase the uptake of zero-emission vehicles in Malta by 2030

Accelerating the transition to zero-emission vehicles is critical to reducing transport emissions in Malta. The current incentive strategies to boost the uptake of cleaner vehicles will be reviewed and updated as necessary.

This measure will include aspects such as:

- Working towards the transition of Malta's bus and taxi fleets to zero-emission vehicles
- Implementing and enhancing fiscal measures and incentives explicitly designed to encourage the purchase and use of zero-emission vehicles, making them accessible to consumers.
- Evaluate current incentives with a view to promoting greener vehicles.

A grant scheme was introduced in 2016 for EVs, although uptake was initially slow due to a lack of consumer confidence in EVs and a lack of supply of suitable vehicles. In 2023, the EU agreed on rules banning the sale of new petrol and diesel cars and vans from 2035. Malta must now develop complementary policy and regulation that support and accelerate the transition to zero-emission vehicles.

2.6.3.2
Maintain and adapt, as required, the substitution requirements on importers of road diesel and petrol

The biofuels substitution obligation remains one of Malta's key policy instruments for increasing the share of renewable energy in transport and reducing greenhouse gas emissions from road transport. This obligation, originally introduced through Legal Notice 68/2011, requires importers and wholesalers of automotive fuels to ensure a minimum share of biofuels in the total volume of petrol and diesel placed on the market. The target of 10% biofuel content was achieved by 2020, and under Directive (EU) 2018/2001, Malta committed to reaching a 14% renewable energy share in transport by 2030, including a 3.5% share of advanced biofuels. The updated NECP projects continued growth in biofuel use, particularly through blending biodiesel, Hydrotreated Vegetable Oil (HVO) and forest processing residue biofuels into the fuel mix.

Moreover, Directive (EU) 2023/2413 (RED III) will introduce more stringent sustainability criteria and updated targets, including the use of renewable fuels of non-biological origin (RFNBOs). The government is currently reviewing the substitution framework to ensure alignment with RED III, including the application of multipliers and the environmental integrity of the fuels used. This measure is expected to remain a central pillar of Malta's decarbonisation pathway for the transport sector.

Key actions of this measure will include:

- Continuously reviewing and updating substitution requirements to ensure they are in accordance with the latest EU standards (e.g. Directive (EU) 2023/2413, "RED III"), especially regarding the incorporation of biofuels, advanced biofuels and renewable fuels of non-biological origin into the fuel mix and the applicability of multipliers for these fuels when supplied to road transport.
- Engaging with fuel importers, environmental experts, and policy advisors to evaluate the environmental and market impacts of these substitution requirements.
- Implementing policy changes that incentivise the importation of cleaner fuels, including biofuels, to reduce the overall environmental impact of road transportation in Malta.
- Regularly monitoring the quality and composition of imported fuels to ensure compliance with standards.
- Providing clear guidelines and support to fuel importers to facilitate the transition towards more sustainable fuel options.

Malta will actively communicate any changes to importers and provide the necessary support for compliance. The impact of these changes will be regularly monitored and evaluated to gauge their effectiveness in reducing emissions and improving air quality. Public awareness campaigns and educational initiatives will also be part of the strategy to inform citizens about Malta's efforts to transition to more sustainable fuel options and their role in supporting these efforts.

2.6.3.3
Support the implementation of an EV charging infrastructure deployment plan for road transport that is aligned with Malta's National Energy and Climate Plan

To enable the shift towards electric mobility in Malta, EV owners and drivers must be confident in accessing suitable charging infrastructure. In 2022, the Government published its National Policy for Electric Vehicle Public Charging Infrastructure, which provided a roadmap for the sector in the coming years.

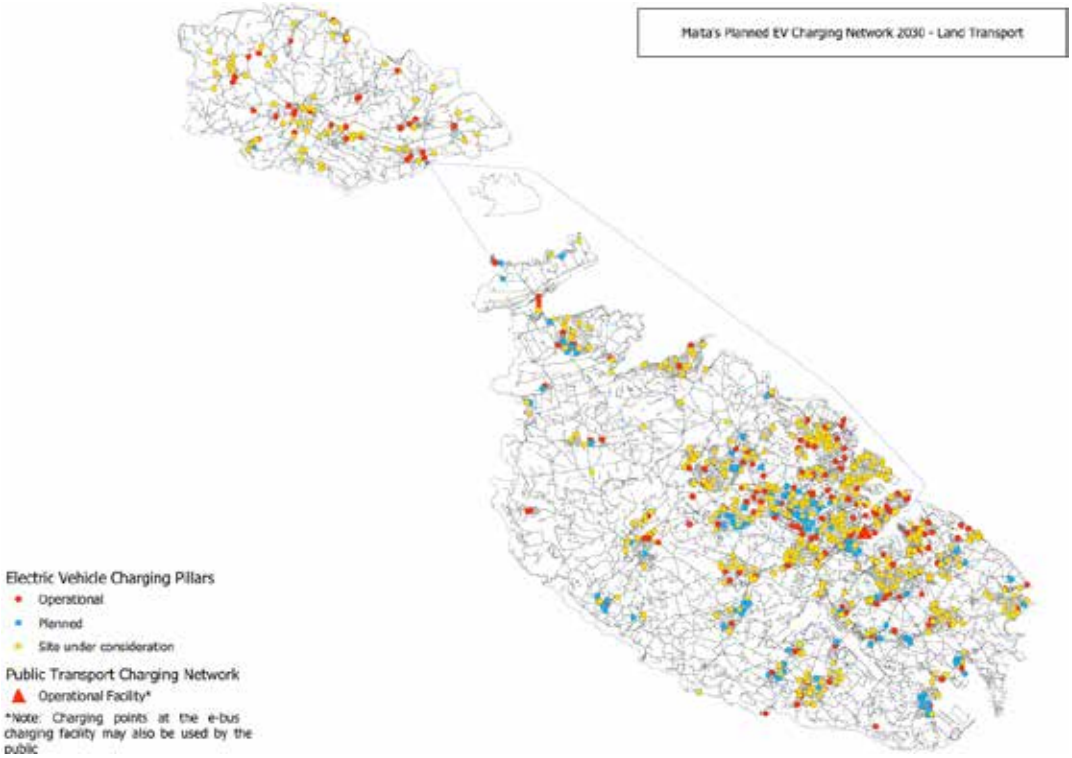
In this regard, Government has committed to having a total of 1572 charging points by 2025. Within this context, the recently adopted European Union Alternative Fuel Infrastructure Regulation (AFIR) sets legally binding national and EU-wide targets for deploying alternative fuel infrastructure, including charging stations.

In addition to carrying out deployment actions outlined in the infrastructure plan, public engagement campaigns will help to encourage citizens and businesses to transition to electric vehicles.

2.6.3.4
Develop a transition plan to ensure the replacement of all public sector (Government and Local/Regional Authority) vehicles with zero-emission alternatives by 2030

The government is leading by example by transitioning its public sector fleets to zero-emission alternatives and has committed to transitioning its public sector vehicle fleet to electric vehicles by 2030. Indeed, the Government has already taken a first step by acquiring 250 EVs for general use within the Public Services, eliminating 370 ICE vehicles from its fleet. A transition is expected to be developed to replace all public sector vehicles with zero-emission alternatives by 2030.

Figure 22: Planned expansion to Malta's EV charging network - Land Transport



2.6.3.5
Collaborate with the private sector to launch an Electric Vehicle Skills and Capacity Building Programme

As the number of EVs increases in Malta, it is important that there is convenient access to quick and affordable maintenance and repair services. This requires a skilled workforce trained to work safely and efficiently on electric vehicles. Through consultation and partnership with relevant private sector organisations, the Government will support EV training through a skills and capacity-building programme.

MCAST has already launched an apprenticeship course for qualified automotive technicians seeking to broaden their knowledge of Electric Vehicles and Hybrids. However, there is a potential for higher take-up, especially from car dealerships or car repair operators.

2.7 ROAD SAFETY AND INFRASTRUCTURE MANAGEMENT

2.7.1 Ensure a robust framework is followed for road safety strategy, regulation and enforcement

Issues

The responsibility of carrying out the enforcement of regulations in the transport sector is spread over three enforcement agencies, primarily the Malta Police Force, Local Wardens and Transport Malta's Enforcement Officers.

Speed cameras tend to be on open roads, and abusive parking and inappropriate stopping cause obstructions on the road network and present danger to pedestrians and other road users. Bus Stops and their immediate surroundings are sometimes obstructed, forcing buses to stop in the middle of the road. This situation exacerbates congestion and poses significant hazards to bus users.

National road haulage operator licence conditions are difficult to enforce due to short distances and significant numbers of "own account" transport (subject to reduced requirements). Enforcement over parking heavy vehicles in registered spaces (and the deterrent to other vehicles parking in these designated spaces) is complex and not enforced effectively. Double (or triple) parking by goods-carrying vehicles for delivery/distribution is also not enforced rigorously and now seems to be common practice, to the frustration of other road users.

Enforcement agencies' training regarding roadside checks and dangerous goods is up to date, but enforcement resources are spread over many regulatory areas. More widespread use of technologically advanced control equipment could potentially make enforcement more efficient.

Analysis of the value of fines issued in recent years has remained constant, and a review as to whether this is due to fewer infringements or less enforcement needs to be undertaken to ensure that the appropriate enforcement pressure is maintained to ensure orderly use of the road network.

While the roads near schools are closed to improve schoolchildren's safety, parents continue to park illegally near the school cordon, obstructing peak-hour traffic flows.

Measures

In response to these issues, the following measures have been identified:

2.7.1.1
Review and update the Road Safety Strategy for Malta

Malta prioritises the safety of all road users. Regular reviews and consultations with stakeholders will ensure that a strategy addresses current issues and is adaptable to unforeseen challenges. This measure will prepare and, in collaboration with the relevant stakeholders, publish the next decennial Road Safety Strategy 2025-2035. The Strategy will focus on the key areas which will most effectively improve Malta's road safety performance.

2.7.1.2
Review and update road specifications and standards in line with European guidance and road safety commitments.

As Malta seeks to elevate its transport infrastructure to the highest standards, aligning with European guidelines ensures adherence to tested norms, creating a safer and more efficient transport system for all users. Malta's road construction and material standards were updated in 2021-22 and will continue to be revised on a needs basis to reflect EU requirements. A systematic analysis of Malta's national road specifications with an emphasis on road safety will guide this process. The process will include European benchmarking to ensure alignment of international standards within the Maltese context. Stakeholder engagement with urban planners, construction agencies, and road safety experts will also be included, as will periodic consultations to maintain the standard's relevance and effectiveness.

2.7.1.3
Increase operational capacity within the Transport Malta enforcement section

Efficient enforcement is a cornerstone of road safety. To achieve this, effective management, monitoring, and penalisation of non-compliant behaviour are crucial to creating a culture of responsible road usage and reducing accidents. This measure stresses the significance of strengthening Transport Malta's enforcement capabilities in terms of numbers and upskilling the officers within the Section through appropriate training. In addition, appropriate investment in the necessary tools and technologies is also required. Collaboration with other European countries could also be pursued to adopt best practices and strengthen Malta's road enforcement mechanisms.

2.7.1.4
Monitor fine levels and penalty points to ensure they provide the appropriate deterrents for specific road traffic offences

Traffic fines play a pivotal role in deterring non-compliant behaviour on roads, ensuring that road users respect and adhere to safety regulations. In 2023, a major review of financial penalties and driving license demerit points was carried out, resulting in a significant increase in the financial penalties imposed on traffic contraventions. However, there is scope to ensure fines are reviewed every few years to ensure their effectiveness and maintain their intended deterrent effect.

This measure, therefore, implements a systematic and regular review process of traffic fine levels, building on past reviews that have taken place. Factors such as inflation, average income, and trends in traffic violations will be evaluated to ensure fines remain impactful. Additionally, comparisons will be made with traffic fine levels in similar European countries. Public consultations or surveys may also be conducted to understand the public's perception of the appropriateness of fines as deterrents. A traffic fine that is too low might not discourage rule-breaking, while one that's excessively high could be viewed as unjust.

Post-review, any proposed changes to the traffic fine structure will undergo a consultation process involving various stakeholders, including transport bodies, local councils, and the public. After implementing the changes, ongoing monitoring will track the impact of the new traffic fine levels on road safety metrics and user behaviour, ensuring the continuous evolution of the system in response to real-world outcomes.

2.7.1.5
Implement recommendations and investment plan from iRAP road network assessment

In 2022 and 2023, a road safety network assessment was conducted across the TEN-T network. Utilising iRAP methodology and tools, the assessment assigned star ratings to different sections of the network, reflecting the road safety risk to different road users. Although a majority of the TEN-T Core network has been upgraded and must be completed as per the TEN-T regulation by 2030, around 60% of the Comprehensive network has been completed.

The iRAP network assessment provided methodology for two types of interventions: mass interventions across the whole network and targeted interventions on specific areas. In the latter case, the star rating can, therefore, be used to target sections with the highest collective risk (i.e. those with a combination of highest flows and highest risk exposure to Fatal or Serious Injury (FSIs)). The cost of all interventions is estimated to be approximately €35 million, and by avoiding 628 FSIs, they will have a benefit-to-cost ratio (BCR) of 3:1 over 20 years.

After 2030, an evaluation can be conducted to determine the feasibility of performing a network assessment of non-TEN-T strategic roads and high-traffic non-strategic roads, such as key Local Access Roads.

2.7.1.6
Regularly investigate and report the overall Euro New Car Assessment Programme (Euro NCAP) rating of the Maltese vehicle fleet, including a review of the mechanisms, such as incentives, through which it can be improved to enhance road safety

The Euro NCAP rating serves as a benchmark for vehicle safety standards. A comprehensive understanding of the rating across Malta's vehicle fleet will provide insights into road safety levels. This information will serve as a basis for identifying initiatives to improve vehicle safety in Malta.

Transport Malta has already analysed the Euro NCAP rating of the Maltese fleet as part of the Baseline project, gaining valuable experience in the collection and use of this data. Building on this foundation, the forthcoming Road Safety Strategy 2025–2035 will establish the fleet's average Euro NCAP rating as a key performance indicator (KPI). This will enable regular monitoring of progress and provide a basis for evaluating the effectiveness of the strategy and the action plans it contains.

To achieve this, the VERA (National Vehicle Road Registration Database) will need to be modified to allow the storage of Euro NCAP ratings. Various methods will be explored to determine the most effective approach. Transport Malta will then continue to analyse the fleet's rating and propose mechanisms to improve it, which might include financial incentives for purchasing safer vehicles and public awareness campaigns on the importance of safety ratings. Regular reviews will ensure that these measures remain relevant and effective.

2.7.2 Ensure effective and efficient management of roads and related equipment, ensuring quality and sustainability of investment through regular maintenance

The past few years have seen unprecedented investment into the strategic road network, which handles 64% of vehicular traffic on a typical day. Much of this was driven by the TEN-T Regulation (EU) 1315/2013 (which has now been replaced by Regulation (EU) 1679/2024), which necessitates efficient and reliable network corridors on the TEN-T portion of Malta's arterial and distributor roads. These strategic roads have been planned, prioritised, and implemented systematically since 2004, and indeed, the TEN-T Core Network must be completed by 2030.

In terms of length, however, strategic roads represent only a tiny proportion of the total road network. To access these strategic roads, motorists need to pass through lower-category roads, the conditions of which are highly variable in terms of quality. A €700 million infrastructure investment plan covering the whole road network started in 2019, and this has seen the upgrade of a number of local roads. In general, however, most investment has been focused on the arterial and distributor road network. That said, the planned asset management system is anticipated to better plan and optimise road network maintenance and provide greater visibility to local roads, which are often neglected.

From a water management perspective, the increase in urbanisation has led to capacity problems with service infrastructure, which can lead to flooding during storms. There is no coordinated forward planning between the entities concerned that takes into account the impact of climate change on transport infrastructure and potential adaptation measures. Centralised, detailed information on the location of buried utility services is lacking. Similarly, integrated long-term investment planning to meet future demands between road network infrastructure and buried service utilities is lacking.

Concurrently, due to a lack of finances and technical resources at the local council level, national bodies such as Infrastructure Malta and Transport Malta implement and oversee much of the major works, even though this is not legally provided for in the legislation. This leads to diminished resources for the strategic arterial and distributor road network.

Measures

In response to these issues, the following measures have been identified:

2.7.2.1
Carry out a needs-based analysis in terms of the appropriate number of weighbridges for use at maritime terminals and weigh-in-motion systems on TEN-T road network

Weigh-in motion systems detect if vehicles exceed the maximum allowable weight limits on the road network and are, therefore, essential for road safety and for ensuring the longevity of road infrastructure. While some sensors are currently in operation, further analysis is needed to determine whether the number should be increased to aid enforcement activities.

2.7.2.2
Implement an advanced digital asset management system and the road network, which enables better asset performance management, performance analysis and investment planning

A well-maintained road network is instrumental in ensuring safe and efficient transportation.

A structured and efficient asset management system extends the longevity of the road infrastructure while increasing safety and resource optimisation. The direct assignment of maintenance responsibilities, streamlined fault reporting, and definitive timeframes for fault rectifications can enhance the reliability and efficacy of road networks. Moreover, such a system would enable better investment planning and a shift from a reactive maintenance paradigm to a proactive one.

As Malta's population continues to grow and evolve, so does its road infrastructure. A holistic, systematic, and responsive asset management system is crucial. Efficiently tracking, maintaining, and repairing road assets ensures the resilience and longevity of the road network.

Once this asset management system is established, continuous training will be provided to all relevant personnel to ensure the system's efficient use and execution. Regular, periodic reviews will be conducted to assess the system's effectiveness and the need for adapting and upgrading based on technological advancements and emerging needs. Public awareness campaigns will also be rolled out, educating the public on how to report faults, thus ensuring collective vigilance and partnership in maintaining the road network's quality. Additionally, as technological advancements develop, the asset management strategy must adapt to integrate innovations that increase efficiency, transparency, and accountability.

2.7.2.3
Improve stormwater management in local roads to prevent flooding and avoid degradation of road surfaces

There is scope for closer collaboration between relevant entities to ensure that all new stormwater systems (pipes, soakaways and reservoirs) are mapped out and an inventory is kept for maintenance purposes. Furthermore, given the envisaged impact of changes in intensity and rainfall patterns, such infrastructure is essential to ensure safe travel for all road users, reduction of flooding and damages to property and congestion on the road networks.

2.7.2.4
Review existing guidelines and develop an action plan to improve the quality of street furniture and signage

Street furniture and signage are essential to an effective transport system and an attractive public space. Reviewing existing guidelines is essential to ensure Malta's public spaces remain vibrant, user-friendly, and aligned with best practices.

The objective of this measure is to scrutinise the current guidelines governing the design, placement, and maintenance of street furniture and signage across Malta. The comprehensive review will focus on design standards, information clarity, placement strategy and maintenance protocols.

Post-review, an actionable plan will be formulated to address gaps, introduce innovations, and set standards. After the action plan is developed, the recommendations will be phased in, prioritising areas with the highest foot traffic or those in need of urgent upgrades. Collaboration with urban planners, local municipalities, and design experts will be vital. Periodic evaluations will be carried out to assess the effectiveness of changes and adapt the guidelines to emerging needs and trends.

2.7.3 Raise the level of standard and resources applied to traffic management to address congestion, correct use of traffic lanes, manage diversions and road works and effectively manage incidents

Issues

Roads are dynamic structures integrated into a more extensive network. Unplanned events, such as a traffic accident on one road, can have a ripple effect across major parts of the network, causing temporal gridlock and delay.

Most road traffic accidents are non-injury collisions that only involve damage to vehicles. Yet, except for front/ rear collisions, vehicles must be left in the collision position until the arrival of a warden at the scene. Accident details are taken purely for insurance purposes, and this is due to the high proportion of vehicles in Malta that are insured for third-party risks rather than fully comprehensive coverage. The cost of congestion resulting from damage-only accidents is disproportionately high compared to the cost of insurance.

Planned events such as roadworks can also cause major disruptions to traffic flows if network repercussions and public information are not considered. Previous attempts to complete road works as quickly as possible while maintaining traffic flow have posed significant health and safety risks for construction workers.

Conversely, extending construction periods typically leads to increased project costs. Recent experiences of carrying out construction during the night are generally positive, but more consideration can be given to reducing machinery noise levels. The lack of alternative routes for projects carried out on the main strategic roads remains a challenge.

Traffic management at other planned large public events or schools, which may lead to road or area closures, requires extensive planning between the entities involved.

Traffic signal time settings need to be adjusted more frequently to reflect traffic growth and the increasingly complex changes in traffic patterns over the course of the day and during different seasons.

There is no centralised traffic control, and the usage of ITS has not been fully exploited compared with most other European countries.

There is limited experience in traffic management and design, traffic signals and control and the use of ITS technology. However, a recent step forward is the TM Roads digital asset management project, which is equipping Transport Malta with modern tools to map, monitor, and manage the road network more efficiently. This system provides better oversight of road assets, allowing for improved planning, maintenance, and integration with traffic management strategies, thereby laying the groundwork for more advanced ITS deployment in the future.

Measures

In response to these issues, the following measures have been identified:

2.7.3.1 Update traffic management guidelines to improve traffic management and safety during road works

Traffic management during road works directly influences traffic flow and safety. Outdated or unclear guidelines can exacerbate congestion, confuse drivers, and increase the risk of accidents. To maintain the efficient movement of traffic and ensure safety for all road users, it is vital that these guidelines are regularly reviewed, updated, and communicated. Enforcement is also crucial in this aspect, including by local councils and other bodies such as utility companies, which sometimes carry out their own work and engage their contractors.

The measure includes several steps:

- **Analysis of Current Guidelines:** The first phase involves assessing existing traffic management guidelines during roadworks to determine their strengths and weaknesses.
- **Benchmarking with International Best Practices:** Comparative research will help us understand traffic management standards in regions with effective roadwork management strategies.
- **Collaboration with Stakeholders:** Input will be requested from traffic management professionals, roadwork contractors, and road safety experts to ensure a comprehensive perspective on real-world challenges and needs.
- **Refinement and Updating:** Drawing on the insights from the analysis, benchmarking, and stakeholder feedback, the guidelines will be revised to include best practices and address identified gaps.
- **Communication and Training:** The updated guidelines will be disseminated to all relevant parties, accompanied by training sessions or workshops, to ensure correct interpretation and application. Stakeholders will be informed of any changes, supported by training modules, information sessions, and resource distribution as appropriate. An ongoing review mechanism will be established to monitor the effectiveness of the guidelines.

2.7.3.2
Introduce a new digital road permits system to assist in permanent and temporary traffic management

Every year, Transport Malta issues thousands of road work permits for road works and road closures requested mainly by external Stakeholders (e.g., Communication Service Providers, Utilities, Malta Tourism Authority, Public Works, Superintendence of Cultural Heritage, Water Services Corporation, Enemalta, Planning Authority, Energy and Resources Authority, Infrastructure Malta and also Local Councils) which are approved and monitored on the Road Permit System (RPS). Local Councils also issue other additional permits on the Local Permit System (LPS) for temporary activities such as the use of cranes and other machinery, skips, commercial activities and public events.

Both the RPS and LPS are standalone systems, and currently, there is no integration between them. Neither system is GIS-based and, therefore, does not allow the monitoring and planning of permits utilising digital mapping tools. This hinders the planning of traffic management measures and creates many conflicts in the road network.

To address these challenges, Government has recently deployed the TM Roads digital asset management system, which will integrate the existing permit systems into a single GIS-based platform. Over the coming months, TM Roads will progressively roll out its integration features, allowing complete visibility of road network interventions to regulatory authorities (including Malta's traffic control centre), stakeholders (such as public transport operators), and the general public. The system will also support monitoring, enforcement, and improved coordination of works, reducing conflicts and disruption across the road network.

2.7.3.3
Integrate Intelligent Transport Systems in traffic management (ITS) to improve safety and efficiency of the transport network

Integrating ITS into Malta's traffic management can allow harnessing real-time data, automation, and analytics to improve traffic flow and safety and reduce transport's environmental impact. This initiative is expected to contribute towards easing congestion, enhance safety, and optimise the transport network.

The main aim of this measure is to promote the integration of ITS into Malta's traffic management framework. Critical components of this integration will comprise:

Traffic Monitoring and Analytics: Deploy sensors and cameras to monitor road conditions, the number of vehicles, and traffic flows, processing this data in real-time to make informed traffic management decisions.

Adaptive Traffic Signal Control: Introduce systems that adjust signal timings based on actual traffic conditions, enhancing fluidity and reducing waiting times at intersections.

Real-time Traffic Information: Provide motorists with real-time updates on traffic conditions, incidents, or route recommendations through mobile apps, radio, and digital road signs.

Incident Detection and Management: Utilise advanced algorithms and sensors to detect accidents or road obstructions promptly, allowing for a swift response and minimising secondary accidents.

Vehicle-to-Infrastructure (V2I) Integration: Develop technologies that allow vehicles to communicate with road infrastructure, such as traffic lights and warning signs, enhancing safety and optimising traffic flows.

Autonomous and Connected Vehicles Readiness: As vehicle automation technologies evolve, Malta's ITS ecosystem must be designed to support higher levels of connectivity and automation. This includes ensuring that digital infrastructure – such as high-precision mapping, consistent lane-marking standards, and resilient communication networks – is capable of interacting with connected and autonomous vehicles (CAVs). Preparing the network for CAV operations will future-proof Malta's transport system, enhance safety, and enable smoother traffic flows by facilitating secure data exchange between vehicles and infrastructure.

Additional datasets, such as the locations of road works from the GIS platform, shall be incorporated into the platform. This system will also provide open application programming interfaces (APIs) for future integration with parking data, EV charging stations, and Automatic Vehicle Location (AVL)systems for cabs, among other applications. The availability of this information on a single platform will enable increased monitoring capabilities.

After the roll-out of various ITS components, their performance will be continuously monitored. Feedback from users and stakeholders will be essential in fine-tuning the systems. Regular training sessions for traffic managers and the public will be conducted to maximise the benefits of the introduced systems.

2.7.4 Identify new technology and data management techniques to efficiently monitor, report and fine traffic violations

2.7.4.1 Continue to update Malta's Speed Camera framework to technical developments

Speed cameras support road safety by deterring speeding and monitoring compliance with speed limits. The Speed Management Policy of 2012 set out the current framework for assessing potential sites for fixed speed cameras. The policy put forward recommendations for new technologies such as average speed cameras. With technological advancements and evolving traffic dynamics, it is important to review and refine the existing speed camera framework periodically.

This measure will include the following components to ensure the ongoing effectiveness of the speed cameras framework:

System Evaluation: Scrutinise the current speed camera technologies, assessing their accuracy, reliability, and coverage.

Technological Advancements: Research and evaluate the latest speed detection technologies available in the market, determining their applicability and benefits for the Maltese context.

Deployment Strategy: Analyse the existing placement of speed cameras, ensuring they are strategically located at high-risk zones or areas with recurrent speeding incidents.

Data Integration and Management: Ensure the integration of camera data with enforcement and justice systems for swift and transparent traffic violation processing.

Public Communication: Evaluate the clarity and effectiveness of signage related to speed cameras to ensure motorists are well-informed.

Once the review is complete and improvements are identified, a phased plan for their implementation will be developed in collaboration with relevant stakeholders. Post-implementation, periodic evaluations will be conducted to measure the system's effectiveness and adapt it to emerging technologies or changing traffic dynamics. Awareness campaigns will also be rolled out to educate motorists about new changes and reinforce the importance of adhering to speed limits.

2.7.4.2
Investigate and introduce technology to reduce labour-intensive enforcement (e.g. for red light and bus lane cameras)

Relying on manual, labour-intensive enforcement methods can strain resources, reduce efficiency, and lead to variable outcomes. Transitioning to technology-driven enforcement, especially for critical violations like running red lights or encroaching on bus lanes, can improve enforcement accuracy, efficiency, and consistency while reducing the need for on-ground personnel.

This measure aims to review and identify technological solutions that can complement traditional manual enforcement methods. The initiative will mainly focus on deploying red light and bus lane cameras, which have been proven effective in reducing traffic violations in various global settings. These technologies ensure that violators are identified and penalised while also serving as a deterrent. Consequently, this can increase adherence to traffic rules and enhance overall road safety. Post-investigation, there will be a phased rollout of the identified technologies. Training will be provided to relevant personnel, and awareness campaigns will be initiated to inform the public about these new enforcement mechanisms. Periodic evaluations will be undertaken to assess the effectiveness of the technology and make necessary adjustments.

2.8 Land-based freight

2.8.1 Reduce the impact of goods-carrying vehicles on urban areas and the road network

Issues

Goods-carrying vehicles[27] represent around 6% of national traffic on a typical weekday. However, during the morning peak hour, the proportion of these vehicles increases significantly to represent almost 8.3% of the total traffic composition. The longest and heaviest goods-carrying vehicles are generally engaged in the transport of goods being imported or exported through Malta's external maritime ports. Distances between ports and the freight operators' warehouses and stores in the hinterland are generally quite short.

Most freight trips on Maltese roads are related to the internal distribution of goods. The sector is largely uncoordinated and inefficient in terms of loading factors (involving many empty or half-loaded runs). Freight distribution is largely unregulated, with a high proportion of trips being made by 'own account' operators. Urban logistics at a national level is still basic compared to Malta's international goods transport operations.

There is scope for training of Dangerous Goods Safety Advisers, urban logistics management, freight distribution and carriage of perishable goods. In addition, there is a need to further consolidate the capacity of authorities, both in terms of the number of staff and equipment, to monitor this sector further and effectively.

Malta's size creates limitations in the availability of dedicated off-road parking areas for goods-carrying vehicles, and the lack of provision for loading and unloading in commercial areas often results in goods vehicles stopping or parking illegally. This evidently contributes to congestion problems during peak hour periods.[28]

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[27] *Goods-carrying vehicles are here defined as a road motor vehicle designed to carry goods (e.g., a lorry), or any coupled combination of road vehicles designed to carry goods (e.g., a lorry with trailer(s), or a road tractor with semi-trailer and with or without trailer).*

[28] *Under Regulation (EU) 2024/1679 on the Trans-European Transport Network (TEN-T), Malta has been exempted from the legal provisions concerning the development of safe and secure parking areas*

Measures

In response to these issues, the following measures have been identified:

2.8.1.1
Develop and implement a national low-emission logistics action plan, aligned with the anticipated uptake of zero-emission vehicles in line with the EU's Clean Vehicles Directive (Directive (EU) 2019/1161)

Approximately two-thirds of Malta's commercial vehicle fleet is pre-Euro 5/V standards. With a growth in delivery services in recent years, these vehicles are becoming a significant contributor to the country's traffic congestion, air pollution problems and greenhouse gas emissions.
A phase-out of these vehicles is now required alongside a transition to zero-emission alternatives to meet national targets and deliver against the EU's Clean Vehicles Directive.

This must follow a structured and considered approach to avoid a negative impact on the country's economy and local businesses. In this regard, a National Action Plan for Low-Emission Logistics will be developed.

The plan will be based on an assessment of the existing logistics infrastructure. It will identify critical areas for introducing and supporting zero-emission vehicles, including charging infrastructure and incentive schemes, as appropriate. Throughout the development of the plan, ongoing communication with freight and logistics stakeholders will be maintained to ensure the plan remains responsive to industry needs and challenges.

2.8.1.2
Evaluate the current scrappage scheme for older commercial vehicles

A scrappage scheme has been in place since 2010, covering vans, small trucks, and trucks. However, two-thirds of the commercial vehicle fleet in Malta is still pre-Euro 5/V standards and, therefore, more polluting than newer, cleaner vehicles. Vehicles over ten years old are eligible for the scrappage scheme. A further review is required to understand whether the scheme is reaching its intended objectives and whether there is room for improvement.

This measure will review the effectiveness of the current financial incentive programme and propose an updated programme with potential improvements that could encourage a higher rate of scrappage of older, more polluting commercial vehicles, particularly those that are at pre-Euro 5/V standards.

2.8.1.3
Assess the impact of freight and logistics movements during peak hours on Malta's road network

With the growth in deliveries in recent years, freight and logistics movements are increasingly contributing to worsening traffic congestion at peak times on the road network. In this regard, there is a need to understand the impact of these vehicles on the road network and engage with stakeholders to evaluate the potential impact of these restrictions and explore feasible alternatives or potential need for compensatory measures.

2.8.1.4
Assess the status of overnight on-street parking of HGVs and opportunities for safe off-street overnight parking at existing parking sites

A comprehensive approach is required to effectively assess the status of overnight on-street parking of Heavy Goods Vehicles (HGVs)[29], the demand for off-street parking, and opportunities for safe off-street overnight parking at existing sites. This requires a detailed survey to gather data on HGVs' current usage of on-street parking, noting any patterns or hotspots.

Simultaneously, there needs to be full engagement with local businesses, drivers, and community stakeholders to understand the demand for off-street parking and identify any gaps. Using Geographic Information System (GIS) mapping, one would be able to visualise parking trends and potential sites for off-street parking. Existing parking facilities will need to be evaluated for their capacity, safety features, and accessibility, and explore possibilities for upgrading or expanding these sites to accommodate overnight HGV parking. Collaboration with local authorities and transport agencies will be crucial to ensure that any proposed solutions are feasible and align with broader urban planning and traffic management strategies.

2.8.2 Ensure efficiency of freight deliveries

2.8.2.1
Facilitate the setting up of a national freight forum by the private sector to improve urban logistics

The development of a national freight forum would bring together stakeholders and interested parties with the aim of further improving urban logistics. These forums could consider the potential of logistics hubs or coordinated distribution in urban centres to increase the effectiveness and efficiency of urban distribution.

The focus of this measure will include:

- Encouraging the formation of a National Freight Forum by key players in the private sector, including logistics companies, retailers, and other stakeholders involved in urban freight and delivery services.
- Contributing to discussions and collaboration within the forum to address common logistics challenges and opportunities, and how there can be improved coordination amongst stakeholders to achieve greater impact.
- Promoting the sharing of best practices and experiences in urban logistics management, both from within Malta and from international examples.
- Advocating for the forum to explore and advocate for policies and practices that enhance the efficiency and sustainability of urban logistics.

[29] *Heavy goods road vehicles are those with gross vehicle weight above 3500 kg, designed, exclusively or primarily to carry goods.*

As a member of the forum, Transport Malta would provide support and guidance on national logistics strategies and targets.

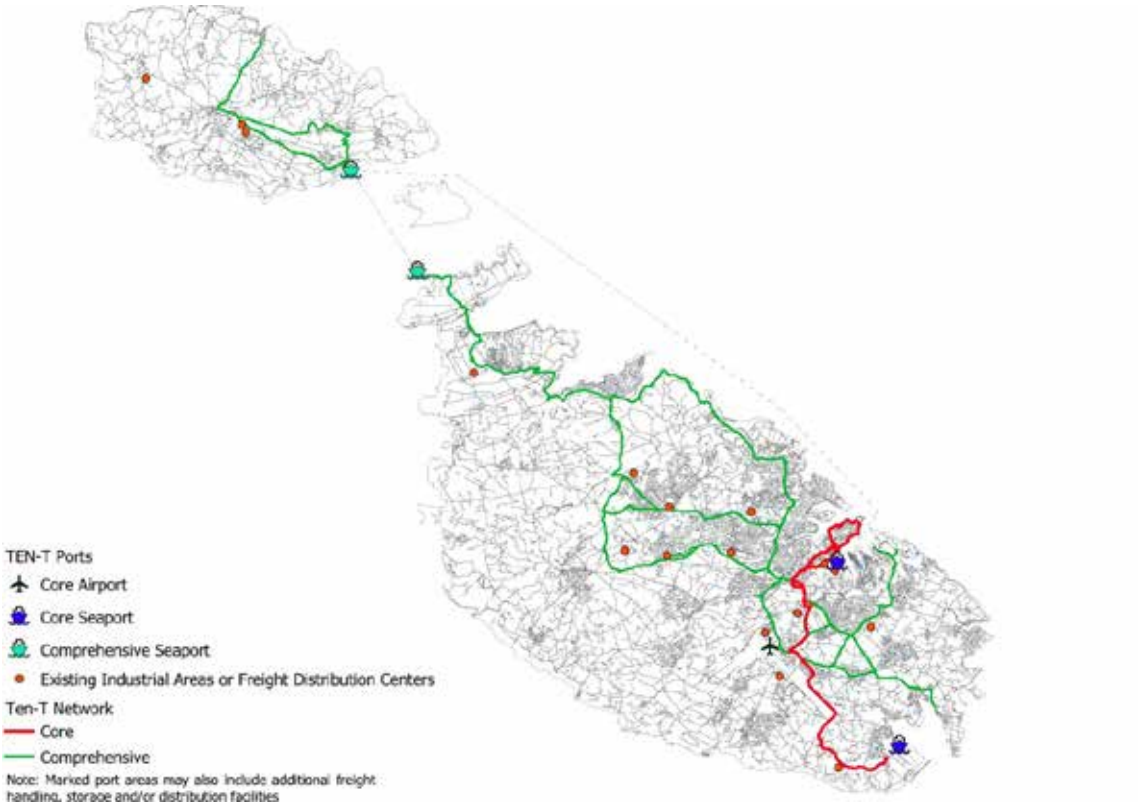
After the forum's establishment, regular meetings and workshops will be organised to discuss ongoing issues, new developments, and potential improvements in urban logistics. The forum will serve as a platform for stakeholders to voice their concerns, share insights, and collaborate on joint initiatives. Additionally, success stories and key learnings from the forum will be documented and disseminated to develop a wider understanding and adoption of effective logistics practices. The forum's feedback and recommendations will be considered in national policy-making and urban planning to ensure that logistics needs are adequately addressed.

2.8.2.2
Study the feasibility of logistics hubs in industrial areas and last-mile deliveries to surrounding urban areas

In 2020, a pilot project using electric vehicles to transport last-mile goods from the Ta' Qali Crafts Village to Valletta was undertaken. While the COVID-19 pandemic hindered the analysis of the pilot's effects, making comparisons between before- and after-effects difficult, the project nonetheless provided a showcase for the potential of freight consolidation, thereby reducing vehicular trips and greenhouse gas emissions. This measure aims to study the impact of the provision of warehouses and storage for consolidation to and from the entities in the industrial areas, thus reducing the number of freight trips and vehicles on the road network. This cargo can then be redistributed via smaller feeders and greener vehicles to retail outlets in urban areas.

To build upon this previous pilot, this measure sets out the need for a feasibility study to create logistics hubs in each of the industrial areas in Malta and Gozo (Figure 23). This includes Ħal Far, Bulebel, Ħal Qormi, Luqa, Mrieħel, San Ġwann, as well as Xewkija in Gozo, amongst others. This measure will be developed in close collaboration with the relevant stakeholders.

Figure 23: Major industrial or freight distribution centres.



2.9 Internal maritime

2.9.1 Ensure the Internal Maritime Sector is backed by long-term planning to support long-term mobility patterns, safety and security

Issues

Port infrastructure requires the necessary investment to ensure that it continues to meet the current and future needs of the country, particularly in terms of functionality and operations. In this regard, it is important that the utilisation of port infrastructure and the appropriate infrastructures need to be reviewed to ensure that the ports' functionality continues to serve society's current and future needs of the country.

When considering the development of links between Malta and Gozo, several key factors must be considered, including the longer-term perspective. For example, the inter-island ferries are owned by a separate company from the operational company, and the sustainability of this arrangement needs to be considered in light of the long-term replacement of vessels. Sustainability is one of the key considerations. Any improvements to the Malta-Gozo link should minimise environmental impact, such as reducing emissions from ferries and protecting marine ecosystems. Capacity and efficiency must be addressed to handle increasing passenger and vehicle traffic, either through the provision of larger vessels or more frequent service. Another facet is resilience against extreme weather events, which is crucial, ensuring that sea links remain reliable under various conditions. Long-term plans should also enable the integration of sea transport with other modes of public transport to ensure a seamless travel experience.

Measures

In response to these issues, the following measures have been identified:

2.9.1.1 Maximising sea links for passengers and goods using alternative transport modes

Malta's heavy reliance on road networks to transport passengers and goods from one place to another can be partly addressed by making better use of existing or potential sea links. Enhanced ferry services can significantly reduce travel time, increase convenience, and provide alternative transport modes for residents, tourists, and local businesses.

2.9.1.2
Assess the potential of underutilised port areas, new ferry-landing sites and improve the capacity of domestic ports in line with EU TEN-T Policy

Malta's TEN-T maritime ports on the Comprehensive Network consist of ferry landing places on the TEN-T Comprehensive network, located at Mġarr (Gozo) and Ċirkewwa (Malta). Other landing places are also used for internal maritime transport, including the TEN-T Core Port of Valletta (Grand Harbour), Sliema, Marsamxett (Valletta) and Bormla. As demand for internal ferry services is increasing, a study on potential additional locations and landing sites to extend the Harbour Ferry service to other destinations and ports around the Islands is underway. Indeed, other ferry landing places are currently under construction (such as Buġibba) or at a design stage. This study entails assessing the potential of underutilised port areas, involving evaluating factors such as infrastructure, accessibility and demand.

Transport Malta continuously monitors the implementation of internal transport initiatives within the port area and adapts strategies as needed based on changing market conditions, regulatory requirements and stakeholder feedback. Other areas within ports are also assessed to locate and develop potential additional landing places, as well as improve the current ones by:

- Evaluating the existing infrastructure within existing secondary ports and these underutilised areas, considering factors such as the availability of roads for internal transport connections, the condition of existing infrastructure and any necessary repairs or upgrades, and access to utilities such as electricity, water and telecommunications.
- Assess the accessibility of such underutilised port areas in terms of their proximity to key transportation networks and populated areas. Evaluate factors such as distance to major roads and airports, availability of public transportation options such as buses, connectivity to industrial zones, commercial centres and residential areas.
- Determining the potential demand for internal transport services within the port areas and surrounding regions. Consider factors such as existing transportation bottlenecks or inefficiencies, potential for modal shift from road to sea to reduce congestion and environmental impact.
- Continuously monitoring the implementation of internal transport initiatives within the port area and adapting strategies as needed based on changing market conditions, regulatory requirements, and stakeholder feedback.
- Conducting a cost-benefit analysis to assess the economic viability of using underutilised port areas for internal transport and to evaluate factors such as capital investment required for infrastructure improvements, operating costs, potential revenue streams from users of the services, return on investment and potential economic benefits for the port and surrounding communities.

2.9.1.3
Review the financial sustainability of Malta-Gozo Ferry Services to develop a business model that minimises the need for government financial support

The Gozo Channel Ferry has not been profitable for many years, and while the situation has improved in recent years, the ferry has not generated sufficient revenues for asset renewal. Indeed, the Fast Ferry service also experiences a lack of profitability, with both ferry connections supported by government funding in the form of a Public Service Obligation arrangement.

This measure will, therefore, seek to conduct a review of ferry operations for both Malta-Gozo ferry services and suggest methods to increase profitability and, therefore, reduce the need for government support. These may include:

- Review of schedule performance, passenger satisfaction, operational costs and revenue generated.
- Assess new revenue sources, such as publicity revenues or differential fares based on frequency of use or peak pricing.
- Assess how the merging of routes may increase demand in the case of any planned expansion of the ferry network.

2.9.2 Improve data collection and use across ports and harbours to inform the planning and operation of maritime transport and infrastructure

2.9.2.1
Maintain and explore further improvements to the framework for collation, analysis and dissemination of meteorological and hydrographic data to support planning, design and operations of internal maritime transport

The framework for collating and disseminating meteorological and hydrographic data has improved since 2015. New tools, technology, and training have been invested in. That said, it is important to keep abreast of technological developments and collaborate further with other respective stakeholders such as AFM, the University of Malta, Infrastructure Malta, and the Met Office. Continuous effort must be made to ensure industry standards and international obligations are maintained. This may involve additional investment in human resources and training.

Six port weather stations are currently maintained with cooperation from the University of Malta. However, new weather stations may need to be considered if the internal maritime network and/or port areas are expanded.

Port weather stations and data collection buoys that generate long-term trends for planning and designing port and maritime infrastructures need to be developed.

2.9.2.2
Collaborate with port concessionaires/operators to understand data gaps and determine methods to collect missing data

Malta currently has a number of both primary and secondary ports that transport both freight and passengers. Although a significant amount of data is collected, the number of operators and stakeholders means that data is not always collected or disseminated in the same way or format to Transport Malta, the regulator. This measure would, therefore, entail analysing operations and contractual obligations of operators in view of improving the framework of data collection and sharing and fixing any operational issues that may result in data gaps.

2.9.2.3
Evaluate and review the current monitoring and management of vessels within territorial waters to increase the safety of navigation and minimise risks at sea

Over the past few years, Malta has seen increased boating activities within its territorial waters. This necessitates a review of the current navigational practices to ensure safety and enhance the experience of boat users and bathers alike. This could include the introduction of virtual buoys and the creation of virtual navigation lanes that would segregate the different types of vessels to ensure safety at sea.

Using telematic applications in internal maritime transport can improve the efficiency and safety of operations. Local commercial vessels (including harbour cruises) are not currently required to use Automatic Identification Systems (AIS), and therefore, traffic management in the port and its approaches causes challenges for port control. Requiring these vessels to deploy AIS would also enable better enforcement, monitoring, and safety.

2.9.2.4
Evaluate and improve the utilisation of the National Single Window

Improvements in the data flow between regulatory authorities and port stakeholders have seen exponential growth in recent years, culminating with the Maritime Single Window Directive, which requires the linking up of all stakeholders involved in the operational chain in Ports.

Further developments of these ICT tools are now needed to ensure that port operations are efficient. Better, timely, and accurate information will enable the operators (one of the stakeholder types) to ensure the continued safety and security of the ports.

2.9.3 Improve operations and enforcement so that internal maritime transport is properly regulated and monitored

Issues

The use of telematic applications in internal maritime transport can improve the efficiency and safety of operations. Local commercial vessels (including harbour cruises) are not currently required to use AIS, and therefore, traffic management in the port and its approaches challenges port control. Requiring these vessels to deploy AIS would also enable better enforcement, monitoring, and safety.

Measures

In response to these issues, the following measures have been identified:

2.9.3.1 Establish clear guidelines with port infrastructure users for operators to be aware of and use the infrastructure within design limits

The state of the maritime infrastructure requires a comprehensive assessment considering its present utilisation, design, and potential future requirements. Once evaluated, clear usage guidelines or conditions must be established and communicated to infrastructure users. To facilitate this process and optimise benefits, an electronic database will be developed to document current and foreseeable future port infrastructure, enhancing management capabilities.

Presently, there exists an analogue preventive and corrective maintenance system encompassing various port assets such as navigational buoys, lighthouse lanterns, and quay facilities, including structures and associated services like fenders, quay lighting systems, and safety measures. However, preventive maintenance schedules are currently limited to backup generators. It is worth noting that the infrastructure and facilities for the Cottonera fast ferries and the Gozo fast ferry terminals fall within the jurisdiction of Transport Malta.

Inspections of the operations of the users then need to be carried out to ensure compliance with the conditions. Penalties for inappropriate use and non-compliance then need to be imposed to make good for any damaged infrastructure.

2.9.4 Reduce the adverse environmental, social, and economic impacts of internal maritime navigation

2.9.4.1 Undertake a feasibility study to review opportunities for low-emission or zero-emission infrastructure, vehicles and vessels for internal maritime transport

In light of growing environmental concerns, there is a pressing need to explore and implement zero-emission solutions within the maritime sector. In this regard, the feasibility study aims to assess the viability and potential opportunities for introducing zero-emission infrastructure, vehicles and vessels for internal maritime transport.

This study will:

- Evaluate the current state of internal maritime transport in terms of emissions and environmental impact and identify available low-emission or zero-emission technologies and solutions for maritime infrastructure, vehicles, and vessels.
- Assess the feasibility of integrating these technologies into existing maritime operations.
- Analyse the economic, social, and environmental implications of transitioning to low-emission or zero-emission maritime transport.
- Develop recommendations and strategies for implementing low-emission or zero-emission solutions within the internal maritime transport sector.

2.9.4.2 Develop and implement an internal maritime sustainability plan

An internal maritime sustainability plan encompasses a comprehensive set of measures aimed at minimising environmental impact and promoting sustainable practices within maritime operations. This plan addresses various facets of sustainability, including but not limited to:

- **Fuel Consumption and Emissions Reduction**: Implement strategies to optimise fuel consumption and reduce emissions through efficient vessel operation, route planning, and utilisation of eco-friendly technologies.
- **Noise Pollution Mitigation:** Employ measures to minimise noise pollution generated by maritime activities, particularly in sensitive marine habitats and areas frequented by marine wildlife.
- **Marine Litter Prevention:** Implement protocols to prevent and mitigate the discharge of marine litter into marine ecosystems, including plastics and other pollutants. This includes waste management practices onboard vessels and promoting awareness among crew members.
- **Pollution Prevention:** Adopt measures to prevent pollution of marine environments, including measures to minimise the discharge of hazardous substances, such as oil and chemicals, and adherence to international regulations governing waste disposal and pollution control.
- **Promotion of Responsible Resource Use:** Promote responsible and sustainable use of coastal and marine resources by adopting practices that minimise ecosystem degradation, support biodiversity conservation, and respect the rights and livelihoods of coastal communities.

2.10 EXTERNAL MARITIME TRANSPORT

2.10.1 Develop and maintain the ports of Valletta and Marsaxlokk in line with EU TEN-T Policy

Issues

Maritime transport plays a key role in the Maltese economy. Indeed, maritime freight transport accounts for virtually all (over 99% of freight tonnes) of all international freight transport to and from Malta. Malta has two TEN-T core ports, the Port of Valletta (Grand Harbour) and the Port of Marsaxlokk (MFT). Both are important gateways to the TEN-T network and European trade, and removal of any bottlenecks and impediments to hinterland connectivity is therefore of utmost importance.

TEN-T Regulation 2024/1679 reaffirms the importance of short-sea shipping to the European economy and the reduction of GHG emissions. It has specific requirements for transport infrastructure at ports, alternative fuel infrastructure, supporting systems such as Vessel Traffic Monitoring and Information Systems (VTMIS), and integration into the National Single Window.

Maritime ports are only as effective as the hinterland connectivity efficiency allows them. Recognition of the Port of Marsaxlokk and the Port of Valletta as TEN-T Core Ports increases the understanding that these ports are an essential part of the EU transportation system and are crucial in ensuring cohesion and resilience.

Any port development (or development that has an effect in the proximity of the port) needs to recognise the importance of safe and efficient access to the port as an integral part of port development. The Port of Valletta, in particular, lies within Malta's most intensely urbanised areas, and space for effective port operation is restricted. While refurbishment works are ongoing within some areas of the port, others require upgrading. These may present opportunities to expand the landside operational areas adjacent to the port, thus enhancing the effectiveness of the port operation.

Current planning regulations study the impact of developments on road and port facilities on a project-by-project basis. This means that the effects of multiple developments close to each other are not considered holistically. In areas such as ports, where developments occur both within and near the ports, a holistic approach is required so that space allocation and other aspects are treated equitably for all stakeholders.

Long-term studies of the Port of Valletta carried out in 1999 and 2007 identified landside bottlenecks that impede access to port areas for passengers and freight. Over the years, the activities of the Northern Port region and traffic congestion on the land side have increased substantially, severely hampering safe and effective port operations. Similarly, the identification of bottlenecks in the Port of Marsaxlokk limits the port's ability to sustain future expected demand, with the respective impact on Malta's socio-economic fabric.

Since ports are highly integrated with their surrounding hinterland and the land side, connectivity is essential to ensure efficient port operations. Regulation and action plans (e.g. urban areas and other transport infrastructures) would ensure long-term sustainability of the port operations and also ensure that the port remains effective in servicing the community needs.

As these ports are classified as TEN-T Core ports, they are Malta's most critical external freight links. Their integration into the rest of Malta's TEN-T network is crucial to ensure effective operation. Valletta and Marsaxlokk suffer bottlenecks on the land side, especially considering that freight movement necessitates larger vehicles e.g.(HGVs) that require suitable road transport links to access and service the port efficiently. Furthermore, suitable space is needed within and around ports to accommodate these vehicles.

While each port has its particularities and focus, improvements to land-side access would significantly enhance the respective port's efficient, effective operation and minimise the negative impacts that the operations have on the urban areas in their proximity.

Measures

In response to these issues, the following measures have been identified:

2.10.1.1

Develop and implement an External Maritime Action Plan until 2030 that is aligned with a wider National Maritime Transport Policy.

The National Maritime Transport Policy will examine the long-term vision of the internal and external maritime sectors while setting out a short-to medium-term action plan for the external maritime sector.

This plan will align with the EU's Integrated Maritime Policy, which aims to foster the sustainable development of sea-based activities and coastal regions.

2.10.1.2

Improve the efficiency of infrastructure at the TEN-T Core Port of Valletta

The government's plans for the TEN-T Core Port of Valletta seek to reduce bottlenecks within the Port while contributing to enhancing Malta's competitiveness through the timely, efficient, and safe movement of both goods and people. Investment in port infrastructure plays a critical role in the Maltese economy and the transport sector, especially since Malta is an island state.

One of the main projects envisaged refers to the setting up of a new cargo facility to eliminate bottlenecks within the Grand Harbour by reducing vessel waiting time and improving efficiency with the Port. The envisaged project will enable a better and more efficient organisation of port usage and increase operational capacity and utilisation of port facilities. This investment is based on developing a quay at Ras Ħanżir between Fuel and Laboratory Wharf within the Grand Harbour of Malta to cater for the increase in berthing demand, mainly for cargo vessels. The proposed investment entails the provision of a quay and support facilities to allow for the berthing of Ro-Ro (Roll-on / Roll-off) vessels and general cargo operations, and enable the operation of tankers and bunker barges from this location.

Further investment is being carried out to extend Quays 4 and 5 at Pinto Wharf to enable larger cruise vessels to berth, as well as the reconstruction of the existing, dilapidated quay at Lascaris Wharf. This investment aims to address this infrastructural deficiency by providing a permanent berthing structure that runs parallel to the shore, which would enable the berthing of vessels that are 250m Length Overall (LOA) and over. This supports the development of the cruise liner industry in Malta, where port infrastructure is upgraded to meet operational maritime market demands.

Investment will also be dedicated to refurbishing the Deep-Water Quay and to upgrading Boiler Wharf, to support the continuous development of port infrastructure in the Grand Harbour. Continuous dredging is also a must within the port area. These works must be carried out in such a way as to minimise interference with other ongoing projects, traffic and operations within the Port. To ensure climate resilient maritime infrastructure in the TEN-T port of Valletta, the Government is working on the construction of a berm and revetment and of a new Breakwater arm beneath St. Elmo to offer protection to the Grand Harbour during North Westerly storms being planned.

The following projects relate to removal of bottlenecks at the Port of Valletta by 2030:

TENtec Node	TEN-T Project Description	TEN-T
27554	Upgrading and Extension of Pinto 4 and 5 Quays	Core
27554	New quay and cargo infrastructure Ras Hanżir/Fuel Wharf	Core
27554	Breakwater Upgrade and Improvement of Inner Harbour Wave Climate	Core
27554	Enhancement of Boiler wharf at the Port of Valletta	Core

2.10.1.3
Improve the efficiency of infrastructure at the TEN-T Core Port of Marsaxlokk

At the time of writing, the Marsaxlokk Freeport is currently undergoing the “squaring off” of Terminal 2, which will reclaim a total of 30,000 sqm of land. This project will increase the capacity of the Freeport from 3.6 million to 4 million TEU movements per year and allow the hosting of ships that are longer than 400m and have a capacity of 24,000 TEUs.

The following projects relate to the removal of bottlenecks at the Port of Marsaxlokk by 2030:

TENtec Node	TEN-T Project Description	TEN-T
27555	Malta Freeport Terminal 2 Squaring-Off	Core

2.10.2 Provide Alternative Fuel Infrastructure to Promote Efficiency and Competitiveness at TEN-T Maritime Ports

Issues

In a bid to reduce emissions of sulphur dioxide content resulting from the combustion of certain types of liquid fuels and thereby reduce the harmful effects of such emissions on man and the environment, Directive (EU) 2016/802 of 11 May 2016 (codified Directive 1999/32/EC), Malta submitted a report to the European Commission on 15th April 2020. Recommendations were made to implement the provisions of the Directive through its transposition into national legislation and in complementary implementation measures.

In line with the Alternative Fuels Regulation (EU) 2023/1804, alternative fuels (including biofuels and cryogenic fuels) are being developed for the maritime and aviation markets. In the local context, developments in the standards of air quality and noise are bringing the need for shore-supply connections to be made available for vessels when berthed in ports.

This aligns with Malta's NECP, which highlights the progressive uptake of biofuels, particularly through the mandated blending and the promotion of renewable and low-carbon fuels in maritime transport as part of the decarbonisation pathway for the transport sector.

Measures

In response to these issues, the following measures have been identified:

2.10.2.1 Finalise Implementation of On-Shore Power Supply at all TEN-T Core Ports

The Alternative Fuels Regulation (EU) 2023/1804, has specific requirements on the number of port-calls at TEN-T ports that must be served by OPS. To this end, investment in onshore power supply has been introduced in the Valletta Grand Harbour. The initial investment of high voltage shore connection, costing €37 million and co-funded through Connecting Europe Facility – Transport, has been installed along the Northern area of the Grand Harbour, primarily focusing on the provision of OPS for the cruise liners berthing along Pinto Wharves, Boiler Wharf and the Deep-Water Quay.

Further investment is currently being undertaken for the provision of OPS along the Southern region of the Grand Harbour along quays within region to extend the supply of shore-side electricity to ships berthing in this area, including Ras Ħanżir, Laboratory and Magazine Wharves as well as two quays located within the Palumbo Shipyard (these being Dock 6 also known as China Dock and Parlatorio quay) and Mediterranean Maritime Hub (MMH).

The following projects relate to the provision of Alternative Fuel Infrastructure at the Port of Valletta by 2030:

TENtec Node	TEN-T Project Description	TEN-T
27554	Provision of OPS Valletta South Harbour Region (9 Quays, 30 Connection Points)	Core

Note: Further projects may be included or prioritised when project pipelines mature and the financial allocation to the transport sector in the post-2027 European Union's Multiannual Financial Framework (MFF) becomes clearer.

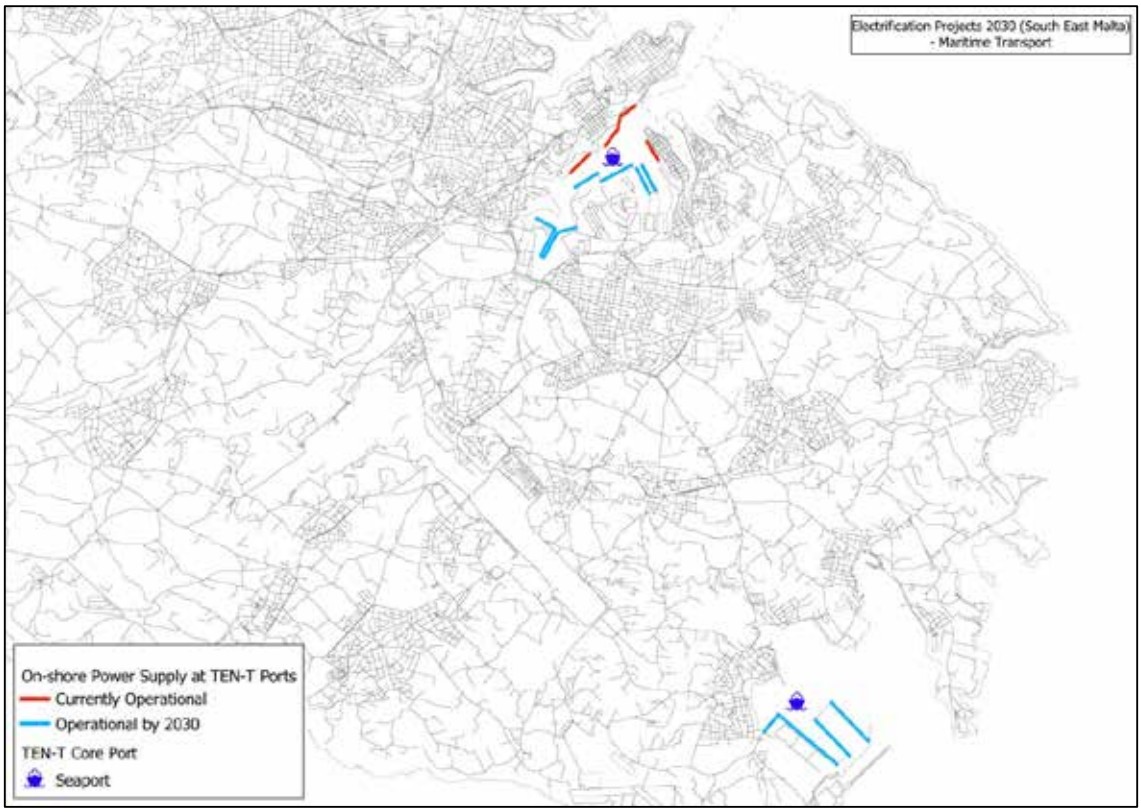
MFT will also invest in an onshore power supply system to supply electricity to berthed vessels. Works on Phase 1 started in 2022 and are ongoing at the time of writing. Phase 1 will see OPS provided at North Quay Terminal 1 and North Quay Terminal 2. Phase 2 is planned for completion by 2027 and will provide OPS at South Quay Terminal 2 and West Quay Terminal 1.

The following projects relate to the provision of Alternative Fuel Infrastructure at the Port of Marsaxlokk by 2030:

TENtec Node	TEN-T Project Description	TEN-T
27555	Provision of Freeport OPS - Phase 1 (Terminal 1 and Terminal 2 north)	Core
27555	Provision of Freeport OPS - Phase 2 (Terminal 1 West and Terminal 2 South)	Core

Note: Further projects may be included or prioritised when project pipelines mature and the financial allocation to the transport sector in the post-2027 European Union's MFF becomes clearer.

Figure 24: Quays in TEN-T ports to provide OPS by 2030



2.10.3 Increase Efficiency and Innovation of The Maritime Administration To Maintain Sectoral Competitivity

Malta has one of the largest ship registries in the world, currently ranked sixth globally in terms of the number of vessels with Malta as their flag state. Maintaining Malta's reputation and competitiveness for ship registration and administration necessitates embracing innovation. This could be achieved by improving administrative tools and processes through digitisation and tapping into innovative markets driven by newly emerging technologies, particularly those related to low- and zero-carbon emission vessels. Embracing this innovation would not only ensure Malta's competitiveness but also contribute to the long- and medium-term goals of the European Green Deal as well as the EU's digital strategy objectives.

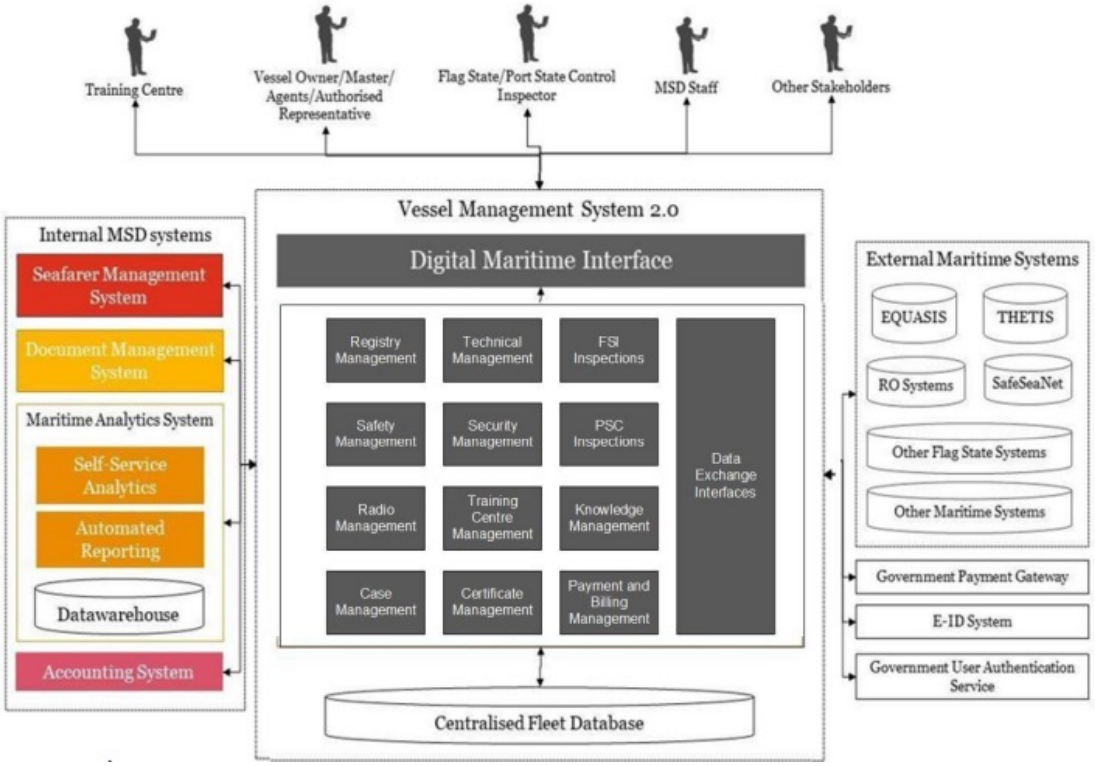
2.10.3.1
Improve efficiency and quality of maritime administration through the digitisation of the ship registration system and Transport Malta's Merchant Shipping Directorate

The administration of the maritime sector is complex and involves the collection and processing of a large amount of data and the performance of numerous operational and administrative tasks by the national transport authority. As shown in the figure below, these range from accounting and registry management to monitoring of technical and maintenance information of vessels and seafarers.

Currently, many of these administrative processes are performed manually, through the collection and processing of analogue data. This results in a lack of efficiency, limited data management and analytics capabilities, and administrative inconvenience for staff as well as existing and prospective clients.

There are many benefits to the digitisation of administration. Firstly, it would improve the exchange of data and documentation between TM's merchant shipping directorate and its clients. This would enhance the user experience for existing and prospective clients, while maintaining the attractiveness of the Maltese flag in the face of increasing competition. However, the main strengths of the system include increased productivity and efficiency and better decision-making through analytics, in addition to better collaboration between the authority and stakeholders. This digitisation is essential for maintaining the competitiveness of Malta's maritime sector, enabling better administrative performance and increased efficiency through improved business intelligence, to effectively reach long-term sectoral goals.

Figure 25: Proposed Architecture for the digitisation of Malta's Ship Registration and Administration System



Source: DG Reform (2023)

2.10.3.2
Launch a Maritime Skills Development Strategy and Action Plan

The maritime sector accounts for 7% of the national Gross Domestic Product and is crucial for an island state like Malta. Indeed, the maritime sector has been identified as one of the six areas of Malta's Smart Specialisation Strategy developed by the Malta Council for Science and Technology now Xjenza Malta. However, the sector is currently struggling as a result of an ageing, shrinking workforce and the lack of attractive educational opportunities that would attract youth and women into the maritime sector. In addition to this, the shift toward zero-emission waterborne transport is rapidly transforming the skills which are needed in the sector.

The purpose of this project is therefore to develop and implement a national maritime skills strategy and corresponding action plan. It will involve multiple government entities and stakeholders in several rounds of consultations to achieve consensus on actions and foster a shared commitment to implementation. This project therefore, has the following objectives:

- Identify the existing skills on the international level and organise these into maritime, blue (i.e. aligned with a sustainable blue economy), digital and horizontal skills.
- Conduct a skill-gap analysis of the maritime sector. This would also involve identifying the sector's future growth and analysing its existing and projected supply.
- Identify the type of education and qualifications needed for these skills (e.g. vocational, higher-secondary, tertiary, etc).
- Develop an Action Plan for the reforming of Malta's maritime skills provision, including a monitoring and evaluation framework
- Undertake necessary activities to build support among stakeholders in the maritime sector

2.10.3.3
Create an infrastructure asset management database system that details all port infrastructure and equipment

Asset management database systems enable the authorities to identify responsibilities, plan inspections, and enforce the various aspects of the infrastructure contractual arrangements, including the milestones within each contract, while assisting in the proper documentation and management of assets. This will enable the Government to determine effective measures to maximise the useful life of the assets.

2.10.4 Ensure equipment, tools and human resources for the use, monitoring and enforcement of maritime areas are updated to improve safety and security

Issues

Transport safety and security measures are often not visible to the user, but the transport system works smoothly when they are effective. These include infrastructure components as well as oversight and monitoring by Port Control officers.

Navigational aids to mariners are key infrastructures that exist both on land and on buoys at sea and are important in maintaining navigation safety.

A key driver in ensuring that these systems and aids are maintained appropriately. The necessary investment must be undertaken to maintain the aids to EU and international standards.

Risk management-based analysis would best guide the allocation of resources to ensure that Malta remains resilient to safety and security issues and is able to recover from any such incident in the shortest possible time. The government needs to set and publish the risk level, and appropriate resources to remain able to manage these risk events should be allocated to the entities tasked with managing safety and security.

Monitoring the activities of vessels in the ports and their approaches is also a key tool for maintaining navigation safety. Likewise, suitable, sustainable long-term funding needs to be established to ensure that the monitoring process remains effective.

Measures

In response to these issues, the following measures have been identified:

2.10.4.1 Ensure equipment and tools for the monitoring and enforcement of maritime areas are updated and enable the required regulatory control to ensure safety and security

Monitoring and enforcement of maritime traffic in and around Malta is a 24/7 exercise. Infrastructure, tools, and equipment monitor and regulate the port and its approaches, ensuring that Malta can remain vigilant as required by legislation and expected by its citizens. In this respect, continuous upgrading of the relevant equipment is required.

2.10.5 Reduce the adverse environmental, social and economic impacts of external maritime navigation, particularly on nearby urban areas

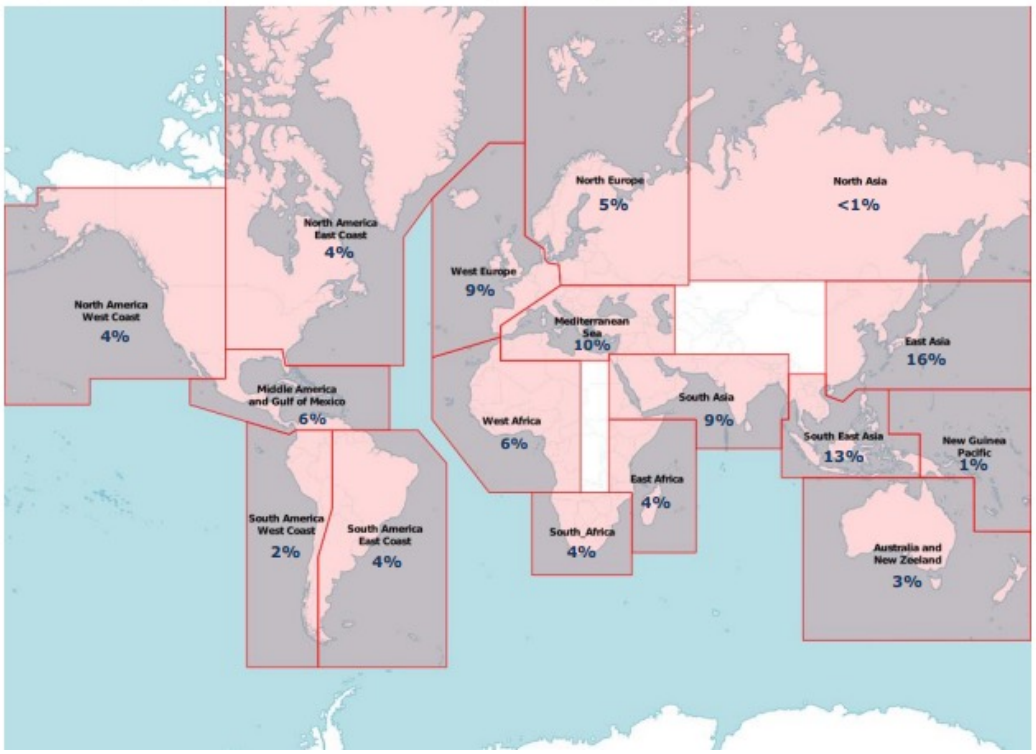
Issues

Across the EU, measures are being taken to mitigate the impact of transport on other parts of society, and maritime activities, especially those in port areas, are no exception. Ten percent of the world's merchant fleet passes through the Mediterranean Sea, resulting in significant levels of sea, air, and noise pollution. A delicate balance between economic activity and the rights of citizens who live and work near the ports is being achieved step by step, and this process is also required in Malta.

Port operations are a crucial link for Malta's economic and social development. However, they also have downside effects on the immediate urban areas. In particular, these are environmental impacts such as noise, sea, and air pollution derived both from the vessels using the port and from the industry related to the port.

Figure 26: Total number of distinct ships sighted by geographical region – 2022

Source: The World Merchant Fleet in 2022 (Equasis 2023)



The Port of Valletta is a thriving economic hub, with bunkering, tugs, and ship repair, among other activities, leading to significant pollution levels. Similarly, the Port of Marsaxlokk has long been challenged by the noise pollution generated when unloading or loading containers from vessels and its impact on neighbouring towns and villages.

Measures

In response to these issues, the following measures have been identified:

2.10.5.1
Implement and enhance pollution mitigation measures as set out in the European Green Deal

Under the European Green Deal, the EU has pledged to become climate-neutral by 2050, with an intermediate target of reducing greenhouse gas emissions by 55% by 2030. Maritime transport, which has traditionally relied on fossil fuels, is undergoing a major transformation to align with both EU and international climate objectives.

The extension of the EU ETS to maritime transport, effective from January 2024, introduces a carbon pricing mechanism for intra-EU voyages and emissions at berth. While Malta supports the EU's climate ambition, it has consistently raised concerns about the potential competitive disadvantages this may pose for EU ports—particularly in the Mediterranean, due to the risk of carbon leakage and traffic diversion to nearby non-EU ports. In parallel, the adoption of the IMO's Net-Zero Framework in April 2025 marks a significant step toward a unified global regulatory regime for maritime decarbonisation. The framework introduces fuel intensity reduction benchmarks and a global GHG pricing mechanism likely to enter into force in 2028.

To this end, in the ongoing decarbonisation of the maritime sector, particularly in the context of the Fuel EU Maritime initiative, the European Maritime Safety Agency (EMSA) has produced a series of reports, studies, and guidance on alternative fuels and sources of power such as Wind, Hydrogen, Batteries, Biofuels – Ammonia and Shore-Side Electricity.

As technologies develop and new developments emerge in port areas, measures to mitigate environmental impacts can be implemented, opening up new opportunities to leverage port use.

An example of this is the implementation of a ship-to-shore supply infrastructure, which enables ships alongside to connect to the electrical network, power down their auxiliary engines, and thus reduce air, sea, and noise pollution that would otherwise be generated.

Some other mitigation measures may require interventions by the private sector, and regulatory measures may be needed to encourage compliance and upgrade the use of these new possibilities.

2.10.5.2
Collaborate with port operators to encourage the upgrading of their equipment/ facilities to reduce pollution and support the transition to zero-emission fuels and infrastructure

The government needs to engage with port operators to understand the challenges in the ports regarding investing in less polluting (air, sea and noise) equipment.

Such collaboration aims to develop a workable solution that supports private stakeholders during this transition.

2.11 AVIATION

2.11.1 Safeguard space within the airport and its contiguous area to ensure developments support long-term sustainable growth in the aviation sector

Issues

Resource availability, particularly space, continues to challenge airside facilities. The airport must develop and implement plans to ensure the quality of the services for all users, including business and leisure travellers.

This process should be overseen at a national level to ensure that air passengers remain the priority over peripheral developments. Allocating space near the airport for activities that do not require proximity to it could undermine the airport's long-term sustainability, limiting future expansion needed to meet forecasted traffic growth and the associated economic benefits. The Malta International Airport terminal has already exceeded its design capacity of 5 million passengers per year, and with forecasted increases in passenger numbers, there is a risk of further deterioration in the passenger experience. Similarly, projected growth in aircraft landings is putting pressure on airside infrastructure, leading to bottlenecks that could impede the efficient flow of passengers through this key TEN-T Core Node.

Temporary aerial fireworks displays during the peak festival season, when both aviation activity and fireworks events are at their highest, can disrupt airfield operations. In certain weather conditions, fireworks smoke has also reduced aerodrome visibility, occasionally leading to temporary airport closures.

Measures

In response to these issues, the following measures have been identified:

2.11.1.1 Develop an action plan that implements the measures under the ICAO and EASA regulations

The International Civil Aviation Organisation (ICAO) is mandated to promote the safe and orderly development of civil aviation worldwide, whilst the European Union Aviation Safety Agency (EASA) is responsible for ensuring safety and environmental protection in European air transport. A safety management system is a crucial pillar within the operational structure of the aviation industry. High safety standards instil confidence not only in users but also in other stakeholders, including investors, employees, agencies, and authorities. Investment in robust safety systems is of utmost importance, not only as a means of ensuring continuous safe operations, but also to be quickly reactive in unprecedented times.

Developing an action plan that aligns with ICAO and EASA regulations requires careful consideration and adherence to their guidelines.

An outline of some measures to ensure compliance may include:

- An assessment of the current operations by reviewing existing operational procedures, safety protocols and regulatory compliance measures to identify any gaps in compliance.
- Review the implementation of a safety management system to proactively identify, assess and mitigate safety risks.
- Implement regular maintenance schedules for aircraft, ensuring that all maintenance procedures are documented accurately.
- Document training needs for the relevant personnel, including pilots, maintenance crew, ground staff and management, to ensure all members know their responsibilities.
- Review all operational manuals and procedures and update them as necessary.
- The action plan under both ICAO and EASA regulations requires a comprehensive approach to ensure compliance and enhance aviation safety. Establishing an action plan in compliance with both ICAO and EASA regulations will enhance safety and operational efficiency.

2.11.1.2
Introduce a digital aviation register

The Aviation Register, maintained by the Civil Aviation Directorate, is the official list containing detailed information about registered aircraft, their owners, and other relevant details. With the annual increase in aircraft registrations, it has become essential to introduce a database that meets the aviation community's needs while enhancing safety and regulatory compliance.

To address this, a digital system will be developed for all documentation related to aircraft registration within the Maltese register. This system will provide direct access to law enforcement entities, such as the Police, facilitating accessibility and reducing the administrative burden.

A robust technology platform will be developed to support the aviation register. This platform will securely store, manage, and update vast aviation-related data, ensuring efficiency and reliability.

2.11.2 Develop and Maintain Malta International Airport in line with EU TEN-T Policy

Issues

Developments at the TEN-T Core Airport must address the identified long-term bottlenecks. MIA has a stated capacity of 5 million passengers per year. From the analysis carried out, the airport terminal sub-system has exceeded its capacity limits of 5 million passengers per year and expected growth by the end of 2025 will be approaching 9.3 million passengers per year.

The Airport can be divided into five Airport Development Zones, each sector based on location. While the sectors do not represent any specific zoning designations, they provide a schematic overview of the airport's different areas and surrounding contiguous land. These areas should be preserved for airport-related activities to ensure the long-term capacity of the airport to support the Maltese islands.

The measures aim to eliminate infrastructure bottlenecks to address airport capacity and meet anticipated demand.

The proposed Gozo airstrip may also address some of the bottlenecks. The airstrip calls for extending the existing runway, which is currently 174m long, to a total length of 445m, including a safety area of 30m on each end of the airstrip. The envisaged upgrades are according to current international standards (ICAO and EASA). The proposed airfield would enable the introduction of an inter-island service by small aircraft between Gozo and the MIA.

Measures

In response to these issues, the following measures have been identified:

2.11.2.1
Improve efficiency of infrastructure at the TEN-T Core Airport

Currently underway is a €40 million investment in the Apron X project. Situated between Apron 8 and 9, Apron X will join Apron 8 and 9 and create a single apron with an area of 100,000 sq. metres and offer additional parking spaces for 7x Code C and 4x Code E/F aircraft. This would provide unrestricted operations for wide-bodied aircraft, thus alleviating capacity issues for mixed-fleet operations during peak periods and meeting growing demand over the next 15 years. Moreover, the new Apron X project also includes the construction of new ground handling and support infrastructure, thus improving and centralising ground handling operations.

Additionally, discussions are underway regarding the central reconfiguration and eastward expansion of the terminal. The central reconfiguration aims to improve passenger flow into the main area and will increase the number of pre-security gates from 6 to 10, along with a larger queuing area. The eastward expansion plans are set to increase the terminal footprint by approximately 5,700 square meters.

The following projects will remove infrastructure bottlenecks at the TEN-T Core Airport:

TENtec Node	Project Description	TEN-T
26851	Apron X Project: • Merging Apron 8 to Apron 8 South to a single apron and increasing the overall apron area to 100,00 sq. metres • The new area will have new parking stands to accommodate either 7 Code C or 3 Code E/F (wide-bodied) aircraft • New 10,00m3 rainwater reservoir • LED floodlighting systems • Electrification of existing remote stands (see measure 2.11.3.1)	Core
26851	Runaway 05-23 and 31-13 rehabilitation: This will entail full excavation, build-up and reconstruction, of the airport's main and secondary runways to ensure safe flight operations.	Core
26851	Expansion and reconfiguration of Malta International Airport Terminal which include: • Expanding the Non-Schengen arrivals area by c.600 square meters. • Introducing a new Schengen arrivals corridor that leads directly to the baggage reclaim hall. • Adding a new baggage reclaim belt and upgrading all existing reclaim systems. • 72 check-in desks (increase from 36) • Circulation space increasing by 2,500 m² to reach 4,000 m² • Six new departure gates, plus a new crew gate • Additional circulation/seating (1,000 m²) • Baggage sorting area increased by 2,680 m² to 5,380 m² • 6 new security scanners, completely lessening the need for passengers to remove liquids or electronic equipment from their hand luggage.	Core

Carry out feasibility studies subject to the revised Airport Master Plan on the development of the route network of the airport

A concession agreement is currently in place for the operation of the MIA, making it responsible for activities in the aerodrome. However, feasibility studies should be conducted to explore development options at the Luqa site or other potential areas.

A detailed feasibility study on developing the areas adjacent to the airport could explore its potential for civil aviation-related activities and for easing or diverting aircraft traffic volumes.

The study should assess the viability and practicality of any proposed developments aimed at enhancing the airport's route network or changing land uses within the airport, in the context of the revised Airport Master Plan.

These initiatives should prioritise sustainability, ensure safe access to more distant points of the airport, study and mitigate traffic congestion in the surrounding area. The feasibility study should also explore alternative scenarios, considering market changes, technological advancements, regulatory requirements, and unforeseen events, ensuring long-term flexibility and adaptability.

Figure 27: Airport Terminal Current Configuration vs Future Expansion

Source: MIA Website

2.11.2.3
Ensure the safeguarding of the safety of aviation services when integrating new aviation technologies

Integrating new aviation technologies while ensuring safety requires a comprehensive approach that prioritises risk management, regulatory compliance and stakeholder collaboration. This approach must include continuous monitoring and evaluation mechanisms such as real-time data analysis, incident reporting systems, and feedback loops to identify emerging safety issues quickly. As technologies such as automation, AI, unmanned aerial systems (UAS) and advanced air traffic management become more widespread, a structured process is crucial to maintaining safety.

Establishing a robust risk mitigation framework is essential when integrating new technologies. Every innovation brings potential risks, and thorough safety evaluations are necessary to assess and mitigate them. Regulatory bodies such as the ICAO and the EASA play vital roles in setting safety standards for new technology integration. Ensuring regulatory compliance is equally important, as aviation is a highly regulated industry. All new technologies must meet existing safety protocols to ensure that innovation does not compromise the safety of operations. Collaboration with regulatory bodies helps to adopt these standards as technological advancements occur.

Once new technologies are implemented, continuous monitoring systems become critical to maintaining safety. These systems should include real-time performance tracking to detect anomalies and potential risks quickly. This also involves establishing feedback loops that allow operators, regulators, and technology developers to share information and address emerging safety concerns proactively.

In addition to technological measures, the human element remains crucial. Aviation relies heavily on skilled personnel to operate and manage new systems safely. Investing in human resources ensures that the sector does not degrade as new technologies are adopted. Comprehensive training programmes are essential to prepare aviation personnel for the use of new technologies, potential safety implications, emergency procedures, and industry best practices. Continuous education and training ensure that staff remain current with the latest advancements and protocols, reinforcing a strong safety culture.

Effective collaboration among industry stakeholders is also vital to safe technology integration. Technology developers, airlines, air traffic management organisations, regulators, and safety agencies must collaborate to share best practices, lessons learned, and safety-related information. Transparent communication channels are crucial for disseminating safety information promptly, enabling the swift resolution of issues before they escalate.

Ensuring sufficient manpower with the appropriate skills and qualifications is crucial for overseeing airport operations, licensing, and compliance with regulations. As the new airport master plan and updated civil aviation policies are introduced, having the right human resources to support these changes is crucial. These skilled technical personnel will help drive initiatives that meet ICAO and EASA standards and recommended practices, ensuring that aviation safety is maintained while adopting new technologies.

2.11.2.4
Encourage the use of less noisy ground equipment

Airports are major business sites, with many employees and passengers visiting daily. The government shall ensure that the regulatory framework is in place to promote the use of less noisy equipment and will support the private sector's involvement in updating or upgrading their equipment to consider the external costs and impacts of noise on the environment.

To reduce noise from ground equipment, maintenance, repair, and overhaul (MRO) activities should be conducted in designated areas with sound barriers or mufflers to mitigate noise impact. Using electric-powered ground equipment, as opposed to traditional fuel-powered alternatives, further reduces noise levels. Regular monitoring of engine run-ups to off-peak hours can also decrease disruptions to nearby communities and lower noise impact, aligning with sustainability goals.

2.11.3 Provide alternative fuel infrastructure at the TEN-T Core Airport

2.11.3.1
Encourage the replacement or deployment of zero-emission airside and landside vehicles at the TEN-T Core airport

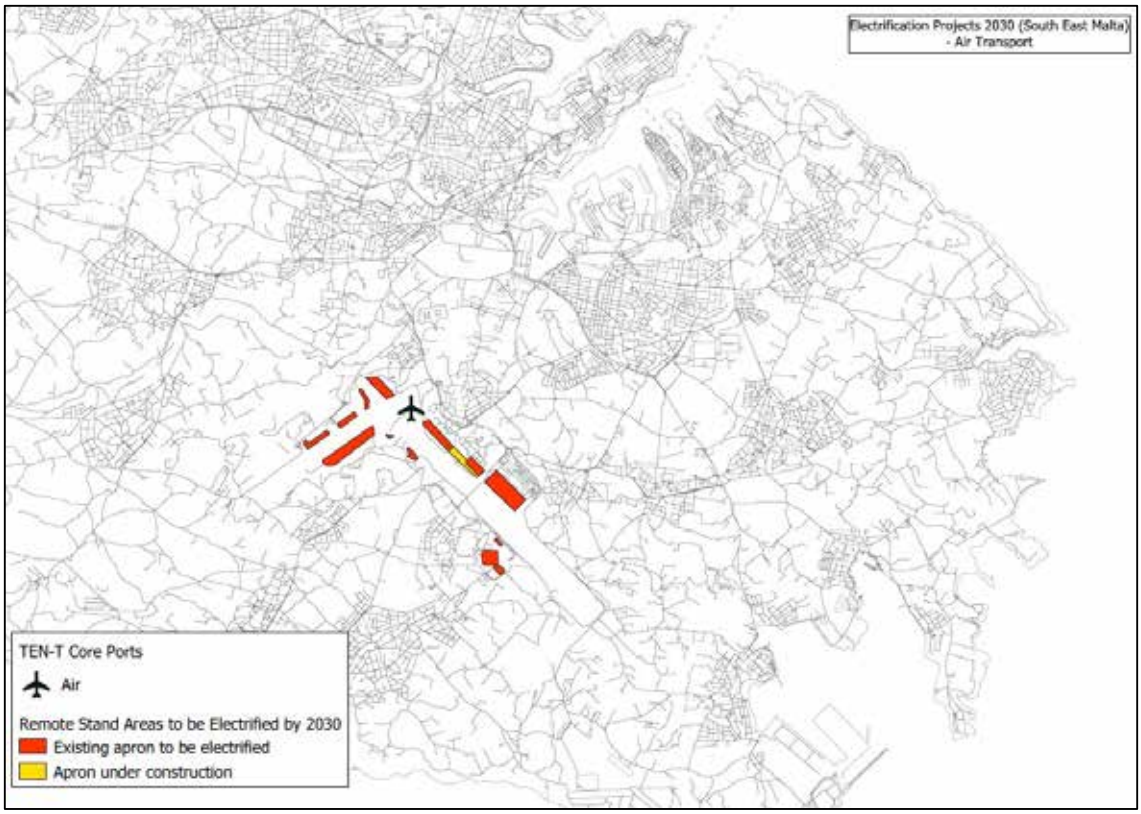
In line with Regulation (EU) 2023/1804, MIA unveiled its Net Zero Carbon Plan. This plan outlines the company's decarbonisation strategy and sets ambitious targets for the airport to reach carbon neutrality by 2025 and achieve net-zero carbon emissions by 2050. Part of the strategy includes electrifying ground support equipment (GSE).

Malta's international airport has no aircraft contact stands and no plans for such due to space constraints. In line with the AFIR Article 12 obligations, by 31 December 2029, an electricity supply to stationary aircraft will be required at all remote stands used for commercial air transport operations to embark or disembark passengers or to load and unload goods. Furthermore, by 1 January 2030, at the latest, necessary measures to ensure that the electricity supplied originates from the electricity grid (including via charging of batteries) or is generated on site without using fossil fuels.

The following projects relate to the provision of Alternative Fuel Infrastructure at Malta International Airport by 2030:

TENtec Node	TEN-T Project Description	TEN-T
26851	Installation of a combination of local power at the Aircraft stands and a charging area for battery-powered Ground Power Units to eliminate the use of fossil fuel generators to supply parked aircraft with power.	Core

Figure 28: Remote Stand Areas to be supplied by the electricity grid



2.11.3.2
Encourage the TEN-T Core Airport to implement the other measures of its Net Carbon Zero Plan

Although not strictly required, the AFIR Regulation (EU) 2023/1804 encourages the development of long-term decarbonisation strategies at TEN-T Core airports. Therefore, the government shall encourage the implementation of additional measures in the airport's Net Carbon Zero Plan that are not a requirement of AFIR.

The following projects are further projects outlined in the Net Carbon Zero Plan:

TENtec Node	Project Description	TEN-T
26851	The installation of a new 3-megawatt peak photovoltaic farm on Apron 7 which raise the airport's clean energy generation capacity from 30% to 70%.	Core
26851	The airport is seeking to reduce the energy consumed by its current heating, ventilation and air-conditioning system by replacing all units with more energy-efficient, state-of-the-art technology.	Core
26851	The conversion of all runway and taxiway lighting systems to high-performance LED lighting, thereby increasing energy efficiency on the airfield while enhancing the safety of flight operations in low visibility conditions.	Core
26851	Replacement of the Airfield Ground Lighting (AGL) Control system, which will allow for extensions to the ground lighting services in existing aircraft movement areas and will provide an opportunity to interface with ATC systems over the coming years.	Core

2.11.4 Improve availability and access to aviation transport statistics

Issues

Transport statistical data, especially real-time data, is crucial for analysing and assessing policy options appropriately and can also improve the efficiency of the transport system. Citing confidentiality and bureaucracy, many operators make the collection, collation, and dissemination of aviation transport data difficult and time-consuming.

Measures

In response to these issues, the following measures have been identified:

2.11.4.1 Continue with the inclusion of contract clauses requiring concessionaires and contractors to provide regular information to the authorities

This measure addresses both the historical statistical data needed to inform policymakers and the need to encourage operators to provide data (including real-time data) to the authorities and other commercial operators, enabling better integration of air transport with other modes, such as public transport.

Indeed, ensuring that concessionaires and contractors provide regular information to the authorities is crucial for maintaining transparency and accountability. The Authority ensures that relevant clauses are within contractual agreements for concessionaires/contractors to provide any information as may be required to the appropriate authority.

The concessionaire/contractor shall ensure transparency by making sure information, such as project updates, financial reports, and compliance status, is readily accessible to the public through the appropriate channels unless such disclosure is restricted by law or deemed commercially sensitive.

This measure requires continuous review of procurement documents and the insertion of relevant clauses to ensure that data remains accessible as required.

2.11.5 Improve air connectivity for commercial passengers, freight and business travellers

Issues

Limitations due to Malta's archipelago of islands mean that passengers arriving by air have limited connectivity options to other parts of Malta.

Civilian domestic air transport is very limited, other than scenic tourism flights and technical flights, due to the fact that there is only one civilian landing point (MIA). Development of other civilian landing points, such as heliports or vertiports could open up new avenues of economic development not currently available (e.g. business tourism, health services, etc).

These ad hoc, domestic services are frequently premium services, and their business model would be more achievable than a regular scheduled passenger flight from one part of Malta to another. Sustaining these connections requires proper infrastructure and resources.

Optimisation of airport slots is also sometimes problematic, with the conflicting needs of the various airport users (commercial airlines, business aviation and passengers) showing room for improvement.

General aviation often takes secondary priority at the aerodrome, with aircraft positioned far from airport services or in locations that create bottlenecks for this growing sector. While space constraints are recognised as an ongoing challenge, further measures should be explored to alleviate bottlenecks and better support this sector.

Measures

In response to these issues, the following measures have been identified:

2.11.5.1
Ensure air connectivity with Gozo

The proposed airstrip in Gozo is expected to boost tourism, improve accessibility, and stimulate the local economy by enhancing connectivity to mainland Malta and, potentially, beyond. This airstrip is expected to accommodate private planes with a capacity of up to nine passengers, helicopters, government aircraft, military vehicles, air ambulances, drones, and research aircraft.

To minimise noise pollution, all flights between Gozo and Malta will be restricted to specific hours of the day.

2.11.5.2
Maintain the establishment of new bilateral agreements with non-EU countries

Further development of the network of bilateral (and multilateral) air services agreements with non-EU countries would help develop the network available to air carriers operating to/from Malta.

Establishing bilateral agreements with non-EU countries can be strategic for various reasons, including enhancing trade relations, fostering economic growth, promoting cultural exchange, and strengthening diplomatic ties. Malta depends on connectivity to thrive economically.

The government will endeavour to establish new bilateral agreements with non-EU countries to promote economic growth, enhance diplomatic relations, and advance shared global interests. This initiative will involve researching and identifying strategic partner countries based on their economic potential, geopolitical significance, and shared objectives. Key factors to consider will include market size, growth prospects, political stability, and existing trade relations.

2.11.5.3
Continue to encourage route development to attract new aviation services

The route development of air networks to Malta is a crucial aspect of aviation services, destination marketing, and attracting new airlines to Malta. However, the transport regulator is not formally included in the committee deciding on new route development, which is usually viewed from a tourism point of view only. Formal inclusion of the transport regulator in the committee would help address other aspects of air transport, such as those relating to high-value, just-in-time freight services.

Holistic linking of the needs of the manufacturing and services industries to outbound worldwide connectivity would better support export-oriented business development in Malta. Major hub airports across the EU contribute to international connectivity from regional airports such as that in Malta, and this connectivity should be maintained and improved in the longer term.

This measure also calls for the identification of more potential countries, through diplomatic dialogues, to include Malta in their travel itineraries.

2.11.5.4
Review opportunities to support business aviation through the development of parking and lounge improvements for business persons

Business aviation in Malta is still in its early stages, and enhancing airside traffic circulation would significantly improve the airport's offerings to this subsector. Developing secure and spacious parking areas equipped to accommodate various sizes of private jets and business aircraft, along with an advanced parking slot reservation system, will ensure clients' availability and convenience.

Efforts should be made to ensure that the ground experience in Malta aligns with improvements in turnaround time and service provision, addressing key issues identified in business aviation. By focusing on these aspects, the development of parking and lounge facilities tailored to business aviation can provide a competitive edge, enhance customer satisfaction, and contribute to the growth and prosperity of the sub-sector.

This measure calls for the identification of strategic locations near major business hubs or airports frequented by corporate travellers to offer a VIP experience.

2.11.5.5
Explore the use of emerging Advanced Air Mobility (AAM) technologies for passenger and freight transport in Malta

Malta, like many other countries, is exploring the potential of AAM technologies for both passenger and freight transport. AAM encompasses the next generation of aviation systems, including electric or hybrid-electric vertical take-off and landing (eVTOL) aircraft, drones, and other advanced air vehicles.

A critical factor in successfully integrating AAM technologies is the development of a robust regulatory framework. Government must collaborate closely with industry stakeholders to establish regulations governing airspace usage, safety standards, pilot licensing, and noise regulations to ensure the safe and efficient operation of AAM vehicles. These technologies could be used for urban mobility solutions, island connectivity, emergency response, and goods transport.

The adoption of AAM technologies has the potential to revolutionise passenger and freight transport in Malta, offering faster, more efficient, and environmentally sustainable solutions to the nation's transportation challenges. However, achieving this will require careful planning, investment, and collaboration between the government, industry, and the public.

This measure calls for a comprehensive study, potentially including a pilot project, as appropriate, to explore the feasibility of using emerging AAM technologies for passenger and freight transport in Malta.

2.11.6 Provide sustainable aviation fuel (SAF) infrastructure to promote efficiency and competitiveness

Issues

The 2007 report for the Malta Maritime Authority recommended that the aviation fuel infrastructures in the Port of Marsaxlokk be put into managed decline and alternative fuel transfer infrastructures be deployed by the end of the expected useful life of the infrastructure. A new storage facility for aviation fuel was inaugurated in 2020, which will lead to the phasing out of the current storage facilities at Wied Dalam. The facility is linked to 8km of pipelines (for direct supply from tankers) and features digital control systems to reduce human intervention and ensure faster response in case of accidents. Nevertheless, with the new EU Regulation, there is a need to explore cleaner fuels, such as SAF.

Measures

In response to these issues, the following measures have been identified:

2.11.6.1 Ensure the deployment of Sustainable Aviation Fuel (SAF) at the TEN-T Core airport is in line with EASA Regulations

At the EU level, regulations like ReFuelEU Aviation apply across all member states, including Malta. Starting in 2025, fuel suppliers must blend SAF with conventional jet fuel: beginning at 2%, ramping up to 70% by 2050. While Maltese fuel operators already provide this type of fuel, Malta needs to ensure that the deployment of SAF is in line with EU regulations.

6 Forecasting

The following chapter will describe the methodology, assumptions and present the results of the appraisal of the policy scenarios used for the development of the Transport Master Plan. As in the TMP2016, the scenarios have been appraised in the form of packages of measures by the National Transport Model (NTM) and an accompanying economic appraisal.

The reason for this is that the combination of different measures at a transport system level can have both positive and undesirable synergistic effects, which would go unnoticed if policies were appraised individually.

The estimations of environmental pollutant reductions have been conducted in full accordance with best-practice Cost-Benefit Analysis (CBA) methodology as prescribed by the European Commission that is required to justify EU co-financed investments identified in the TMP. These estimates are intended solely for the purpose of quantifying the costs of relative externalities between modelled scenarios .

While the National Transport Model (NTM) was used to generate transport system activity data, a dedicated environmental model was not employed to produce precise forecasts of environmental outcomes. Such detailed environmental analysis falls within the scope of other publications, such as the NECP and the Air Quality Plan for Malta.

The National Transport Model

The NTM is a Four-Stage Model transport model. Four-stage models are built on a sequential process of four distinct steps for estimating transportation demand, namely: trip generation, distribution, modal split and assignment. Four-stage models have been effectively used since the 1960s and the basic principles behind such models have largely remained unchanged; modelling software has on the other hand changed drastically with advances in computer technology.

In summary, the analytical approach used in the four-stage transport model for Malta first considered the extent of the study area and defined the multimodal network operating within that study area, i.e. road network, public transport network and internal maritime connections (supply side). Aside from this, the analytic approach must consider demand factors, which are affected by population levels, land use patterns, travel patterns, as well as macroeconomic data such as fuel costs.

The NTM was originally developed in 2014 to support the development of TMP2016 and NTS2050. Recognising the need to adapt to evolving circumstances, the model was updated in 2017 (NTM 2017). The 2017 revision included modifications in infrastructure, public transport systems, land use patterns and transport policies since the previous model was implemented. The most recent version of the model, NTM 2021 (with a base year of 2021) and its forecast, takes centre stage in the discussions of this chapter. It is crucial to highlight that each subsequent version of the model has been built upon the insights and advances gained from the preceding version. Thus, the model has been updated, calibrated, and validated for subsequent scenario testing and strategic planning purposes.

It is important to note that it has not been possible to incorporate all the Master Plan measures likely to have an impact on travel demand into the scenario testing process. Transport modelling used for the appraisal of policy scenarios requires quite specific information about each particular measure or project, including precise location on the network and user fees. In many cases, the measure contained in the Master Plan is a study to better define the operational parameters. However, a good cross-section of measures has been more clearly defined and has been carefully grouped together to help guide decision makers.

3.1 FORECASTING FRAMEWORK

3.1.1 Framework

Malta NTM2021 consists of a macroscopic multimodal transport model based on a typical four-stage modelling process. Four-stage models are built on a sequential process of four distinct steps for estimating transportation demand, namely: trip generation, distribution, modal split and assignment. It is crucial to highlight that each subsequent version of the model has been built upon the insights and advances gained from the preceding version. Thus, the model has been updated, calibrated, and validated for subsequent scenario testing and strategic planning purposes.

The process of defining future scenarios is divided into several steps:

- Selection of forecasting years
- Demand forecast
- Supply forecast

3.1.2 Forecast years

The forecast years refer to the temporal horizons considered in the development of the scenarios in the NTM and the TMP. They refer to the future years in which future scenarios will be evaluated in transport and socioeconomical terms, which will provide a vision of Malta in the future and the interaction of transport and mobility supply and demand.

The results of the NTM and the forecasting activities support the development of the TMP in Malta at the country level. Therefore, apart from modelling terms, the evaluation years need to be consistent with Malta's different planning and operational timelines.

The **first forecast year set for the short term** is 2025, four years from the base-year situation. This time horizon aims to evaluate committed measures and the most likely situation.

The **second forecast year set for the medium term** is 2030: nine years from the base-year situation. It aims to evaluate different packages of measures which will provide authorities with a global vision of their impact to prioritise or make decisions about them.

The **third forecast year is long-term and is set in 2060: It will be used to evaluate future scenarios only in socioeconomic** terms.

3.1.3 Demand forecast

The definition of strategic planning is highly dependent on the socio-economic and land-use changes to be undertaken within Malta and its surroundings over the following decades. These variables are fundamental to forecasting future travel patterns and usage.

To deal with this uncertainty, the future scenarios of the NTM have taken into consideration growth in social variables such as population and employment, economic transport costs (value of time, vehicle operation costs), and land use plans.

The demand forecast, therefore, has included sub-forecasts including (1) an internal passenger forecast, (2) an internal freight forecast and (3) a cost forecast.

For the sake of conciseness, this chapter does not include complete information on the demand forecast and is present in the full NTM Forecast report.

3.1.4 Supply forecast

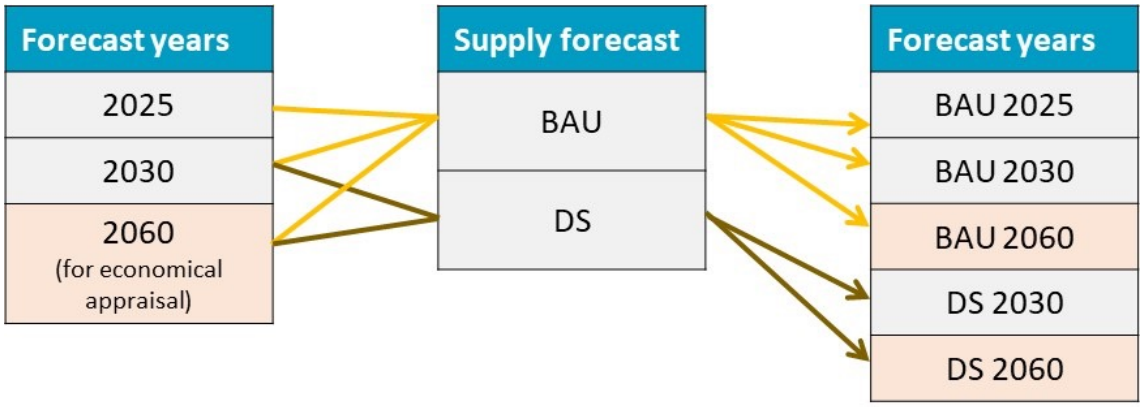
An important part of the forecasting framework, besides the demand forecast, is the supply forecast, which will be assessed according to investments in transport infrastructure and services planned within the modelling time horizons.

The supply forecast is divided into infrastructure interventions, mainly road projects, public transport investments aimed at improving the public transport service, and sustainable transport measures, which mainly aim to promote a modal shift toward more sustainable transport modes.

All measures are structured to define two scenarios, which are the basis for the analysis of the future transport interventions:

The **Business-As-Usual scenario (BAU)** includes all the recently implemented supply changes to the transport network as of 2021. It refers to a probable scenario regarding implemented infrastructure projects and measures, and no further significant policy changes that would significantly affect the supply or demand of transport.

The **Do-Something scenario (DS)** contains a package of measures involving infrastructure projects, improvements and incentives to multimodal and public transport, provision of new park-and-ride services, and a large investment in transport electrification. In this case, only the time horizon 2030 is considered due to the relatively short period considered in the TMP.



3.2 Selection of projects for Supply Forecast

In line with the principles set out in Malta's Road Safety Strategy (2014-2024) and the transposed requirements of Directive 2008/96/EC (as amended by Directive (EU) 2019/1936) on road infrastructure safety management, Malta carried out a network-wide road safety assessment across the entire TEN-T and Primary Road Network in 2022. The results of this assessment and a corresponding multi-criteria analysis were a major factor in the prioritisation of road infrastructure projects until 2030.

With technical support through a framework agreement with EIB Advisory Services and following a comparative analysis of the different approaches being deployed by authorities worldwide, Malta chose the tried and tested International Road Assessment Programme (iRAP) methodology as the basis for its network-wide road safety assessment.

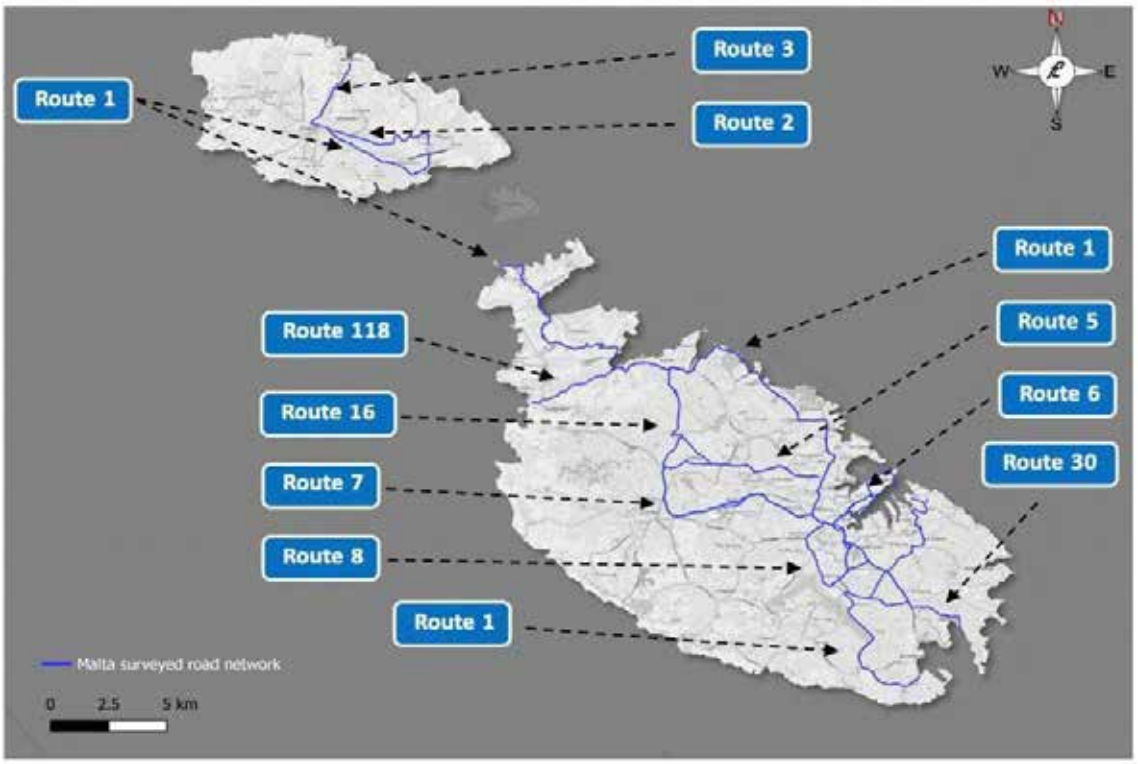
The following pages will first present the methodology for prioritising road projects according to road safety risks. Following this, the list for each supply forecast (covering road, public transport, and sustainability measures) will be shown in addition to the modelling methodology.

3.2.1 Data Collection and Coding for Network Safety Assessment

Before a risk assessment for the network can be calculated, the network must first be analysed and coded, taking into consideration various safety criteria (e.g., speed limit, median type, road curvature, presence of objects on the road). To do this, Transport Malta conducted a combination of surveys in November 2021 and also utilised pre-existing data from Malta's National Transport Model.

The total of 153.9 km of road carriageway length that was inspected included 67% of roads in the urban environment and the remaining 33% in rural/open areas. The inspected road network included 106.5 km (66%) of divided carriageway length and 53.7 km (34%) of undivided carriageway length.

Figure 29: Map of inspected network



The complete survey of 153.9 km of the road carriageway length in Malta and the preparation of the video survey data were performed according to the iRAP Survey and Coding Specification.

Figure 30 : iRap survey tool

The level of risk of death or serious injury on a road is highly dependent on the speed at which the traffic is travelling. Risk assessments were using the 'operating speed' on a road, which is defined as being the greater of the legislated speed limit or the measured 85th percentile speed.

3.2.2 Prioritisation of Road Infrastructure Investments on the TEN-T

The network-wide road safety risk assessment carried out over the course of 2021 and 2022 has played a significant part in prioritising investments up to 2030. Sections of the TEN-T road network that have been in operation for more than three years and that have been designated as high risk, i.e., with a road safety risk rating of less than three stars, were followed up by targeted road safety inspections. Particular attention was given to sections with high levels of road safety risk to vulnerable road users.

Using ViDA, a data processing engine for Star Ratings developed by iRAP, and local crash history (Fatal and Serious Injury estimates), the Maltese authorities have simulated the impact of different road safety treatments, such as installing barriers or improving signage, on sections of the TEN-T road network that had been identified through iRAP and targeted road safety inspections as having low levels of safety.

A twenty-year investment Plan has been drawn up, identifying measures with high potential for safety development and accident cost savings. This investment plan has a benefit-to-cost ratio of 3.0 and is estimated to save 628 FSIs (Fatal and Serious Injuries) at a cost of €35,794,607 at a 5% discounted rate in 2042.

The prioritisation of investments in the TEN-T network up to 2030 has used a Multi-Criteria Analysis (MCA) approach. Improvement of sections with a high road safety risk level is one of four key criteria that have been used to shortlist prioritised projects for major infrastructure investment that goes beyond normal asset management. The four criteria used to prioritise investment in the TEN-T up to 2030 include:

- Road Safety Star Rating (less than three stars with a focus on vulnerable road users);
- Completion of TEN-T Core Road Network by 2030;
- Level of Congestion (Volume / Capacity > 0.80);
- Traffic density.

The table below summarises the Multicriteria Analysis that led to the prioritisation of investments up to 2030.

Figure 31: Prioritisation of Investment on the Ten-T Road Network

TENtec ID	TEN-T Section Description	TEN-T	Completion Date	Road Safety Risk Rating for Road sections (iRap) One star highest risk * Five star lowest risk *****				Level of Traffic congestion (v/c)	Traffic Density (AADT)
				Vehicle Occupants	Motorcycles	Pedestrians	Cyclists		
150330140513992(D) 150316094516738 (E) 211013102908605 (F)	Remove traffic bottleneck and reduce severance between urban communities [Nodes EA20a-EA7a] -December 19th Road, Marsa (Malsch Factory Project)	Core	2030	***	**	***	*	>1.00	70,000
24396 (C)	Make more efficient use of road space and reduce severance on Route 6 [Node EA7a-EA6] from Blata l-Bajda to Valletta	Core	2030	**	*	***	*	0.60-0.80	45,000
150330140851868 (S)	Removal of bottleneck and reduce severance between urban communities [Nodes SA12-SA11] - Triq Tal-Barrani, Tarxien	Comprehensive	2027?	**	**	*	**	0.80-1.00	48,000
211013101730552 (H)	Removing bottleneck and reduce severance between communities at Regional Road (Nodes NA11-EA13) - White Rocks complex to Manuel Dimech Bridge, St Andrew's	Comprehensive	2026?	**	**	*	*	>1.00	29,000
150330140851869 (U)	Remove conflict between high traffic flow and urban activity [Nodes SA12-SA12a] and major junction improvement - Triq Tal-Barrani, Bir-id-Deheb to Bulebel	Comprehensive	2030	***	*	*	**	0.60-0.80	28,000
150323161206640 (G)	Removal of traffic bottleneck along Route 1 and improving connectivity between TEN-T core and Comprehensive Road networks [Nodes WA19-WA19a] - Hamrun / Marsa	Comprehensive	2030	***	**	***	*	>1.0	70,000
21400000 (A)	Upgrading of road infrastructure quality on Marsalforn Road [Nodes GA32-GA41] - Victoria to Marsalforn, Gozo	Comprehensive	2026?	*	*	*	*	0.45-0.60	10,000
150316094654822 (P)	New Link Road to Smart City Malta	Comprehensive	2030	New Link Design subject to Road Safety Audits					
211013102705714(	Removal of traffic bottleneck by upgrading intersection [node WA13] between Triq Guze Duca, Triq Manuel Dimech and Triq l-Imdina, Qormi	Comprehensive	2030	**	**	**	*	>1.0	29,000

Malta's Networkwide Road Safety Assessment Report (iRap) (August 2022) was prepared with technical support through the EIB Advisory Hub under the Framework Agreement to support EIB Advisory Services (EIBAS).

3.3 DESCRIPTION OF MEASURES IN SUPPLY FORECAST

3.3.1 Infrastructure interventions summary

A summary of all the interventions considered as part of the supply forecast is shown in the table below.

They are divided into 12 major projects and 11 minor interventions included in the investment plans of the infrastructure of Malta.

Major projects mainly consist of new junctions, including grade-separating junctions, which allow the inclusion of bypasses for direct movements, which will improve traffic flow.

One of the most important interventions is the new grade-separated junction at Paceville to ease access to St Julian's (Swieqi). This includes the construction of a new multi-level intersection to replace the current traffic light system. The new junction will also include the construction of a new hairpin loop, slipways, and a roundabout that will connect the main road in all directions in place of the current intersection. Therefore, all movements will be possible without interfering with the main flow passing by the road.

The project aims to improve traffic flow on Triq Mikiel Anton Vassalli, a TEN-T route also known as the Regional Road. It will introduce a grade-separated junction to replace the existing traffic lights and reorganise traffic lanes to improve vehicular accessibility to and from Swieqi and St Julian's.

Figure 32: Infrastructure Intervention list showing the major projects included as part of the supply forecast (NTM; Elaboration)

Code	Name	Description
MP13	Erba Mwieżeb Junction	Bypass lanes from Burmarrad to Bypass and from Coast Road to Burmarrad.
MP18	Paceville Junction Project	Grade-separated junction to improve traffic flow to replace the previous junction.
MP20	Smart City Connection-Missing link from is-Sur ta' Notre Dame to Smart City	Provide a connection to Smart City through a single carriageway (one lane in each direction) and upgrading of junctions.
MP21	Burmarrad Bypass	Remove the present bottleneck along Triq Burmarrad (2+1 road from junction to Wardija up to Erba Mwieżeb Junction).
MP23	Msida Creek	New grade-separated junction to eliminate the present traffic light junction.
MP29	Improvements at Tal-Barrani, Zejtun	Proposed improvements of junctions and rationalisation of lanes.
MP30	Proposed Grade Separated Junction at Roundabout at Qormi Centre Entrance	Proposed Underpass joining Triq Ġuże Duca with Triq Manwel Dimech and Triq L-Imdina (South part) to Triq Ġuże Duca.

Minor interventions included as part of the transport supply consist of the construction of minor junctions and the realignment of lanes.

Figure 33: Infrastructure Intervention list showing the minor interventions included as part of the supply forecast (NTM; Elaboration)

Code	Name	Description
MI19bis	Upgrading of roundabout at Triq Dun Karm, Birkirkara, junction with Triq Ganu, Birkirkara	Re-alignment of roundabout to improve the roundabout capacity.
MI27	New Roundabout at Barrani Junction to Żejtun	Lidl Roundabout.
MI32	Additional lane at road from B' Kara Bypass to Mater Dei	Additional lane at approach to Mater Dei roundabout by widening on left-hand side.
MI44	Triq San Andrija Upgrades (Pembroke)	Widening of lanes including introduction of two hairpin turns.

Figure 34: Infrastructure interventions included in the supply forecast (NTM; Elaboration)

All road projects are modelled by drawing their sections and characteristics through the allocation of road classes based on the provided CAD files of Infrastructure Malta.

3.3.2 Public transport measures summary

The public transport measures consist of

Free public transport
Free public transport has a direct impact on the perceived generalised cost of this mode. It has been directly modelled.

Increase in frequency of specific PT routes
Directly modelled through the rise in AM and PM headways.

3.3.3 Multimodal hubs proposal

Part of the supply forecast includes the creation of 10 multimodal hubs, which aim to improve the transfer from sustainable modes to public transport, as well as the creation of dissuasive Park and Rides. They correspond to Ta' Xħajma in Gozo, Northern hub, Pembroke hub, UoM hub, Marsa, Floriana, Paola, Qormi, Żabbar and Luqa.

Figure 35: Multimodal hubs (NTM; Elaboration)

This measure will improve access and egress to and from the stations in addition to providing new Park and Ride services. Therefore, in modelling terms, the access/egress walk time for public transport trips in ODs located in the influence area of a Hub has been reduced.

3.3.4 Sustainability Measures Summary

The sustainability measures list proposed by Transport Malta refers to the electrification of vehicles, including grants to incentivise the renewal of private vehicles and the direct purchase of electric vehicles for the PT and public sector vehicle fleet.

The following subsections provide information about how each of these measures is modelled.

Figure 36: Sustainability Measures included as part of supply forecast (Elaboration)

Code	Name	Description
SM1	Electrification of Vehicles	Equivalent savings and GHG emissions abatement of 65,000 vehicles by 2030 (for analysis in the CBA)
SM2	Electrification of Public Sector Vehicle Fleet	250 EVs by 2030
SM3	Electrification of Public Transport Fleet	144 EVs by 2030

The measures related to infrastructure, public transport and sustainable measures are planned to be implemented at the specific time horizon and supply scenario as shown in tables overleaf:

Figure 37 : Major road projects by future scenario (NTM; Elaboration)

Code	Name	Description	BAU 2025	BAU 2030	DS 2030
MP13	Erba' Mwieżeb Junction	Bypass lanes from Burmarrad to Bypass and from Coast Road to Burmarrad.	✗	✗	✓
MP14	Mrieħel ByPass grade separated junction	A new grade-separated junction will improve access and exit from Mrieħel onto the Bypass. Upgrades are ongoing, namely to introduce an added exit from the service road.	✓	✓	✓
MP15	Upgrading of Għadira Road	Upgrading of the present road infrastructure, public transport and pedestrian facilities.	✓	✓	✓
MP18	Paceville Junction Project	Grade-separated junction to improve traffic flow, to replace the previous junction.	✗	✗	✓
MP20	Smart City Connection-Missing link from is-Sur ta' Notre Dame to Smart City	Provide connection to Smart City through a single carriageway (one lane in each direction) and upgrading of junctions.	✗	✗	✓
MP21	Burmarrad Bypass	Remove the present bottleneck along Triq Burmarrad (a 2+1 road from the junction to Wardija up to Erba' Mwieżeb Junction).	✗	✗	✓
MP23	Msida Creek	New grade separated junction to eliminate the present traffic light junction.	✗	✓	✓
MP25	Civil Aviation node WA23 - Upgrading of node WA23 Malta International Airport	New Grade separated junction at node WA23.	✓	✓	✓
MP26	Civil Aviation node WA24 - Upgrading of node WA24 Malta International Airport	New Grade separated junction at node WA24.	✓	✓	✓
MP29	Improvements at Tal-Barrani, Żejtun	Proposed improvements of junctions and rationalisation of lanes.	✗	✗	✓
MP30	Proposed Grade Separated Junction at Roundabout at Qormi Centre Entrance	Proposed Underpass joining Triq Ġuże Duca with Triq Manwel Dimech and Triq L-Imdina (South part) to Triq Ġuże Duca.	✗	✗	✓

Figure 38: Minor road interventions by future scenario (NTM; Elaboration)

Code	Name	Description	BAU 2025	BAU 2030	DS 2030
MI19bis	Upgrading of roundabout at Triq Dun Karm, Birkirkara, junction with Triq Ganu, Birkirkara	Re-alignment of roundabout to improve the roundabout capacity.	✗	✗	✓
MI27	New Roundabout at Barrani Junction to Żejtun	Lidl Roundabout.	✗	✗	✓
MI29	Vjal Kottoner	Upgrading of roundabout and converting road into 1+1 road	✓	✓	✓
MI30	Roundabout at Għajn Tuffieha and re-arrangement of traffic flows.	Upgrading from T Junction to roundabout and converting one way road to 2 way following downgrading of present exit road.	✓	✓	✓
MI32	Additional lane at road from B' Kara Bypass to Mater Dei	Additional lane at approach to Mater Dei roundabout by widening on left hand side.	✗	✗	✓
MI34	Mdina Road, Żebbuġ	Increasing of lanes and convert the roundabout to Siġġiewi to T junction (don't have latest plan)	✓	✓	✓
MI37	New roundabout to improve junction between Triq Durumblat and Triq ta' Torba, Mosta	New roundabout to improve the safety and efficiency of junction	✓	✓	✓
MI38	New roundabout at Tarġa Gap	New roundabout with bypass lanes to improve connections between Triq id-Difiża Ċivili, Vjal l-Indipendenza	✓	✓	✓
MI40	Change in Traffic Flows at Access and Exits to Mosta	Changes in traffic flows at Vjal l-Indipendenza and Triq il-Kostituzzjoni and Triq il-Kbira, Mosta. Project led and proposed by Mosta Local Council.	✓	✓	✓
MI43	Manoel Island Junction	New roundabout to improve the safety and efficiency of junction	✓	✓	✓
MI44	Triq San Andrija Upgrades (Pembroke)	Widening of lanes, including the introduction of two hairpin turns.	✓	✓	✓

Figure 39: Infrastructure supply forecast by scenario (NTM; Elaboration)

Figure 40: Public transport measures by future scenario (NTM; Elaboration)

Code	Name	Description	BAU 2025	BAU 2030	DS 2030
PT1	Free Public Transport	All Public Transport is free in all forecasting scenarios, including for the BRT	✗	✗	✓
PT2	Increase in frequency of certain PT routes	In Summer 2023, certain routes increased in frequency. These have been taken into consideration in BAU Scenarios.	✓	✓	✓
PT4	Multimodal Hubs	Creation of Multi-modal Hubs with Park and Ride facilities at 8 of the 13 interchanges	✗	✗	✓

Figure 41: Public transport measures by future scenario (NTM; Elaboration)

Code	Name	Description	BAU 2025	BAU 2030	DS 2030
SM1	Electrification of Vehicles	Equivalent savings and GHG emission abatement of 65000 vehicles by 2030	✗	✗	✓
SM2	Electrification of Public Sector Vehicle Fleet	250 EVs by 2030	✗	✗	✓
SM3	Electrification of Public Transport Fleet	144 by 2030	✗	✗	✓

3.4 OUTPUTS AND INDICATORS OF FORECAST SCENARIOS

The results of modelling a future scenario are the outputs that guide policy makers in defining the Transport Master Plan and its contribution to the short—to long-term targets. The outputs that have been obtained are different performance indicators of the mobility behaviour in Malta, such as travelled distance or average speeds, congestion indicators, accidents, and environmental externalities.

The analysis of these outputs in the different scenarios allows a complete test of the proposed measures and projects, which provides guidance as to which measures and projects should be finally implemented and with which level of prioritisation. The results are shown for the modelling years in the short term, 2025, and in the medium term, 2030.

3.4.1 Main indicators

Main indicators assess the numerical effectiveness of the road and public transport measures included in each future scenario. For the ease of the analysis, the results are reported separately for general mobility impact, network performance, and trip analysis. Also, Base-Year model results are included to establish comparisons.

3.4.2 Global impact

Global indicators provide a big picture of the whole mobility performance in terms of daily trips and modal share.

Daily trips depend on the evaluation year considered. The relative increase from 2021 is 9% in 2025 and 18% in 2030 for both BAU and DS growth scenarios. These results come directly from the demand forecast for b

Figure 42: Global impact. Daily trips by scenario (NTM; Elaboration)

DAILY MOBILITY	Base Year 2021	BAU 2025	BAU 2030	DS 2030
Daily person trips	482,776	524,880	571,829	571,828
increase (ref. 2021)	-	9%	18%	18%
Freight trips	8,361	10,063	11,735	11,735
increase (ref. 2021)	-	20%	40%	40%

In modal share terms, AM and PM results differ slightly. In the BYM, for both periods, modal share for private modes is set around 88%, whereas public transport mode in the AM period represents 6% and 8% in the PM period.

In the BAU scenario, similar results were obtained for both forecast years since the transport supply is similar. The impact of the measures is low in the modal share since they are mainly focused on road projects. The PT share, including PandR, increases from 7% in the Base Year to almost 10%.

In the DS scenario, where measures are mainly focused on improving the modal share for public transport, the impact on the modal share is higher. Specifically, for the AM period, the PT share increased to almost 11%, 3 points higher than in BAU 2030 and almost 5 points higher than in the BYM.

Similar results are obtained in PM scenario.

Figure 43: Global impact. Modal choice by scenario and time period AM/PM (NTM; Elaboration)

MODAL CHOICE - AM (%)	Base Year 2021	BAU 2025	BAU 2030	DS 2030
Car share	88.14	85.93	85.07	82.48
PT share	6.05	7.77	7.95	10.42
Others	5.05	5.81	6.46	6.32
PandR	0.76	0.50	0.52	0.78
MODAL CHOICE - PM (%)	**Base Year 2021**	**BAU 2025**	**BAU 2030**	**DS 2030**
Car share	88.85	85.98	85.04	80.34
PT share	7.90	10.33	10.86	15.08
Others	2.83	3.09	3.51	3.55
PandR	0.42	0.59	0.59	1.03

3.4.3 Network performance

Indicators from this group provide a global picture of the whole road network performance. Specifically, three main indicators are commonly used in transportation:

- vehicles x kilometre (veh*km): combination, extended to all the links of the network, of the products of the number of vehicles driving on each link and the length of the link; it represents the total distance travelled by all the vehicles in the network;
- vehicles x hour (veh*h): combination, over all the links of the network, of the product of the number of passing vehicles on each link and the travel time of the link; it represents the total time spent by all the vehicles in the network;
- average network speed (ave speed): ratio between veh*km and veh*h; it consists of the average speed of the entire network.

Indicators show that veh*hour increase with a higher ratio than veh*km and therefore, the average entire network speed decreases in the future scenarios.

Figure 44: Network performance. Entire veh*km and veh*h by scenario and time period AM/PM (NTM; Elaboration)

NETWORK PERFORMANCE - AM	Base Year 2021	BAU 2025	BAU 2030	DS 2030
Entire network veh*km	400,549	440,046	485,499	477,683
increase (ref. 2021)	-	10%	21%	19%
Entire network veh*h	18,427	21,529	26,122	25,677
increase (ref. 2021)	-	17%	42%	39%
Entire network ratio veh*km/ veh*h	21,74	20.44	18.59	18.60
increase (ref. 2021)	-	-6%	-14%	-14%

NETWORK PERFORMANCE - PM	Base Year 2021	BAU 2025	BAU 2030	DS 2030
Entire network veh*km	352,295	383,221	406,593	387,117
increase (ref. 2021)	-	-4%	2%	-3%
Entire network veh*h	13,457	15,406	17,197	16,189
increase (ref. 2021)	-	-16%	-7%	-12%
Entire network ratio veh*km/ veh*h	26,18	24.88	23.64	23.91
increase (ref. 2021)	-	-5%	-10%	-9%

Veh*km and Pax*km are shown by mode, separating light vehicles, heavy vehicles, and public transport in the tables below.

LV pax*km is obtained through veh*km and vehicle occupancy ratio which was set in 1.207 and therefore has the same impact. Referenced in 2021 the increase in BAU is of about a 7% in 2025 and 16% in 2030 whereas in DS the impact is lower, just of a 13%.

PT supply and demand impact in terms of veh*km and pax*km differ since the supply entirely depends on the proposed bus lines and frequency, and the pax*km in the demand capture. As shown in the table below, for the AM period, for both BAU and DS scenarios, the increase in demand is higher than in PT supply referred to BYM:

In the BAU Scenario, the increase in PT supply is tight and linked only to the increase in some bus lines' frequencies, which has an impact on demand, together with the free public transport policy and the reversion of the COVID-19 effect.

In the DS Scenario, both PT supply and demand are high and linked to the reconfiguration of the bus network.

Figure 45: Network performance. Entire veh*km by mode, scenario and time period AM/PM (NTM; Elaboration)

VEHICLE AND PAX*KM - AM	Base Year 2021	BAU 2025	BAU 2030	DS 2030
LV veh*km	285,815	304,792	330,965	322,222
LV pax*km	344,978	367,884	399,474	388,922
HV veh*km	31,415	37,698	44,028	44,343
PT veh*km	5,267	5,762	5,788	5,783
PT pax*km	30,295	44,815	50,248	68,824
Increase (ref. 2021) LV veh*km	-	7%	16%	13%
Increase (ref. 2021) LV pax*km	-	7%	16%	13%
Increase (ref. 2021) HV veh*km	-	20%	40%	41%
Increase (ref. 2021) PT veh*km	-	9%	10%	10%
Increase (ref. 2021) PT pax*km	-	48%	66%	127%
Entire network veh*km	400,549	440,046	485,499	477,683

VEHICLE*KM - PM	Base Year 2021	BAU 2025	BAU 2030	DS 2030
LV veh*km	267,658	282,365	291,903	270,789
LV pax*km	323,063	340,814	352,327	326,842
HV veh*km	23,939	28,909	33,512	34,066
PT veh*km	5,014	5,523	5,542	5,540
PT pax*km	34,795	50,780	56,336	80,003
Increase (ref. 2021) LV veh*km	-	5%	9%	1%
Increase (ref. 2021) LV pax*km	-	5%	9%	1%
Increase (ref. 2021) HV veh*km	-	21%	40%	42%
Increase (ref. 2021) PT veh*km	-	10%	11%	11%
Increase (ref. 2021) PT pax*km	-	46%	62%	130%
Entire network veh*km	400,549	440,046	485,499	477,683

As in the previous case, veh-h are shown by mode, separating light vehicles, heavy vehicles, and public transport:

Figure 46: Network performance. Entire veh*km and veh*h by scenario and time period AM/PM (NTM; Elaboration)

VEHICLE*HOURS - AM	Base Year 2021	BAU 2025	BAU 2030	DS 2030
LV veh*h	13.543	15,387	18,524	17,928
HV veh*h	1.309	1,680	2,126	2,185
PT pax*h	2.146	3,312	4,032	5,427

VEHICLE*HOURS - PM	Base Year 2021	BAU 2025	BAU 2030	DS 2030
LV veh*h	10.062	11,155	12,116	11,125
HV veh*h	953	1,213	1,482	1,487
PT pax*h	2.106	3,215	3,724	4,955

3.4.4 Trip analysis

Trip analysis includes indicators which represent the principal patterns of an average trip in AM and PM period for each scenario referred to time, distance and speed travelled.

As shown below, trip distance remains similar in all scenarios for car and bus trips, whereas travel time does not in the DS scenario. In BAU and DS Scenario for 2025 and 2030, the average trip travel time increases 1 and 2 minutes in global terms. In DS, due to the increase in the PT modal share, travelling time for car and bus trips slightly decreases in comparison to BAU 2030 and, therefore, the average speed increase.

Figure 47: Trip analysis. Average trip time, distance and speed AM/PM (NTM; Elaboration)

TRIP ANALYSIS - AM	Base Year 2021	BAU 2025	BAU 2030	DS 2030
Average car trip time [min]	13.3	14.0	14.9	14.7
Average car trip distance [km]	6.1	6.1	6.0	6.0
Average bus trip time [min]	43.9	44.9	46.3	45.0
Average bus trip distance [km]	6.5	6.7	6.6	6.9
LV average speed	21.1	19.8	17.9	18.0
HV average speed	24.0	22.4	20.7	20.3
PT average speed	22.3	21.3	19.8	20.3

TRIP ANALYSIS - PM	Base Year 2021	BAU 2025	BAU 2030	DS 2030
Average car trip time [min]	15.0	15.5	16.2	14.8
Average car trip distance [km]	8.0	8.0	7.8	7.7
Average bus trip time [min]	47.9	48.4	48.8	46.6
Average bus trip distance [km]	8.5	8.8	8.6	8.8
LV average speed	26.6	25.3	24.1	24.3
HV average speed	25.1	23.8	22.6	22.9
PT average speed	24.0	23.1	22.4	23.5

3.4.5 Traffic results

The next figures show the **Traffic flow maps** for each scenario in the AM peak period for BAU 2030 and DS 2030 in order to analyse the impact of the measures included in the DS Scenario. Moreover, similar to the main indicators, BYM figures are also provided in order to analyse the trend evolution of traffic flow and congestion in BAU 2030. Please note that the unit is the Passenger Car Unit (PCU), which is a combination of LVs and HVs (the latest multiplied by a factor of 3).

The general levels of adequacy and effectiveness of the road network during the most congested time segments of the day are shown by the following **Volume/Capacity maps**.

3.4.6 Traffic flow

The traffic across the dense Maltese road network is mainly concentred along the central section of the TEN-T Network (mainly arterial with some distributor corridors), which gravitates around the harbour region (Peninsula, Inner Harbour and Outer Harbour) with its border defined by the following localities: Fgura, Malta International Airport, Qormi, Mosta, Birkirkara, Valletta and St Julian's. From the outputs of the National Transport Model, it can be concluded that:

The higher traffic levels are registered in the TEN-T Core and Comprehensive Network in all scenarios.

Even though the increase in daily trips between BAU 2030 and BYM is due to socioeconomical variables (population, employees, etc), traffic flow does not in general terms. This is linked to the increase in bus service frequency and the reversion of COVID-19 effects, which has also been reflected in the model.

The maps below show the decrease in traffic Volumes in some sections of the TEN-T Comprehensive Network (the transverse corridor), the main arterial road to access Floriana and Valletta (Triq San Ġorġ Preca), and to southeastern parts of the island (Triq Santa Luċija) between the BAU and the Do-Something scenario. This is likely related to the measures included in DS to increase PT modal share.

The following figures show the traffic flow throughout Malta and provide details of the Inner Harbour region, which, as commented above, is the focus of the analysis due to its high and dense traffic levels. Figures are shown for the AM period by scenario (Base Year, BAU 2030 and DS 2030).

Figure 48: Traffic flow within the Inner Harbour region. Base year model (NTM; Elaboration)

Figure 49: Traffic flow within the Inner Harbour region. BAU 2030 (NTM; Elaboration)

Figure 50: Traffic flow within the Inner Harbour region. DS 2030 (NTM; Elaboration)

Figure 51: Traffic flow of the entire network. Base year 2021 (NTM; Elaboration)

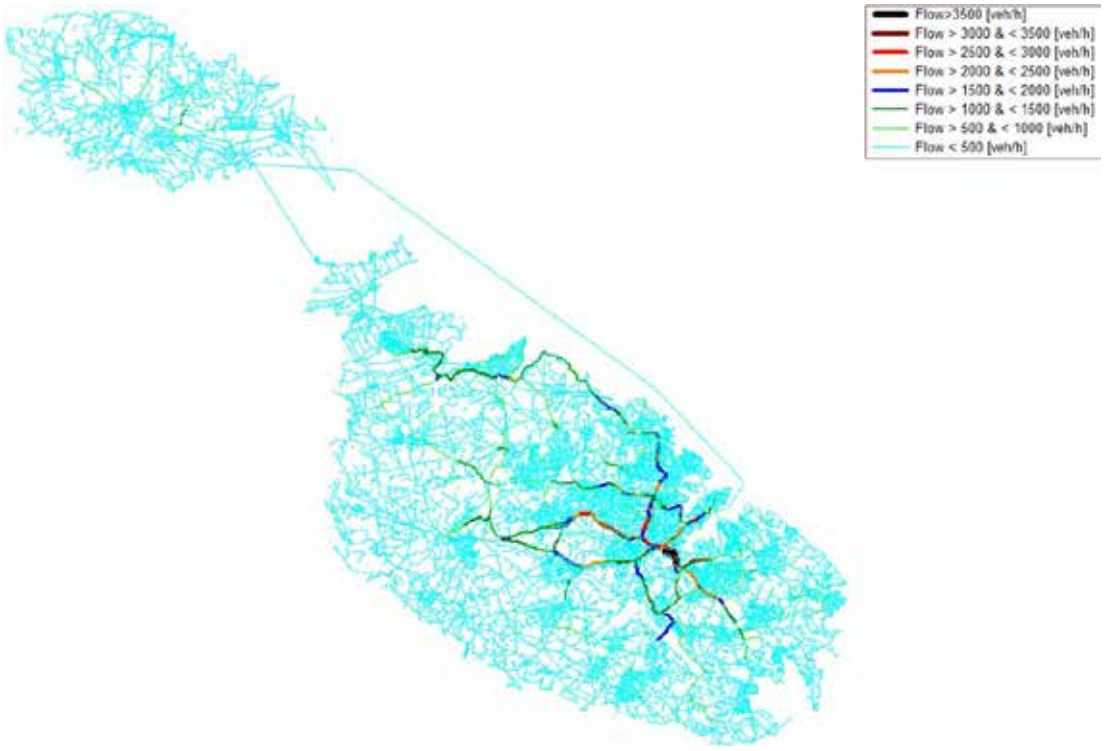


Figure 52: Traffic flow of the entire network. BAU 2030 (NTM; Elaboration)

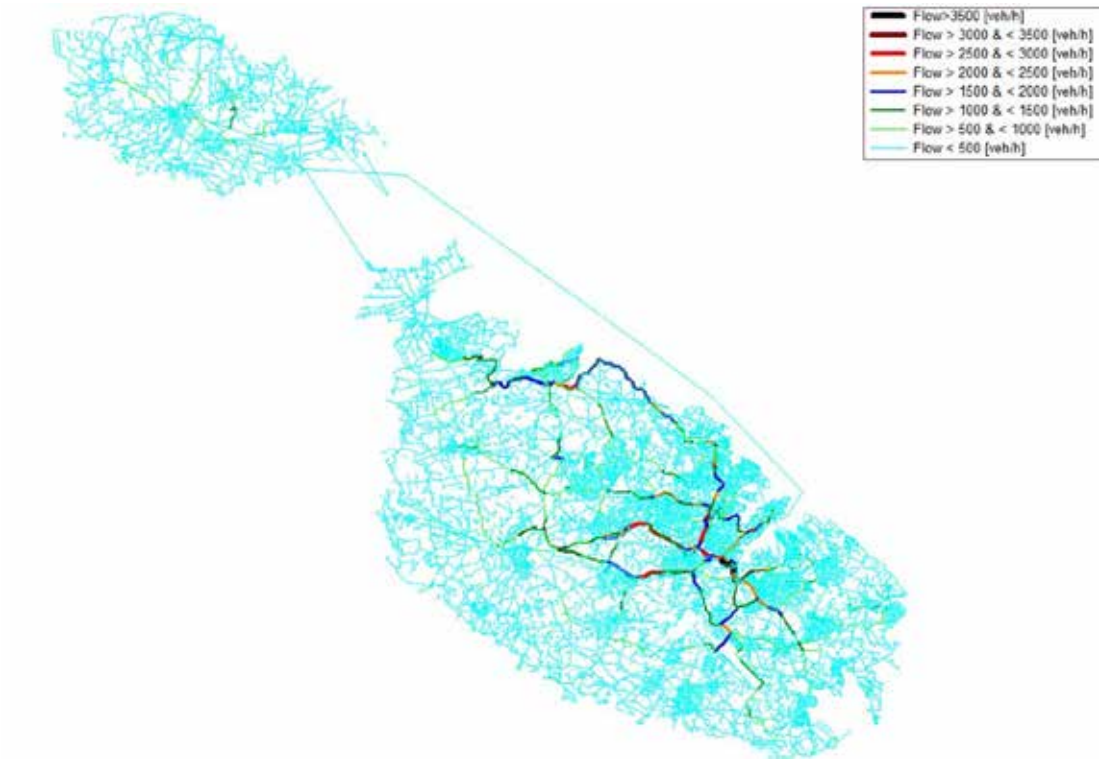
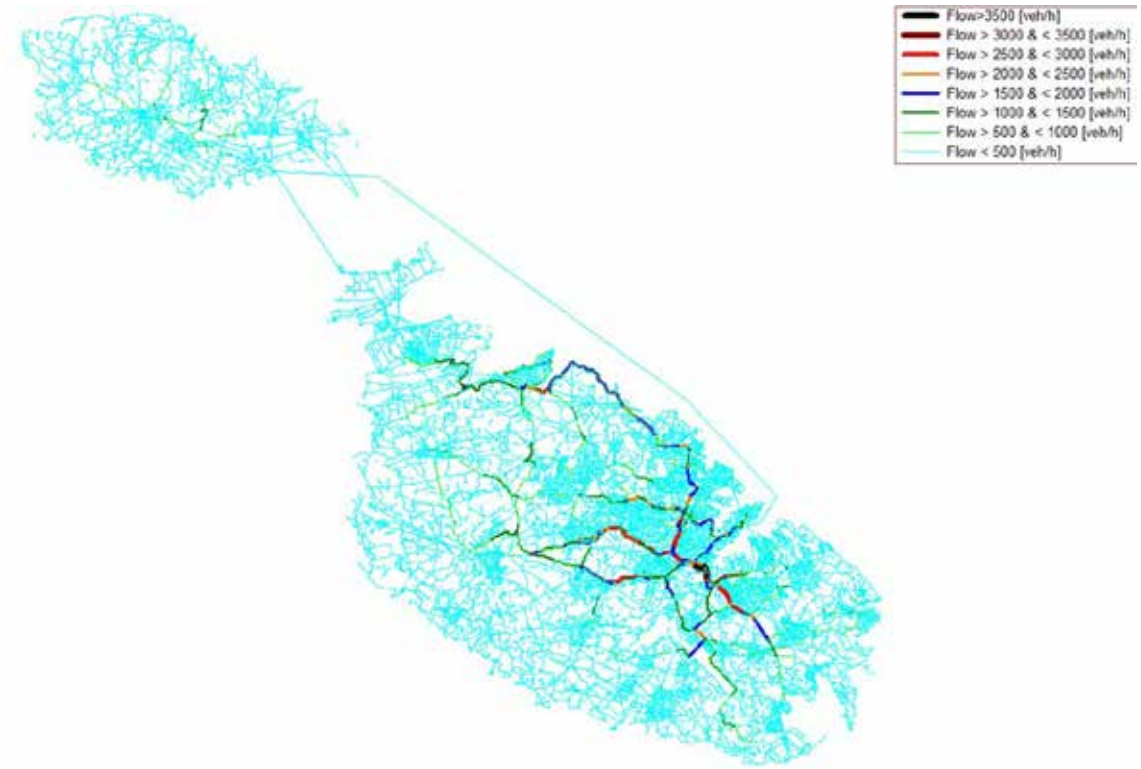


Figure 53: Traffic flow of the entire network. DS 2030 (NTM; Elaboration)



3.4.7 V/C Maps

The following volume/capacity (v/c) figures show the general levels of adequacy and effectiveness of the road network during the most congested periods of the day, which are modelled as AM and PM peaks. These figures are part of the key outcomes of the NTM.

The V/C ratio, often called the ratio of flow rate to capacity, varies from a low of zero (free flow) to values sometimes greater than 1.0 (severely/heavily congested); for relatively short periods, roads can handle more traffic than their rated capacities. The Highway Capacity Manual details the relationship between Level of Service (LOS) and the V/C Ratio in freeways as shown in the table below:

Figure 54: Typical relationship between LOS and V/C Ratios in Freeways (Highway Capacity Manual; Elaboration)

LOS	V/C Ratio	V/C Ratio
A	0.00 – 0.35	Represents the best operating conditions and is considered free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.
B	0.35 – 0.58	Represents reasonably free-flowing conditions but with some influence by others
C	0.58 – 0.75	Represents a constrained constant flow below speed limits, with additional attention required by the drivers to maintain safe operations. Comfort and convenience levels of the driver decline noticeably.
D	0.75 – 0.90	Represents traffic operations approaching unstable flow with high passing demand and passing capacity near zero, characterised by drivers being severely restricted in manoeuvrability.
E	0.90 – 1.00	Represents unstable flow near capacity. LOS E often changes to LOS F very quickly because of disturbances (road conditions, accidents, etc.) in traffic flow.
F	>1	Represents the worst conditions with heavily congested flow and traffic demand exceeding capacity, characterised by stop-and-go waves, poor travel time, low comfort and convenience, and increased accident exposure.

The critical sections, characterised by a higher degree of congestion and a lower level of service, have a V/C > 0.8. As shown in the table below, in the Base year model and for the AM period, they represent around 9% of the arterial roads, 5% of the distributor roads and 1% of local access. Due to the increase in mobility in future years and despite the implementation of the measures, the trend is to increase the amount of road sections with a V/C > 0.8 of all classes, arterial, distributor or local access.

Figure 55: V/C per Road Hierarchy by scenario and time period AM/PM (NTM; Elaboration)

AM	Base Year model	BAU 2025	BAU 2030	DS 2030
Arterial % V/C >0.8	9%	10%	12%	13%
Distributor % V/C >0.8	5%	6%	8%	7%
Local Access % V/C >0.8	1%	1%	2%	2%
PM	**Base Year model**	**BAU 2025**	**BAU 2030**	**DS 2030**
Arterial % V/C >0.8	7%	9%	9%	9%
Distributor % V/C >0.8	1%	2%	2%	2%
Local Access % V/C >0.8	0%	1%	1%	1%

As depicted in the V/C maps below, the congestion in the main corridors of Malta noticeably increases in some sections in the BAU Scenario compared to the Base Year Model scenario. Specifically:

In all scenarios, the most congested section refers to the Core TEN-T in Marsa.

In BAU 2025 and 2030, the congestion increases in the northern sections of the TEN-T, near San Pawl il-Baħar. Some sections achieve an average V/C higher than 0.8. In DS 2030, the congestion level in those sections slightly decreases without returning to the Base Year level.

A similar effect occurs in some distributor roads transversal to the TEN-T (Triq L-Imdina to Żebbuġ or Triq Ħal Luqa to the airport).

The following figures show the effect explained above in the Inner Harbour region and in the entire network below:

Figure 56: AM V/C within the Inner Harbour region. BYM 2021 (NTM; Elaboration)

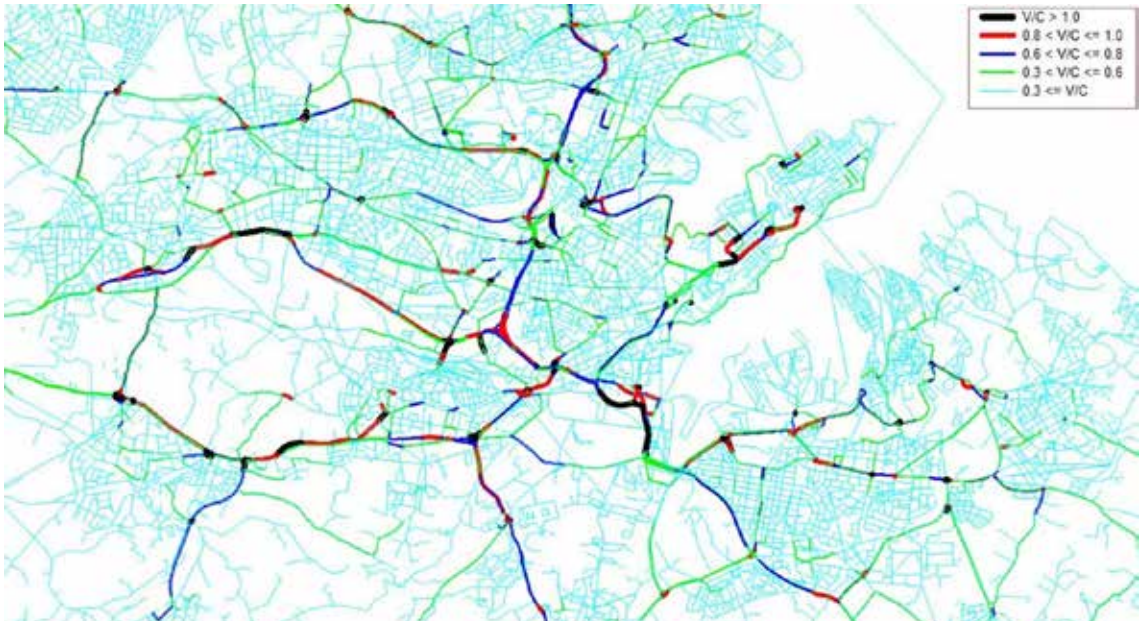


Figure 57: AM V/C within the Inner Harbour region. BAU 2030 (NTM; Elaboration)

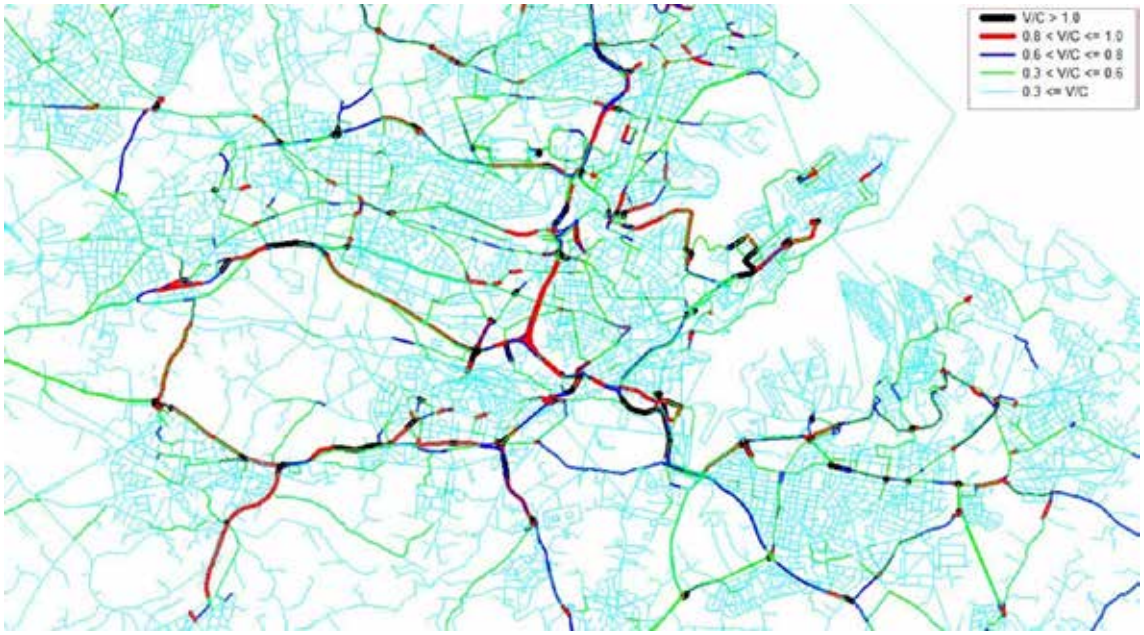


Figure 58: AM V/C within the Inner Harbour region. DS 2030 (NTM; Elaboration)

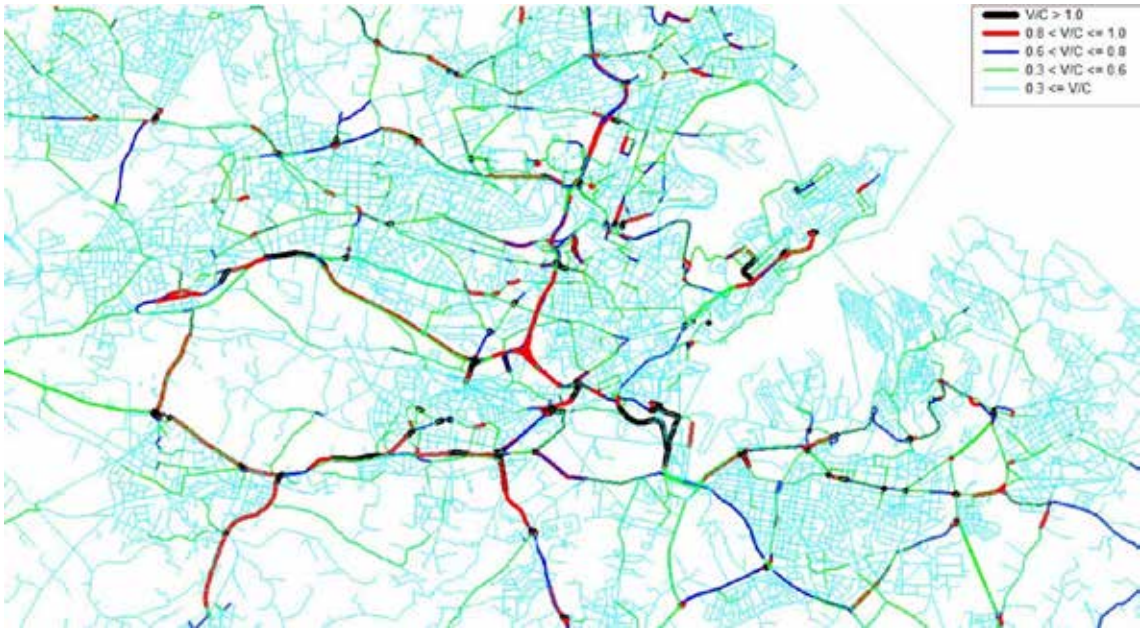


Figure 59: V/C of the entire network. Base year 2021 (NTM; Elaboration)

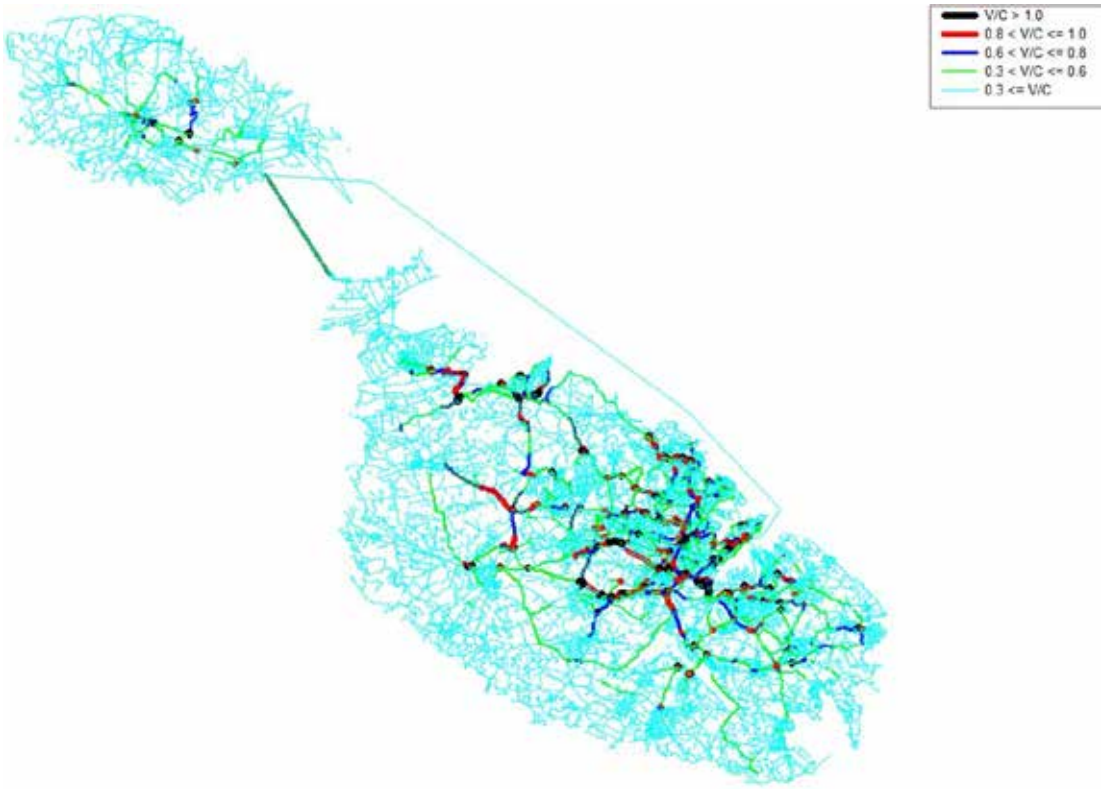


Figure 60: V/C of the entire network. BAU 2030 (NTM; Elaboration)

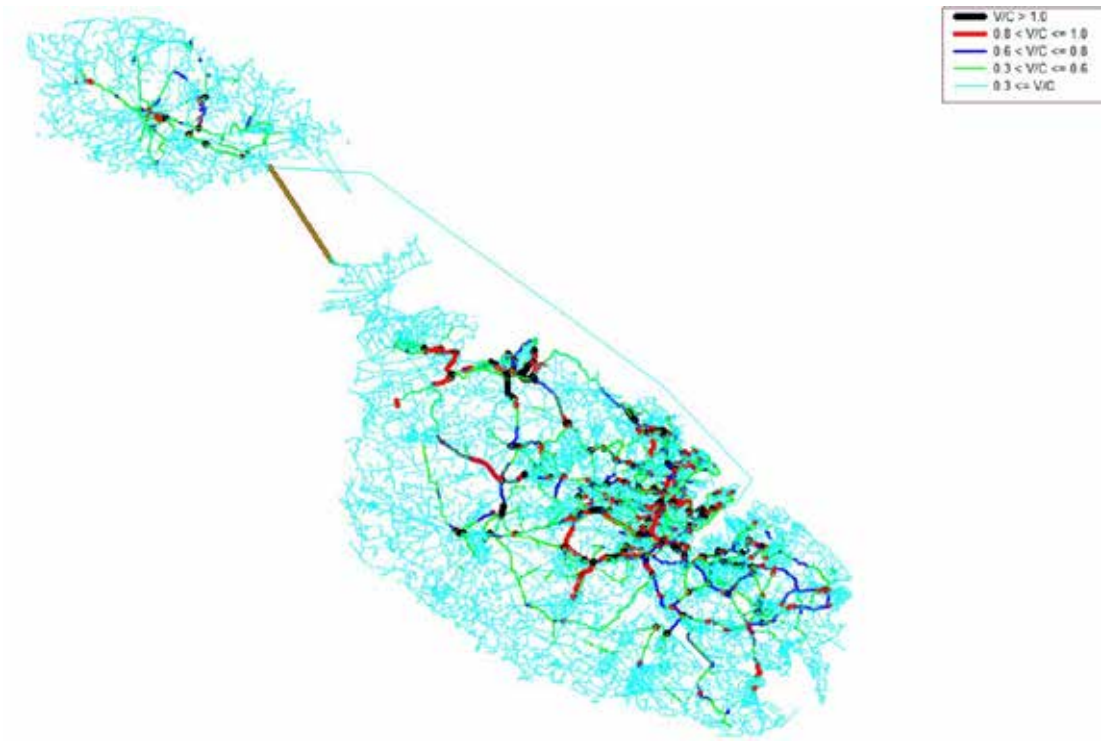
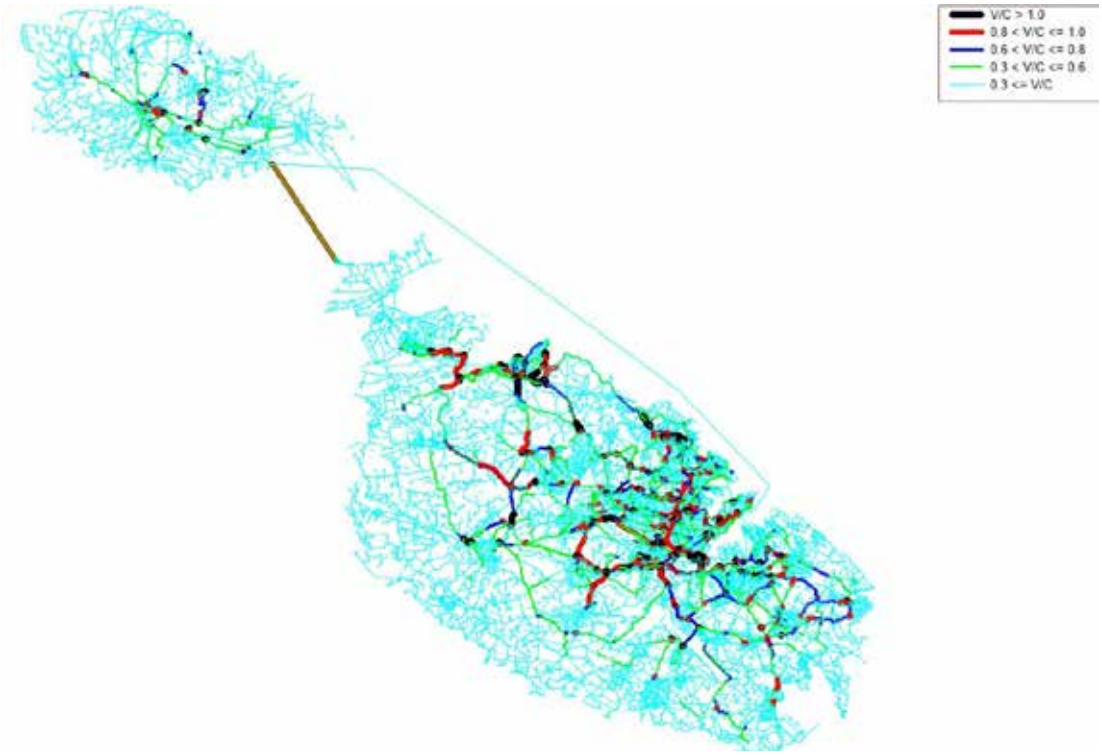


Figure 61: V/C of the entire network. DS 2030 (NTM; Elaboration)



3.4.8 Environmental impact

One of the key external impacts of the transport sector is its contribution to climate change, primarily through carbon dioxide (CO_2) and other GHG emissions. Among all modes, road transport is the most significant contributor to GHG emissions. This chapter outlines projected future emissions from the transport sector, including both GHGs and other harmful pollutants.

The basic data used to estimate environmental impact are the vehicle fleet composition, the annual road transport, and the emission factors considered.

Vehicle fleet composition

The vehicle characteristics assumed throughout the external impacts analysis in future years are set based on EWA's projected fleet composition. Since the BAU scenario is defined as a tendential/Do-Minimum scenario, the current vehicle fleet composition (2023) is used, whereas for the DS scenario, the projected fleet composition for 2030 is assumed.

The projection set by EWA reflects projected economic and energy policy (including electrification) and market factors. Compared to the current (2023) vehicle fleet composition, the weight of electric vehicles will grow by 10 points for all classes.

The following table shows the vehicles' share by fuel type and vehicle group in 2021, which is used for all the time horizons of the study. The average fuel consumption and average pollutant emissions were calculated based on the vehicle fleet and its respective characteristics.

Figure 62: Vehicles by fuel type and vehicle group (NTM; Elaboration)

Vehicle category	Fuel	Current vehicle fleet (BAU)	Estimation for 2030 (DS)
LV	Petrol	68%	64%
	Diesel	31%	25%
	Electric	1%	10%
HV	Petrol	3%	5%
	Diesel	95%	84%
	Electric	1%	11%
BUS	Diesel	97%	88%
	Electric	3%	12%

Annual road traffic

Starting from the value of the total travelled distance per LVs, HVs, and buses as the main AM and PM models' result and knowing the different number of vehicles in each category, it is possible to split the total distance between the different vehicle categories considered by the calculation method. The total travelled distance has been extracted directly from AM models and is split between Light and Heavy Vehicles and buses.

The reconciliation factor from peak hour road traffic into yearly was obtained using the Base year and the NSO statistics of yearly veh*km by vehicle class and mode, shown below:

Figure 63: Vehicles by fuel type and vehicle group (NTM; Elaboration)

	AM Period	Yearly	Reconciliation factor
LV veh*km	285,815	2,307,238,770	8,072.50
HV veh*km	31,415	115,942,637	3,690.73
PT veh*km	5,267	29,264,178	5,555.99

With the yearly travelled distance by vehicle group and the factors presented overleaf, it is possible to estimate the yearly road traffic in veh*km terms for the BAU and DS scenarios:

Figure 64: Annual road traffic in veh*km by scenario (NTM; Elaboration)

	Base Year 2021	BAU 2025	BAU 2030	DS 2030
LV veh*km	2,307,238,770	2,460,432,121	2,671,711,059	2,601,136,347
HV veh*km	115,942,637	139,132,257	162,497,076	163,659,546
PT veh*km	29,264,178	32,012,949	32,160,793	32,131,625

From the table above, it is clear that the included measures in the DS scenarios, which mainly impact the PT modal share, imply a reduction in the total amount of road traffic compared to BAU in 2030.

Emission factors

Typical fuel consumption and emission factors used to estimate environmental impact in the future scenarios are taken from the EMEP/EEA air pollutant emission inventory guidebook 2023. GHG emissions are calculated from IPCC Guidelines for National Greenhouse Gas Inventories in terms of CO_2 equivalent.

The following table lists the assumptions used to calculate the fuel consumption and pollutant emissions in this model.

Figure 65: Tier 1 — Typical fuel consumption per km and Tier 1 emission factors for CO, PM NOX and PM by kg of fuel, by category of vehicle (EMEP/EEA)

Vehicle category	Fuel	Typical fuel consumption (g/km)	CO (g/kg fuel)	PM (g/kg fuel)	NOx (g/kg fuel)	NMVOC (g/kg fuel)
Passenger cars	Petrol	70	84.7	0.03	8.73	10.05
	Diesel	60	3.33	1.10	12.96	0.70
LCV	Petrol	100	152.3	0.02	13.22	14.59
	Diesel	80	7.40	1.52	14.91	1.54
HDV	Diesel	240	7.58	0.94	33.37	1.92
	CNG (buses)	500	5.70	0.02	13.00	0.26

Figure 66: Tier 1 —Emission factors for GHG estimation (CO2, CH4, NO2 and fuel conversion factor) by fuel type (IPCC)

Fuel	CO2 (kg/TJ)	CH4 (kg/TJ)	N2O (kg/TJ	Fuel conversion factor (TJ/Gg)
Petrol	69,300	29	5.6	44.30
Diesel	74,100	3.9	3.9	43.00

Figure 67: Tier 1 —Global Warning Potential for 100 years horizon (NTM; IPCC)

Fuel	CO2 (kg/TJ)	CH4 (kg/TJ)
GWP (100 years)	27.9	273

Air pollution and fuel consumption

With the yearly travelled distance by vehicle group and the factors, it was possible to estimate the average fuel consumption. Consequently, based on measured emission factors, it is possible to estimate the total quantity of pollutants generated by transport yearly for each of the future scenarios.

In general terms, in 2030, due to the impact of the planned measures included in DS (vehicle electrification and an increase in the PT modal share), the trend of the environmental externalities linked to transport is reversed, achieving emission levels slightly better than those obtained in BAU2025.

The following table lists the results of the yearly fuel consumption by vehicle type in tonnes and fuel type in TJ, and the CO_2 emissions, as well as the pollutant emissions for the future BAU and DS scenarios:

Figure 68 : Estimation of annual fuel consumption (tonnes/year and TJ/year) by future scenario (NTM; Elaboration)

Vehicle type	BAU 2025	BAU 2030	DS 2030
LV (t)	162,224	176,154	156,471
HV (t)	11,100	12,964	11,800
PT (t)	7,485	7,520	6,768
Total (t)	**180,809**	**196,638**	**175,039**

Fuel type	BAU 2025	BAU 2030	DS 2030
Total petrol (TJ)	5,211	5,660	5,219
Total diesel (TJ)	2,717	2,961	2,461
Total (TJ)	**7,928**	**8,622**	**7,680**

Figure 69: Air Pollutants: Estimation of annual emission of CO, PM, NOx and NMVOC by future scenario (NTM; Elaboration)

Pollutant type	BAU 2025	BAU 2030	DS 2030
CO	10,281.27	11,171.98	10,298.48
PM	76.28	83.59	70.00
NOx	2,021.34	2,188.13	1,933.40
NMVOC	1,246.65	1,354.45	1,245.30

Figure 70: Climate change: CO^2 e.g. Emissions in tonnes (NTM; Elaboration)

Pollutant type	BAU 2025	BAU 203	DS 203
CO2 (t)	562,429	611,686	544,023
CH4 (t)	162	176	161
N2O (t)	39.8	43.2	38.8
CO2 eq (t)	**598,757.04**	**651,185.80**	**579,383.54**

Considering that vehicle characteristics remain constant in the NTM for future scenarios, CO_2 emissions drop 11% in the DS scenario compared to BAU due to the investments. For the air pollutants considered, the impact in the DS is a reduction of 8% in CO and NMVOC annual tonnes emissions and 12% in NOx emission levels. In terms of PM emissions, in DS, they are reduced by 16%.

3.4.9 Accidents impact

The average number of accidents per vehicle kilometre was calculated based on historic statistical data. Then, the total number of accidents per forecast scenario was estimated by multiplying this factor by the scenario outputs.

Figure 71: Cost of accidents, 2025 and 2030, (Various sources)

Vehicle type	BAU 2025	BAU 2030	DS 2030
Fatalities	16.92	18.44	18.03
Serious injuries	432.18	471.36	460.81
Slight injuries	3,338.47	3,651.42	3,569.92
Total	**3,787.57**	**4,141.22**	**4,048.76**

Socioeconomic appraisal

The economic analysis of actions in the transport system consists of monetary valuation of its effects on producers and consumers of transport activities and, in the case of external effects (environmental impacts, accidents, etc.), on the entire society.

The monetary valuation of these effects aims to analyse, from a social perspective, whether the benefits associated with the actions in the transport system are significant enough to offset the opportunity cost of the resources that need to be allocated to execute and operate the project.

Cost-benefit analysis (CBA) is a tool whose main objective is to assist decision-making in prioritising socially relevant actions based on their contribution to social welfare, valued in monetary terms.

The CBA methodology applied to the transport system is a systematic process for calculating and comparing benefits and costs to determine the expected changes in social welfare resulting from implementing actions in the transportation system. The use of monetary units to measure these changes allows for considering and quantifying social benefits that do not require any economic exchange but have an impact on welfare, such as reductions in travel time or avoidance of externalities. The main methodological assumptions and terms for the CBA are presented below:

Counter-Factual Scenario: The impact assessment is based on comparing the "with projects" scenario with respect to the "without projects" scenario (i.e., the BAU scenario). The BAU scenario is defined for comparison purposes to estimate the Plan's incremental impact by comparing it to the scenario where the projects are developed.

Time horizon: As the Plan and its social benefits and costs spread over time along the project's life, a horizon must be defined to account for them. The most appropriate time horizon for evaluating infrastructure projects is the one that includes the useful life of most of the assets. The analyses have been carried out over a time horizon of 30 years.

Residual value: Considering the value of the assets at the end of the project's life allows for accounting for the value of those assets whose useful life exceeds the horizon considered in the analysis. The residual value of investments in the year 2060 has been estimated at 50% of the total CAPEX amount.

The Discount Rate: The discount rate represents the opportunity costs of capital investment and its effects on social benefits over time. It represents the value of the benefits of other investments that could otherwise be accomplished using the same funds. Therefore, it is an important value to compare to the internal rate of return. The discount rate applied in the analysis is 5%, as recommended by the European Commission.

Real terms and year of current value: The economic evaluation of a project must be evaluated in real terms, considering real prices, to avoid misleading interpretations of the discount rate. This convention implies the need to define the year of current value as the one whose prices will be considered at the evaluation. The present value year of the monetary values defined in this analysis is 2024.

Social Net Present Value (SNPV) represents the changes in welfare discounted over the period of time considered. Therefore, it computes the benefits minus the project's investments and costs. If the SNPV yields a positive outcome, it will mean that the project is viable and beneficial for society as a whole.

Social Internal Rate of Return (SIRR): This indicator is the discount rate at which a project has a zero Net Present Value. The higher the value, the more profitable the project is expected to be. If the value is less than the discount rate considered, it would mean that the project is not beneficial under the set of conditions assumed in the analysis.

The benefit-cost ratio (BCR or B/C): Compares the present value of all benefits generated from a project or Plan to the present value of all costs. A project is considered cost-effective when the BCR is 1.0 or greater

The payback year: Is the year that costs are expected to be recovered by benefits. For its calculation, costs and benefits are discounted at the discount rate.

3.4.10 Results of the CBA

CAPEX - OPEX of the projects included in the Plan

The first elements that are included in the calculations for the economic and social evaluation of the Plan are CAPEX and OPEX of the actions contemplated in the Plan.

The estimates received for the economic analysis for CAPEX and OPEX are presented in the following tables.

Figure 72 : CAPEX: Value of the estimated investments for the period 2025-2029 for the actions included in the Plan and their annual distribution proportionally during said period. (Various sources)

Scenario		2025-2029	2025	2026	2027	2028	2029
DS							
Major road infrastructure provision	MP13 and 21	20.000.000	4.000.000	4.000.000	4.000.000	4.000.000	4.000.000
	MP18	50.000.000	10.000.000	10.000.000	10.000.000	10.000.000	10.000.000
	MP20	6.000.000	1.200.000	1.200.000	1.200.000	1.200.000	1.200.000
	MP23	38.000.000	7.600.000	7.600.000	7.600.000	7.600.000	7.600.000
	MP29a	4.000.000	800.000	800.000	800.000	800.000	800.000
	MP30	30.000.000	6.000.000	6.000.000	6.000.000	6.000.000	6.000.000
	MI19bis	4.000.000	800.000	800.000	800.000	800.000	800.000
	MI27	15.000.000	3.000.000	3.000.000	3.000.000	3.000.000	3.000.000
	MI32	4.500.000	900.000	900.000	900.000	900.000	900.000
	MI44	9.000.000	1.800.000	1.800.000	1.800.000	1.800.000	1.800.000
Multimodal hubs	Northern Hub_Parking	1.433.400	286.680	286.680	286.680	286.680	286.680
	Southern Harbour Hub_Parking	1.576.069	315.214	315.214	315.214	315.214	315.214
	South Malta Hub_ Parking	1.453.444	290.689	290.689	290.689	290.689	290.689
	South Eastern Malta Hub_Parking	836.178	167.236	167.236	167.236	167.236	167.236
	Floriana P+R_Parking	1.275.556	255.111	255.111	255.111	255.111	255.111
	Northern Harbour Hub_Parking	1.321.782	264.356	264.356	264.356	264.356	264.356
	Pembroke P+R_ Parking	5.236.770	1.047.354	1.047.354	1.047.354	1.047.354	1.047.354
	South Western Hub_ Parking	2.598.361	519.672	519.672	519.672	519.672	519.672
	Ta' Xħajma, Gozo	0	0	0	0	0	0
	Ta' Qali	11.400.000	2.280.000	2.280.000	2.280.000	2.280.000	2.280.000
	Victoria, Gozo	1.099.835	219.967	219.967	219.967	219.967	219.967
Vehicle fleet electrification	Electrification of Public Sector Vehicle Fleet	9.578.358	1.915.672	1.915.672	1.915.672	1.915.672	1.915.672
	Electrification of Vehicles	421.991.000	84.398.200	84.398.200	84.398.200	84.398.200	84.398.200
	Electrification of Public Transport Fleet	65.800.000	13.160.000	13.160.000	13.160.000	13.160.000	13.160.000

Figure 73: OPEX: Value of the estimated operating and maintenance costs for the period 2030-2040 for the actions included in the Plan. (Various sources; Elaboration)

Scenario		2030-2040	2040-2060
DS			
Major road infrastructure provision	MP13 and 21	600.000	600.000
	MP18	1.500.000	1.500.000
	MP20	180.000	180.000
	MP23	950.000	950.000
	MP29a	120.000	120.000
	MP30	900.000	900.000
	MI19bis	120.000	120.000
	MI27	450.000	450.000
	MI32	135.000	135.000
	MI44	270.000	270.000
Multimodal hubs	Northern Hub_Parking	114.672	114.672
	Southern Harbour Hub_Parking	126.086	126.086
	South Malta Hub_Parking	116.276	116.276
	South Eastern Malta Hub_Parking	66.894	66.894
	Floriana P+R_Parking	102.044	102.044
	Northern Harbour Hub_Parking	105.743	105.743
	Pembroke P+R_Parking	418.942	418.942
	South Western Hub_Parking	207.869	207.869
	Ta' Xħajma, Gozo	0	0
	Ta' Qali	912.000	912.000
	Victoria, Gozo	43.993	43.993
Vehicle fleet electrification	Electrification of Public Sector Vehicle Fleet	0	0
	Electrification of Vehicles	621.000	621.000
	Electrification of Public Transport Fleet	65.800.000	13.160.000

Operating costs for light veh. (LV) and heavy goods veh. (HGV)

The calculation of operating costs for light vehicles (LV) and heavy goods vehicles (HGV) involves considering fuel consumption and maintenance expenses. For both LV and HGV, operating costs are computed by multiplying:

- The number of vehicles per kilometre, in millions; and
- The operating costs in euros per kilometre.
- The number of vehicles per kilometre is derived from the data in the table provided for 2030, as defined by the traffic model. A hypothesis of an annual growth rate of 1.031% has been assumed to estimate annual data for the period of analysis.

The annual operating costs under each scenario are presented in the table below for the years 2030 and 2060.

Figure 74: Annual operating cost, 2030 and 2060 (Various sources; Elaboration)

Year	Mode	Annual veh-km [millions]		Unit Operating Costs [€/km]	Operating Costs [million €/year]	
		BAU	DS		BAU	DS
2030	LV	2,671.71	2,601.14	0.24	641.21	624.27
	HGV	162.50	163.66	0.56	91.00	91.65
	Total	**2,834.21**	**2,764.80**	-	**732.21**	**715.92**
2060	LV	3,634.08	3,538.08	0.30	1,090.22	1,061.42
	HGV	221.03	222.61	0.71	156.93	158.05
	Total	**3,855.10**	**3,760.69**	-	**1,247.16**	**1,219.48**

The total cost in this section includes only that for VP and HGV, as the operation and maintenance costs of the public transport system are included in the operating costs section (OPEX) associated with the investments of the Plan (CAPEX).

Cost of lost time due to congestion

The cost of lost time refers to time lost in congestion and the cost borne by private and public transport users as a result. For both PV and PT, the cost of lost time is computed by multiplying:

- The time lost in congestion, measured in millions of hours per year, and;
- The value of time lost in congestion, measured in euros per passenger per hour.

The traffic model estimates the time lost in congestion for 2030. To estimate annual data for the period of analysis, a hypothesis of an annual growth rate of 1.031% has been assumed.

The unit value of time (VOT) considered has been calculated using the following methodology: VOT for Malta in 2002€ were published at HEATCO[29].

Figure 75: VOT for Malta in 2002€, HEATCO (pages S9 and S10).

Work (business) passenger trips

Air	Bus	Car, train
25.67	14.96	18.64

Figure 76: VOT for Malta in 2002€, HEATCO (pages S9 and S10).

Non-work passenger trips

Commute-Short Distance			Commute-Long Distance			Other-Short Distance			Other-Long Distance		
Air	Bus	Car, train	Air	Bus	Car, train	Air	Bus	Car, train	Air	Bus	Car, train
9.73	4.69	6.53	12.50	6.02	8.37	8.17	3.93	5.47	10.48	5.05	7.02

These values have been updated to 2022€ using the GDP deflator.

With the values in 2022€, a weighted average for bus (PT) and car (PV) has been estimated according to the following weights:

0.25 x VOT work passenger trips
0.25 x VOT non-work passenger trips commute short distance
0.1 x VOT non-work passenger trips commute short distance
0.3 x VOT non-work passenger trips other short distance
0.1 x VOT non-work passenger trips other long distance
This estimate is close to the value used in the transport model.

Estimates of VOT obtained for the year 2022 have been projected to 2060, considering a real growth in the unit value as recommended by the European Commission (Economic Appraisal Vademecum 2021-2027[30]). A scalation elasticity of 0.8 to real income (GDP/capita) has been considered.

Additionally, a correction factor of 1.5 for PV (not for PT) has been applied, following HEATCO guidelines (page S6), resulting in the VOT for time lost in congestion applicable for each year. Not considering a correction factor for VOT in PT means assuming that congestion would be implicit in public transport schedules, not implying additional delays, which is regarded as a reliable assumption.

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29 *HEATCO, 2006a P. Bickel (et al.) Developing Harmonised European Approaches for Transport Costing and Project Assessment (HEATCO), Deliverable D5: Proposal for Harmonised Guidelines - Stuttgart : IER, Germany, Stuttgart, 2006. https://www.putevi-srbije.rs/images/pdf/strategija/HEATCO_D5_eng.pdf*

30 *Economic Appraisal Vademecum 2021-2027. General Principles and Sector Applications - European Commission https://ec.europa.eu/regional_policy/sources/guides/vademecum_2127/vademecum_2127_en.pdf*

The annual costs of lost time under each scenario are presented in the table below.

Figure 77: Annual cost of lost time, 2030 and 2060 (Various sources; Elaboration)

Year	Model	Lost time in congestion [millions h/year]		VOT lost in congestion	Cost of lost time [million €/year]	
		BAU	DS		BAU	DS
2030	LV	8.54	7.90	25.33	216.32	200.11
	PT	2.50	3.23	12.83	32.08	41.44
	Total	**11.04**	**11.13**	**-**	**248.39**	**241.55**
2060	LV	11.62	10.74	30.35	352.67	325.96
	PT	3.40	4.39	15.38	52.29	67.52
	Total	**15.02**	**15.13**	**-**	**404.96**	**393.48**

Cost of consumption at idle

The cost of consumption at idle refers to fuel expenses incurred when vehicles are stationary, such as in traffic congestion. It quantifies the wasted fuel during idle times. The estimation of the cost of consumption at idle for private vehicles (PV) and public transport (PT) involves multiplying:

- The idling time lost, measured in millions of vehicle-hours annually, and
- The idling fuel consumption rate, expressed in euros per hour.

The annual idling time lost has been calculated by the traffic model for the period of analysis (2030-2060). The unit idling fuel consumption rate in euros per hour for every year has been as well considered in the traffic model.

Figure 78: Cost of consumption at idle, 2030 and 2060, (Various sources; Elaboration)

Year	Model	Lost time at idle [millions veh h/year]		Idle fuel consumption (€/h)	Cost of consumption at idle [million €/year]	
		BAU	DS		BAU	DS
2030	LV	8.54	7.90	25.33	216.32	200.11
	PT	2.50	3.23	12.83	32.08	41.44
	Total	**11.04**	**11.13**	**-**	**248.39**	**241.55**
2060	LV	11.62	10.74	30.35	352.67	325.96
	PT	3.40	4.39	15.38	52.29	67.52
	Total	**15.02**	**15.13**	**-**	**404.96**	**393.48**

Cost of time spent at free flow

The cost of time spent at free flow represents the economic value under ideal "free flow conditions" without congestion.

Calculating the cost of time spent at free flow for both Private Vehicles (PV) and Public Transport (PT) involves multiplying:

- The time lost in circulation, measured in millions of hours annually, and
- The value of time lost in circulation, measured in euros per passenger per hour.

Regarding the time lost in circulation, estimates for 2030 result from the traffic model. A hypothesis of an annual growth rate of 1.031% has been assumed to estimate annual data for the period of analysis.

The unit value of time (VOT) considered has been calculated using the following methodology:

- VOT for Malta in 2002€ were published at HEATCO[32].
- VOT for Malta in 2002€, HEATCO (pages S9 and S10).

Work (business) passenger trips

Air	Bus	Car, train
25.67	14.96	18.64

Non-work passenger trips

Commute-Short Distance			Commute-Long Distance			Other-Short Distance			Other-Long Distance		
Air	Bus	Car, train	Air	Bus	Car, train	Air	Bus	Car, train	Air	Bus	Car, train
9.73	4.69	6.53	12.50	6.02	8.37	8.17	3.93	5.47	10.48	5.05	7.02

These values have been updated to 2022€ using the GDP deflator.
With the values in 2022€, a weighted average for bus (PT) and car (PV) has been estimated according to the following weights:

- 0.25 x VOT work passenger trips
- 0.25 x VOT non-work passenger trips commute short distance
  - x VOT non-work passenger trips commute short distance
  - x VOT non-work passenger trips other short distance
  - x VOT non-work passenger trips other long distance

[32] *HEATCO, 2006a P. Bickel (et al.) Developing Harmonised European Approaches for Transport Costing and Project Assessment (HEATCO), Deliverable D5: Proposal for Harmonised Guidelines - Stuttgart : IER, Germany, Stuttgart, 2006. https://www.putevi-srbije.rs/images/pdf/strategija/HEATCO_D5_eng.pdf*

This estimate is close to the value used in the transport model.
Estimates of VOT obtained for year 2022 have been projected to 2060 considering a real growth in the unit value as recommended by the European Commission (Economic Appraisal Vademecum 2021-2027[33]). A scalation elasticity of 0.8 to real income (GDP/capita) has been considered.

The costs of time spent at free flow under each scenario are presented in the table below.
Cost of time spent at free flow, 2030 and 2060, (Various sources, Elaboration)

	Model	Lost time at circulation [millions veh. h/year]		VOT spent at free flow	Cost of time spent at free flow [million €/year]	
Year		BAU	DS		BAU	DS
2030	LV	24.51	23.43	16.88	413.73	395.50
	PT	4.10	5.70	12.83	52.60	73.13
	Total	**28.61**	**29.14**	**-**	**466.33**	**468.63**
2060	LV	33.34	31.87	20.23	674.47	644.73
	PT	5.57	7.76	15.38	85.67	119.35
	Total	**15.02**	**39.63**	**-**	**760.13**	**764.08**

Cost of air pollution

Two types of emissions are considered: Greenhouse Gas (GHG) Emissions and other Air Pollution Emissions.

- **Cost of GHG Emissions** has been estimated by multiplying:
  - GHG Emissions measured in equivalent CO2 emissions per year in tons, by
  - The unit value of these emissions, in euros.

The estimated GHG emissions have been derived from the traffic model for 2030 and a hypothesis of an annual growth rate of 1.031% has been assumed to estimate annual data for the period of analysis.

The unit value of the estimated CO2 equivalent emissions considered has been calculated using the following methodology:

Shadow cost of carbon values per year in EUR/tCO2e are published (in 2016€) at the Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027, European Commission[34].

Shadow cost of carbon values per year in EUR/tCO2e in 2016 € (Technical Guidance on the Climate Proofing of Infrastructure in the Period 2021-2027 by the European Commission, page 27)

[33] *Economic Appraisal Vademecum 2021-2027. General Principles and Sector Applications - European Commission https://ec.europa.eu/regional_policy/sources/guides/vademecum_2127/vademecum_2127_en.pdf*

[34] *Commission Notice — Technical guidance on the climate proofing of infrastructure in the period 2021-2027 (OJ C, C/373, 16.09.2021, p. 1, CELEX: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021XC0916(03))*

Year	EUR/tCO$_2$e	Year	EUR/tCO$_2$e	Year	EUR/tCO$_2$e	Year	EUR/tCO$_2$e
2020	80	2030	250	2040	525	2050	800
2021	97	2031	278	2041	552		
2022	114	2032	306	2042	579		
2023	131	2033	334	2043	606		
2024	148	2034	362	2044	633		
2025	165	2035	390	2045	660		
2026	182	2036	417	2046	688		
2027	199	2037	444	2047	716		
2028	216	2038	471	2048	744		
2029	233	2039	498	2049	772		

These published values have been updated to 2022€ by using the GDP deflator to be applied to Emission figures for the period 2030-2050. For the period 2051 to 2060, the updated value to 2022€ for 2050 has been considered.

The cost of Other Air Pollution Emissions has been estimated by multiplying:

- The estimated emissions of PM, NOX, and NMVOC per year in tons, by
- The unit value of these emissions, in euros.

The emissions for 2030 as been estimated by the traffic model and a hypothesis of an annual growth rate of 1.031% has been assumed to estimate annual data for the period of analysis.

To determine the value of emissions, the following procedure has been followed.

Air pollution cost values in 2016€ are published in the Handbook on the external costs of transport[35].

Air pollution cost values in Malta in 2016 € (Handbook on the external costs of transport, page 55

€2016/kg	NH3	NMVOC	SO2	NOX transport city	NOx transport rural	PM2,5 transport city	PM2,5 transport rural	PM10 average
Malta	6.40	0.40	4.30	2.30	1.40	72.00	18.00	5.20

These values have been updated to 2022€ using the GDP deflator.

[35] *Publications Office of the European Union. (2020). Handbook on the external costs of transport : version 2019 – 1.1. Publications Office of the EU. https://op.europa.eu/en/publication-detail/-/publication/9781f65f-8448-11ea-bf12-01aa75ed71a1*

Estimates of values obtained for year 2022 have been projected to 2060 considering a real growth in the unit value as recommended by the European Commission (Economic Appraisal Vademecum 2021-2027). A scalation elasticity of 0.8 to real income (GDP/capita) has been considered.

To calculate the cost of NOX, the average of city and rural values has been considered.

To calculate the cost of PM, only the value of PM10 has been considered.

The costs of air pollution under each scenario are presented in the table below:

Year	Model	CO2 equivalent emissions [tons]		Value of CO2 equiv. emissions	Cost of CO2 equiv. emissions [million €/ year]	
		BAU	DS		BAU	DS
2030	GHG	651,185.80	579,383.54	290.13	188.93	168.10
2060	GHG	814,432.42	788,080.49	928.43	756.14	731.68

Year	Model	Air pollution emissions [tons]		Value of air pollution emissions	Cost of air pollution emissions [million €/ year]	
		BAU	DS		BAU	DS
2030	PM	83.59	70.00	6.70	0.560	0.469
	NOX	2,188.13	1,933.40	2.38	5.208	4.601
	NMVOC	1,354.45	1,245.30	0.52	0.704	0.648
	Total	**3,626.17**	**3,248.70**	**-**	**6.47**	**5.72**
2060	PM	103.76	95.22	8.03	0.833	0.765
	NOX	2,749.44	2,629.82	2.86	7.863	7.521
	NMVOC	1,695.70	1,693.86	0.62	1.051	1.050
	Total	**4,548.90**	**4,418.89**	**-**	**9.75**	**9.34**

Year	Model	Cost of air pollution [million €/year]	
		BAU	DS
2030	Total	195.40	173.81
2060	Total	765.89	741.01

Cost of accidents

The cost of accidents refers to the aggregate expenses associated with traffic incidents, including medical costs, vehicle repair, loss of productivity, and property damage.

The calculation of the cost of accidents stems from the summation of the cost of accidents for each type of accident: fatalities, severe injuries, and slight injuries. The cost of each accident type arises from the product of two factors:

- Estimated number of accidents, and
- The statistical unit costs.

The number of accidents is derived from the data in the table provided for 2030, as defined by the traffic model. To estimate annual data for the period of analysis, a hypothesis of an annual growth rate of 1.031% has been assumed.

The statistical unit costs are derived through the following process:

The estimated values for the economic accident costs components in Malta are published in the Handbook on the external transport costs in 2016€.

Value for economic accident costs components in Malta in 2016 € (Handbook on the external costs of transport, page 44.)

	Human costs			Production loss		
€2016/kg	Fatality	Serious injury	Slight injury	Fatality	Serious injury	Slight injury
Malta	1,726,048	292,090	22,468	294,266	19,589	1,198

	Medical costs			Administrative loss		
€2016/kg	Fatality	Serious injury	Slight injury	Fatality	Serious injury	Slight injury
Malta	2,216	6,824	587	1,554	1,069	459

These cost values have been updated to 2022 € using the GDP deflator.

Estimates of cost values obtained for the year 2022 have been projected to 2060, considering a real growth in the unit value as recommended by the European Commission (Economic Appraisal Vademecum 2021-2027). A scalation elasticity of 0.8 to real income (GDP/capita) has been considered.

The costs of accidents under each scenario are presented in the table below: Cost of accidents, 2030 and 2060 (Various sources; Elaboration)

3.5 OUTPUTS AND RESULTS OF THE DS SCENARIO

The results of the assessment of the DS scenario of the Plan are presented in the table below.

Outputs and results of the evaluation of scenario DS, (Various sources; Elaboration)

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DISCOUNT RATE	CONSTRUCTION START	START OF EXPLOITATION
5%	2025	2030

SCENARIO DS_	NPV	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
INVESTMENT COST (MILLION €/YEAR)	819,35	141,22	141,22	141,22	141,22	141,22	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
OPERATIONAL COST (MILLION €/YEAR)	57,36	0,00	0,00	0,00	0,00	0,00	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49
TRANSPORT SAVINGS (MILLION €/YEAR)	1.142,08	0,00	0,00	0,00	0,00	0,00	51,03	53,58	56,05	58,45	60,76	63,00	65,07	67,06	68,96	70,76	72,48	74,10
SAVINGS IN OPERATIONAL COSTS (LV & HGV)	337,16	0,00	0,00	0,00	0,00	0,00	16,47	16,81	17,16	17,50	17,85	18,20	18,56	18,92	19,28	19,64	20,01	20,38
LOST TIME SAVINGS	138,43	0,00	0,00	0,00	0,00	0,00	6,92	7,05	7,17	7,30	7,43	7,56	7,69	7,83	7,96	8,10	8,23	8,37
CONSUMPTION AT IDLE SAVINGS	8,51	0,00	0,00	0,00	0,00	0,00	0,42	0,43	0,43	0,44	0,45	0,46	0,47	0,48	0,49	0,50	0,51	0,51
TIME SPENT AT FREE FLOW SAVINGS	-47,61	0,00	0,00	0,00	0,00	0,00	-2,38	-2,42	-2,47	-2,51	-2,56	-2,60	-2,65	-2,69	-2,74	-2,78	-2,83	-2,88
AIR POLLUTION SAVINGS	545,32	0,00	0,00	0,00	0,00	0,00	21,59	23,56	25,45	27,26	28,99	30,62	32,09	33,47	34,75	35,94	37,03	38,01
GHG Reduction Savings	534,54	0,00	0,00	0,00	0,00	0,00	20,83	22,81	24,71	26,53	28,26	29,90	31,37	32,76	34,05	35,25	36,34	37,34
Ambient Air Pollution Savings	10,78	0,00	0,00	0,00	0,00	0,00	0,75	0,75	0,74	0,74	0,73	0,72	0,72	0,71	0,70	0,69	0,69	0,68
ACCIDENTS SAVINGS	160,27	0,00	0,00	0,00	0,00	0,00	8,01	8,16	8,30	8,45	8,60	8,75	8,91	9,06	9,22	9,37	9,53	9,69
TOTAL	265,38	-141,22	-141,22	-141,22	-141,22	-141,22	42,54	45,09	47,56	49,96	52,27	54,51	56,58	58,57	60,46	62,27	63,99	65,60
Present Value 2030 TOTAL FLOW		-180,24	-171,65	-163,48	-155,70	-148,28	42,54	42,94	43,14	43,15	43,00	42,71	42,22	41,62	40,92	40,14	39,28	38,36
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IRR	6,84%																	
B/C	1,30																	
PAYBACK	2051																	

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DISCOUNT RATE
5%

SCENARIO DS_	NPV	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
INVESTMENT COST (MILLION €/YEAR)	819,35	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
OPERATIONAL COST (MILLION €/YEAR)	57,36	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49	8,49	-344,56
TRANSPORT SAVINGS (MILLION €/YEAR)	1.142,08	75,62	77,03	78,34	79,54	80,69	81,72	82,63	83,42	84,07	83,19	82,29	81,37	80,42	79,44	78,43	77,40	76,34	75,25	74,14
SAVINGS IN OPERATIONAL COSTS (LV & HGV)	337,16	20,76	21,14	21,52	21,91	22,30	22,69	23,08	23,48	23,88	24,29	24,70	25,11	25,53	25,95	26,37	26,79	27,22	27,66	28,09
LOST TIME SAVINGS	138,43	8,51	8,65	8,80	8,94	9,09	9,23	9,38	9,53	9,68	9,84	9,99	10,15	10,30	10,46	10,62	10,78	10,95	11,11	11,28
CONSUMPTION AT IDLE SAVINGS	8,51	0,52	0,53	0,54	0,55	0,56	0,57	0,58	0,59	0,60	0,61	0,62	0,63	0,64	0,65	0,66	0,67	0,69	0,70	0,71
TIME SPENT AT FREE FLOW SAVINGS	-47,61	-2,93	-2,98	-3,03	-3,07	-3,13	-3,18	-3,23	-3,28	-3,33	-3,38	-3,44	-3,49	-3,54	-3,60	-3,65	-3,71	-3,77	-3,82	-3,88
AIR POLLUTION SAVINGS	545,32	38,89	39,66	40,32	40,87	41,36	41,72	41,95	42,05	42,02	40,45	38,85	37,22	35,56	33,86	32,13	30,37	28,58	26,74	24,88
GHG Reduction Savings	534,54	38,23	39,01	39,68	40,23	40,73	41,10	41,35	41,47	41,45	39,89	38,31	36,69	35,04	33,36	31,65	29,91	28,13	26,31	24,47
Ambient Air Pollution Savings	10,78	0,67	0,66	0,65	0,64	0,62	0,61	0,60	0,59	0,58	0,56	0,55	0,53	0,52	0,50	0,48	0,47	0,45	0,43	0,41
ACCIDENTS SAVINGS	160,27	9,85	10,02	10,18	10,35	10,52	10,69	10,86	11,03	11,21	11,39	11,57	11,75	11,93	12,11	12,30	12,49	12,68	12,87	13,06
TOTAL	265,38	67,12	68,54	69,85	71,05	72,20	73,23	74,14	74,92	75,58	74,70	73,80	72,88	71,93	70,95	69,94	68,91	67,85	66,76	418,69
Present Value 2030 TOTAL FLOW		37,38	36,35	35,28	34,18	33,08	31,95	30,81	29,65	28,48	26,81	25,23	23,73	22,30	20,95	19,67	18,46	17,31	16,22	96,88
		-	-	-	-	-	-	-	-	-	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
IRR	6,84%																			
B/C	1,30																			
PAYBACK	2051																			

The results obtained show a positive value for the NPV, an IRR slightly higher than the discount rate, a BCR higher than 1 and therefore costs can be expected to be offset by revenues during the analysis period.

4 Maintenance

Preventive and corrective maintenance is crucial towards supporting the existing and planned infrastructural investment in the TEN-T network across Malta and Gozo.

In this regard, the Government is investing significantly in more effective tools to monitor and ensure a life cycle approach for existing and planned infrastructure.

This chapter provides an overview of the maintenance and operations of existing and planned investments, including details on the respective financing resources and the underlying practices being undertaken by the Government in its efforts to adopt a more sustainable and effective process.

4.1 TEN-T ROAD INFRASTRUCTURE

The maintenance programme for TEN-T road infrastructure falls under the responsibility of Infrastructure Malta. To implement its obligations, i.e., to maintain the upkeep of, improve, and restore road infrastructure falling under its remit, the Agency implements a set methodology that allows for the implementation of an annual maintenance programme. In recent years, the Agency has invested in new tools that can effectively provide a more rigorous approach towards maintenance and upkeep of the TEN-T road network given the significant investment undertaken in the TEN-T road network.

Investment is being made in a new implementation programme, namely iROADS/ Performance-Based Road Management and Maintenance (PBRMC), which aims to ensure the introduction of an effective asset management system. This new system, which is expected to be fully operational by the end of 2025, will provide the Government with the right tools to design a maintenance strategy. In this regard, the system will enable the collection, collation, and management of asset information more effectively. In fact, the system is expected to contribute towards maintaining the set safety and performance standards, as well as keeping track of inventories. Thus, this system will enable the Agency to understand the impact of maintenance policy options better and minimise risk.

This new system is also intended to improve current practices and ensure a better record management system for arterial and distributor roads based on a performance-based system. In this regard, the system will support the decision-making process, particularly for the required routine and correction maintenance programme, with real-time information, enabling a more resource-efficient system to be implemented.

4.2 MARITIME TEN-T INFRASTRUCTURE

Malta has two TEN-T Core ports in Valletta and Marsaxlokk, providing access and connectivity with other European and International Ports for passengers and freight. The Port of Valletta is a multipurpose port that provides passenger and cargo services, including bunkering. The TEN-T core port of Marsaxlokk is a freight terminal port that sees significant economic activity and connects with the rest of the world. The TEN-T comprehensive ports of Ċirkewwa and Mġarr provide the required access to passengers and cargo for intra-modality between the islands of Malta and Gozo. The sustainability and upkeep of these ports are fundamental to ensure reliable and effective connections between the Maltese Islands on a national and international level.

Preventive maintenance is fundamental to sustaining the marine infrastructure. The ports frequently face severe weather conditions, including potent winds and sea currents. Ongoing maintenance is crucial to ensure the proper functioning of these assets.

Transport Malta, through its Ports and Yachting Directorate, is responsible for the asset management of maritime infrastructure that falls under the Authority's ownership. The Directorate aims to assess the status of the assets and carry out required maintenance accordingly. Subsequently, an annual programme is prepared and followed through by the maintenance department within the same directorate. It is important to note that this infrastructure is a critical element of the national security sphere and must conform to International Ship and Port Facility Security Code (ISPS) standards in the sector, ensuring quality and security in the services they offer.

While recent efforts at the ports have encompassed maintenance dredging, quay upgrades, and a reorganisation of the marina pontoons allocated for fishing and commercial vessels, further maintenance is required, including extraordinary maintenance in certain areas. A risk assessment shall be carried out by the Authority for Transport in Malta and relevant stakeholders to establish the condition of existing port infrastructure and to set a clear and structured maintenance and repair programme. The aim is to move towards a more comprehensive national port infrastructure database, encompassing all pertinent details regarding port facilities and equipment. This initiative aims to facilitate scheduled maintenance activities as well as preventive maintenance programmes.

4.3 AVIATION-RELATED TEN-T INFRASTRUCTURE

Malta has only one TEN-T national core airport, which is managed and operated through a commercial agreement. Passenger and freight terminal operations and maintenance are part of the Malta International Airport plc concession agreement and regulated by Transport Malta.

Air connectivity with Europe and internationally for both passengers and freight needs to be ensured. The airport infrastructure must be maintained to meet European and international standards and obligations. Maintenance clauses are built into such agreements. As the regulator, Transport Malta will continue to ensure the maintenance and monitoring of safety programmes implemented in the aviation system.

4.4 FINANCIAL RESOURCES

Government allocates an annual budget for the maintenance and operations of the TEN-T Core and Comprehensive network.

The yearly budget allocated for maintaining existing road infrastructure covering Arterial and Distributor Roads is about €15 million, with an average of 3% of investment costs for the first ten years. Maintenance costs are, however, expected to increase to 6-7 % in the coming 20-30 years.

A distinct approach is applied for planned large-scale road projects, whereby a long-term approach is taken, and maintenance obligations are included in the works contract following project completion. The specific investment costs towards this obligation are allocated based on the nature of the specific project.

Most of the maritime infrastructure is managed and operated by private operators, with agreements including adequate maintenance clauses to sustain the respective infrastructure and monitored as appropriate. Transport Malta implements an annual maintenance programme, where no commercial agreement exists. The yearly allocation for maintenance is circa €5 million per annum.

Airport infrastructure is managed and operated by private operators, with agreements that include adequate maintenance clauses to sustain the respective infrastructure. Transport Malta monitors these agreements.

Delivery and Timelines

This chapter sets out the delivery and timeframes of the revised Transport Master Plan. The maintenance costs have already been indicated in the previous chapter. As in the last Master Plan, the costs are indicative and subject to project approval and funding provision by the Ministry for Finance.

Moreover, the figures for EU/National Funds reflect measures which may include projects that are or may be expected to be eligible for EU funding (CEF, AFIF, etc). Figures under “Private Sector” are those funds expected to be expended by the Private Sector, including government-owned companies such as Malta Air Traffic Services Ltd. A number of these funds could be eligible for support under the various EU funding programmes.

The following table summarises the measures outlined in this Master Plan and includes expected timelines for delivery.

Operational Objective	TMP Ref.	Measure	2025	2026	2027	2028	2029	2030
Strategic Planning Policy and Framework								
2.2.1		**Put in place and maintain a strategic framework for the integrated, long-term planning and design of Malta's transport network**						
1	2.2.1.1	Set up a monitoring framework to ensure the successful implementation of the Plan						
2	2.2.1.2	Transport Malta and MTIP to work in collaboration with key stakeholders to implement and monitor a framework within the spatial planning process in order to promote greater transit-oriented development.						
3	2.2.1.3	Conduct, collate, and analyse a National Household Travel Survey and publish a report every five years to help identify the travel and transport trends of the national population						
4	2.2.1.4	Conclude development of design guidelines for infrastructure on local streets, including those to promote a balanced approach to different modes						
2.2.2		**Put in place and maintain a strategic framework for the integrated, long-term planning and design of Malta's transport network**						
5	2.2.2.1	Carry out a Transport System Public Finance Review to understand the efficiency, effectiveness and equity of public spending in the transport sector						

Operational Objective	TMP Ref.	Measure	2025	2026	2027	2028	2029	2030
2.2.3	**Incorporate climate adaptation and mitigation in the long-term planning and design of Malta's transport network**							
6	2.2.3.1	As part of the Transport System Public Finance Review, analyse how considerations at the planning and design stage can reduce retrofitting costs and aid in climate change adaptation and resilience						
7	2.2.3.2	Monitor the share of GHG emissions from transport that could be mitigated by the measures recommended in this master plan and, therefore, fairly contribute to climate change targets						
2.2.4	**Establish and maintain a framework (strategic and procedural) for research and innovation in transport**							
8	2.2.4.1	Set up a transport research and innovation body to improve links with research institutions and encourage research, testing and piloting of innovative technology and solutions in the transport sector						
9	2.2.4.2	Develop Transport Malta's in-house capability for data analytics						
10	2.2.4.3	Set up and maintain a centralised open database for transport data and statistics						
2.2.5	**Explore the establishment of a single transport accident safety investigation entity covering all modes**							
11	2.2.5.1	Establish a Transport Safety Investigation Commission						
12	2.2.5.2	Task the Transport Safety Investigation Commission to contribute to the action plan for response to national disasters and accidents on strategic infrastructure						

	Operational Objective	TMP Ref.	Measure	2025	2026	2027	2028	2029	2030
	2.2.6	**Develop and Maintain a High Quality Road Network in line with the EU TEN-T Policy**							
13		2.2.6.1	Completion of the TEN-T Core Road Network by 2030 and Extended Core Road Network by 2040						
14		2.2.6.2	Completion of the TEN-T Comprehensive Road Network by 2050						
15		2.2.6.3	Completion of other strategic road Infrastructure projects – Non-TEN-T						
16		2.2.6.4	Complete and publish a review of the road classification system that is currently underway						

Active Travel And Micromobility

	2.3.1	**Develop a safe, accessible network of infrastructure for cycling, walking and micro-mobility**							
17		2.3.1.1	Publish the National Cycling Strategy						
18		2.3.1.2	Develop and implement a Pedestrian and Cycling Infrastructure Plan and define and implement active mobility routes across the Maltese Islands						
	2.3.2	**Promote the use of cycling, walking and micro-mobility as alternatives to private car journeys**							
19		2.3.2.1	Develop design guidelines for active travel infrastructure, parking, and storage						
20		2.3.2.2	Set the minimum level provision of active travel facilities required at government offices and commercial developments						
21		2.3.2.3	Ensure Integration of the Malta Road Code						
22		2.3.2.4	Review and implement enforcement regime to prevent other road users from using active mobility infrastructure						

Operational Objective	TMP Ref.	Measure	2025	2026	2027	2028	2029	2030
2.3.2	**Promote the use of cycling, walking and micro-mobility as alternatives to private car journeys**							
23	2.3.2.5	Run an awareness campaign of the benefits of active mobility						
24	2.3.2.6	Promote active travel at schools						
25	2.3.2.7	Plan and implement an annual programme of active travel days and promote active mobility activities						
26	2.3.2.8	Explore further financial incentives for the purchase of bikes, electric bikes and e-scooters						
27	2.3.2.9	Improve the vertical and pedestrian connectivity between the Sliema - Valletta ferry service at Valletta and the city centre						

Public Transport and Shared Mobility Services

2.4.1	**Improve service quality and modal share along strategic routes by introducing public transport quality corridors**							
28	2.4.1.1	Draft a new national public transport strategy for the Maltese Islands, with periodic reviews						
29	2.4.1.2	Evaluate and redesign the current public transport network						
30	2.4.1.3	Begin preparatory work on a rapid-link transport system for Malta						
31	2.4.1.4	Carry out an in-depth analysis on the prioritisation of public transport over other motorised modes						

Operational Objective	TMP Ref.	Measure	2025	2026	2027	2028	2029	2030
2.4.2	**Improve public transport service quality to and between strategic employment nodes, services outside the inner harbour regions and peripheral residential areas**							
32	2.4.2.1	Implement Intelligent Transportation System technologies across the public transport network to support the efficiency and punctuality of public transport services						
33	2.4.2.2	Use electronic data collected by public transport operators to quickly adapt route timetables						
34	2.4.2.3	Run a public awareness campaign to promote bus travel and feeder services as an alternative to private cars						
35	2.4.2.4	Evaluate the use of parking facilities integrated with the public transport network to manage congestion in dense urban areas						
2.4.3	**Improve physical accessibility of public transport services**							
37	2.4.3.1	Ensure the requirements in the EU Accessibility Act 2019 (EUAA) are reflected in relevant national standards and policies						
2.4.4	**Reduce the impact of clustering unscheduled public transport, particularly in tourism hot-spots and commercial areas**							
38	2.4.4.1	Evaluate school transport services						
39	2.4.4.2	Facilitate a scaling up of a national car sharing/lift sharing/car club scheme						

Multimodal Transport

2.5.1	**Improve intermodal seamless mobility (travel information, journey planning services and multi-modal ticketing)**							
40	2.5.1.1	Collect and consolidate all public transport routes and scheduling data into a single platform						
41	2.5.1.2	Facilitate the provision of journey planning and ticketing information at key transport hubs such as ferry ports						

	Operational Objective	TMP Ref.	Measure	2025	2026	2027	2028	2029	2030
	2.5.2	**Improve the quality of the environment at primary and secondary public transport hubs**							
42		2.5.2.1	Carry out an accessibility audit of all transport hubs to improve the environment for pedestrians, cyclists and vulnerable road users, as well as those with mobility impairments						

Private Motorised Transport

	2.6.1	**Reduce the role of the car in urban centres and on congested inter urban routes to increase space for other modes**							
43		2.6.1.1	Study the feasibility of Green Travel Plans at new and existing developments that are high-volume travel generators						
44		2.6.1.2	Implement an awareness campaign around carpooling journeys in connection with green travel plans						
45		2.6.1.3	Carry out an assessment of parking provision in Malta and develop a comprehensive national parking/travel demand management strategy						
46		2.6.1.4	Review and update parking standards to facilitate greater transit-oriented development						
	2.6.2	**Reduce the adverse environmental, social and economic impacts of motorised modes, both in urban areas and on the wider road network**							
47		2.6.2.1	Continue contributing to the alignment with air quality plans for areas that will exceed EU air quality standards in 2030						
48		2.6.2.2	Carry out a feasibility study for a Low Emission Zone within the Northern/ Southern Harbour Region						
49		2.6.2.3	Align transport policies with noise action plans to ensure that Malta will comply with the EU Noise Directive						

	Operational Objective	TMP Ref.	Measure	2025	2026	2027	2028	2029	2030
	2.6.3	**Promote, facilitate and incentivise the purchase and use of zero-emission vehicles to replace internal combustion engine vehicles for personal/passenger use**							
50		2.6.3.1	Review the current approach to providing incentives that promote Malta's clean vehicle fleet renewal and update as necessary to increase uptake of zero-emission vehicles in Malta by 2030						
51		2.6.3.2	Maintain and adapt, as required, the substitution requirements on importers of road diesel and petrol						
52		2.6.3.3	Support the implementation of an EV charging infrastructure deployment plan for road transport that is aligned with Malta's National Energy and Climate Plan						
53		2.6.3.4	Develop a transition plan to ensure the replacement of all public sector (Government and Local/Regional Authority) vehicles with zero emission alternatives by 2030						
54		2.6.3.5	Collaborate with the private sector to launch an Electric Vehicle Skills and Capacity Building Programme						

Operational Objective	TMP Ref.	Measure	2025	2026	2027	2028	2029	2030
Road Safety and Infrastructure Management								
2.7.1		**Ensure a robust framework is followed for road safety strategy, regulation and enforcement**						
55	2.7.1.1	Review and update the Road Safety Strategy for Malta						
56	2.7.1.2	Review and update road specifications and standards in line with European guidance and road safety commitments						
57	2.7.1.3	Increase operational capacity within the Transport Malta enforcement section						
58	2.7.1.4	Monitor fine levels and penalty points to ensure they provide the appropriate deterrents for specific road traffic offences						
59	2.7.1.5	Implement recommendations and investment plan from iRAP road network assessment						
60	2.7.1.6	Regularly investigate and report the overall Euro New Car Assessment Programme (Euro NCAP) rating of the Maltese vehicle fleet, including a review of the mechanisms, such as incentives, through which it can be improved to enhance road safety						

Operational Objective	TMP Ref.	Measure	2025	2026	2027	2028	2029	2030
2.7.2	**Ensure effective and efficient management of roads and related equipment ensuring quality and sustainability of investment through regular maintenance**							
61	2.7.2.1	Carry out a needs-based analysis in terms of the appropriate number of weighbridges for use at maritime terminals and weigh-in-motion systems on TEN-T road network						
62	2.7.2.2	Implement an advanced digital asset management system and the road network, which enables better asset performance management, performance analysis and investment planning						
63	2.7.2.3	Improve stormwater management in local roads to prevent flooding and avoid degradation of road surfaces						
64	2.7.2.4	Review existing guidelines and develop an action plan to improve the quality of street furniture and signage						
2.7.3	**Raise the level of standard and resources applied to traffic management to address congestion, correct use of traffic lanes, manage diversions and road works and effectively manage incidents**							
65	2.7.3.1	Update traffic management guidelines to improve traffic management and safety during road works						
66	2.7.3.2	Introduce a new digital road permits system to assist in permanent and temporary traffic management						
67	2.7.3.3	Integrate Intelligent Transport Systems in traffic management (ITS) to improve safety and efficiency of the transport network						

	Operational Objective	TMP Ref.	Measure	2025	2026	2027	2028	2029	2030
	2.7.4	**Identify new technology and data management techniques to efficiently monitor, report and fine traffic violations**							
68		2.7.4.1	Continue to update Malta's Speed Camera framework to technical developments						
69		2.7.4.2	Investigate and introduce technology to reduce labour-intensive enforcement (e.g. for red light and bus lane cameras)						

Land-based Freight

	2.8.1	**Reduce the impact of goods-carrying vehicles on urban areas and the road network**							
70		2.8.1.1	Develop and implement a national low-emission logistics action plan, aligned with the anticipated uptake of zero-emission vehicles in line with the EU's Clean Vehicles Directive (Directive (EU) 2019/1161)						
71		2.8.1.2	Evaluate the current scrappage scheme for older commercial vehicles						
72		2.8.1.3	Assess the impact of freight and logistics movements during peak hours on Malta's road network						
73		2.8.1.4	Assess the status of overnight on-street parking of HGVs and opportunities for safe off-street overnight parking at existing parking sites						
	2.8.2	**Ensure efficiency of freight deliveries**							
74		2.8.2.1	Facilitate the setting up of a national freight forum by the private sector to improve urban logistics						
75		2.8.2.2	Study the feasibility of logistics hubs in industrial areas and last-mile deliveries to surrounding urban areas						

Internal Maritime Transport

Operational Objective	TMP Ref.	Measure	2025	2026	2027	2028	2029	2030
2.9.1	**Ensure the Internal Maritime Sector is backed by long-term planning to support long-term mobility patterns, safety and security**							
76	2.9.1.1	Maximising sea links for passengers and goods using alternative transport modes						
77	2.9.1.2	Assess the potential of underutilised port areas, new ferry-landing sites and improve the capacity of domestic ports in line with the EU TEN-T Policy						
78	2.9.1.3	Review the financial sustainability of Malta-Gozo Ferry Services to develop a business model that minimises the need for government financial support						
2.9.2	**Improve data collection and use across ports and harbours to inform planning and operation of maritime transport and infrastructure**							
79	2.9.2.1	Maintain and explore further improvements to the framework for collation, analysis and dissemination of meteorological and hydrographic data to support planning, design and operations of internal maritime transport						
80	2.9.2.2	Collaborate with port concessionaires/operators to understand data gaps and determine methods to collect missing data						

	Operational Objective	TMP Ref.	Measure	2025	2026	2027	2028	2029	2030
81		2.9.2.3	Evaluate and review the current monitoring and management of vessels within territorial waters to increase the safety of navigation and minimise risks at sea						
82		2.9.2.4	Evaluate and improve the utilisation of the National Single Window						
	2.9.3	**Improve operations and enforcement so that internal maritime transport is properly regulated and monitored**							
83		2.9.3.1	Establish clear guidelines with port infrastructure users for operators to be aware of and use infrastructure within design limits						
	2.9.4	**Reduce the adverse environmental, social, and economic impacts of internal maritime navigation**							
84		2.9.4.1	Undertake a feasibility study to review opportunities for low-emission or zero-emission infrastructure, vehicles and vessels for internal maritime transport						
85		2.9.4.2	Develop and implement an internal maritime sustainability plan						

External Maritime Transport

	2.10.1	**Develop and maintain the ports of Valletta and Marsaxlokk in line with EU TEN-T Policy**							
86		2.10.1.1	Develop and implement an External Maritime Action Plan until 2030 that is aligned with a wider National Maritime Transport Policy						
87		2.10.1.2	Improve efficiency of infrastructure at the TEN-T Core Port of Valletta						
88		2.10.1.3	Improve efficiency of infrastructure at the TEN-T Core Port of Marsaxlokk						

	Operational Objective	TMP Ref.	Measure	2025	2026	2027	2028	2029	2030
	2.10.2	**Provide Alternative Fuel Infrastructure to Promote Efficiency and Competitiveness at TEN-T Maritime Ports**							
89		2.10.2.1	Finalise Implementation of On-Shore Power Supply at all TEN-T Core Ports						
	2.10.3	**Increase Efficiency and Innovation of The Maritime Administration to Maintain Sectoral Competitivity**							
90		2.10.3.1	Improve efficiency and quality of maritime administration through the digitisation of the ship registration system and Transport Malta's Merchant Shipping Directorate						
91		2.10.3.2	Launch a Maritime Skills Development Strategy and Action Plan						
92		2.10.3.3	Create an infrastructure asset management database system that details all port infrastructure and equipment						
	2.10.4	**Ensure equipment, tools and human resources for the use, monitoring and enforcement of maritime areas are updated to improve safety and security**							
93		2.10.4.1	Ensure equipment and tools for the monitoring and enforcement of maritime areas are updated and enable the required regulatory control to ensure safety and security						
	2.10.5	**Reduce the adverse environmental, social and economic impacts of external maritime navigation, particularly on nearby urban areas**							
94		2.10.5.1	Implement and enhance pollution mitigation measures as set out in the European Green Deal						
95		2.10.5.2	Collaborate with port operators to encourage the upgrading of their equipment/facilities to reduce pollution and support the transition to zero-emission fuels and infrastructure						

Aviation

Operational Objective	TMP Ref.	Measure	2025	2026	2027	2028	2029	2030
2.11.1	**Safeguard space within the airport and its contiguous area to ensure developments support long-term sustainable growth in the aviation sector**							
96	2.11.1.1	Develop an action plan that implements the measures under the ICAO and EASA regulations						
97	2.11.1.2	Introduce a digital aviation register						
2.11.2	**Develop and Maintain Malta International Airport in line with EU TEN-T Policy**							
98	2.11.2.1	Improve efficiency of infrastructure at the TEN-T Core Airport						
99	2.11.2.2	Carry out feasibility studies subject to the revised Airport Master Plan on the development of the route network of the airport						
100	2.11.2.3	Ensure safeguarding of the safety of aviation services when integrating new aviation technologies						
101	2.11.2.4	Encourage the use of less noisy ground equipment						
2.11.3	**Provide alternative fuel infrastructure at the TEN-T Core Airport**							
102	2.11.3.1	Encourage the replacement or deployment of zero-emission airside and landside vehicles at the TEN-T Core airport						
103	2.11.3.2	Encourage the TEN-T Core Airport to implement the other measures of its Net Carbon Zero Plan						
2.11.4	**Improve availability and access to aviation transport statistics**							
104	2.11.4.1	Continue with the inclusion of contract clauses requiring concessionaires and contractors to provide regular information to the authorities						

Operational Objective	TMP Ref.	Measure	2025	2026	2027	2028	2029	2030
2.11.5	**Improve air connectivity for commercial passengers, freight and business travellers**							
105	2.11.5.1	Ensure air connectivity with Gozo						
106	2.11.5.2	Maintain the establishment of new bilateral agreements with non-EU countries						
107	2.11.5.3	Continue to encourage route development to attract new aviation services						
108	2.11.5.4	Review opportunities to support business aviation through the development of parking and lounge improvements for business persons						
109	2.11.5.5	Explore the use of emerging Advanced Air Mobility (AAM) technologies for passenger and freight transport in Malta						
2.11.6	**Provide sustainable aviation fuel (SAF) infrastructure to promote efficiency and competitiveness**							
110	2.11.6.1	Ensure the deployment of Sustainable Aviation Fuel (SAF) at the TEN-T Core airport is in line with EASA Regulations						

6 Conclusion

The National Transport Master Plan 2030 builds upon the solid foundation laid by the 2025 Plan, embodying a vision for a sustainable, resilient, and inclusive transport system. This Plan integrates lessons learned, addresses evolving challenges, and leverages new opportunities to create a transport framework aligned with Malta's socio-economic and environmental goals. Focusing on long-term benefits, the Plan outlines a clear roadmap for investments, innovations, and collaborative strategies that will shape Malta's transport landscape over the next decade.

6.1 KEY ACHIEVEMENTS AND PROGRESS

The journey since the launch of the 2025 Master Plan has been marked by significant progress. Notable milestones include:

Infrastructure Development

Major projects along the TEN-T core and comprehensive networks, including the Marsa Junction and the Santa Luċija tunnels, have enhanced connectivity and reduced bottlenecks. Upgrades to the maritime and aviation sectors have reinforced Malta's role as a vital transport hub in the Mediterranean.

Sustainable Mobility Initiatives

The electrification of the public transport fleet, promotion of active mobility options such as cycling and walking, and incentives for low-emission vehicles have laid the groundwork for reducing Malta's carbon footprint.

Integration of Technology

Smart traffic management systems and the deployment of Intelligent Transport Systems have improved road safety, congestion management, and public transport efficiency.

Stakeholder Engagement and Policy Development

Collaborative efforts among government agencies, private entities, and the public have fostered an environment conducive to innovation and participatory planning.

These achievements underscore Malta's commitment to sustainable development and provide a robust platform for the objectives of the 2030 Master Plan.

6.2 Persistent Challenges

Despite these advancements, several challenges remain. The dependence on private vehicles, exacerbated by Malta's growing population density, continues to strain the transport system. Urban congestion, environmental degradation, and the ageing vehicle fleet underscore the need for more policy measures aimed at convincing people to make the leap from using private vehicles to using public transport and other modes of commuting such as walking and cycling. Furthermore, balancing infrastructure development with environmental preservation remains a critical concern.

6.3 Strategic Vision For 2030

The 2030 Master Plan is designed to address these challenges through an integrated, multi-modal approach that aligns with Malta's broader national and EU-level commitments. The strategic vision includes the following priorities:

6.3.1 Sustainability and Climate Resilience

The Plan adopts a forward-looking perspective by embedding climate adaptation and mitigation into transport policies. It promotes the adoption of renewable energy, low-emission transport modes, and infrastructure designs that can withstand extreme weather events. These initiatives are essential for achieving Malta's climate goals and EU directives.

6.3.2 Enhancing Accessibility and Inclusion

Transport equity is a cornerstone of the Plan. By improving public transport coverage, ensuring seamless intermodal connections, and prioritising infrastructure for active mobility, the Plan seeks to create a system that is accessible to all, including vulnerable populations. This approach not only fosters social inclusion but also encourages sustainable travel behaviours.

6.3.3 Leveraging Technological Advancements

The integration of technology remains a pivotal aspect of the 2030 Plan. Investments in ITS, real-time passenger information systems, and advanced data analytics will drive operational efficiency, enhance user experience, and enable dynamic decision-making. The Plan also envisions expanding electric vehicle infrastructure to support the transition to greener mobility.

6.3.4 Maintenance and Asset Management

The long-term sustainability of Malta's transport infrastructure depends on rigorous maintenance and asset management strategies. Performance-based systems, such as TM Roads (iROADS), and the adoption of preventive maintenance frameworks will ensure the durability and safety of critical assets, particularly within the TEN-T network.

6.3.5 Promoting Active Mobility and Public Transport

Expanding pedestrian-friendly zones, cycling infrastructure, and the scope of public transport services will reduce reliance on private vehicles. By prioritising investments in these areas, the Plan aims to enhance mobility options, reduce congestion, and improve public health outcomes.

6.3.6 Alignment with the UN Sustainable Development Goals

The 2030 Master Plan does not only build on the national transport strategy but also contributes towards Malta's commitments under the United Nations 2030 Agenda for Sustainable Development. Transport plays a critical role in achieving several SDGs, particularly in areas related to sustainable cities, climate action, clean energy, health, and resilient infrastructure.

By embedding sustainability, inclusivity, and innovation at its core, the Plan directly supports SDG targets such as reducing road fatalities (SDG 3.6), ensuring access to affordable and sustainable transport (SDG 11.2), and integrating climate action into national policies (SDG 13.2). Other measures, including the promotion of zero-emission vehicles and improvements in freight efficiency, contribute to cleaner energy use (SDG 7) and more responsible consumption and production (SDG 12).

The table below outlines the alignment between the Plan's objectives and the SDGs to which they most directly contribute. This mapping demonstrates how national transport priorities are integrated with global sustainability goals, reinforcing Malta's role in advancing the EU's Green Deal and broader international commitments.

SDG	Directly Relevant TMP Objectives	
SDG 3 – Good Health and Well-Being	2.2.4	Establish a single transport accident safety investigation body
	2.3.1	Develop safe, accessible cycling, walking, micromobility infrastructure
	2.3.2	Promote cycling, walking, micromobility as alternatives to car use
	2.6.2	Reduce environmental, social, and economic impacts of motorised modes
	2.7.1	Road safety strategy, regulation and enforcement
	2.7.3	Raise standards/resources for traffic management and safety
SDG 7 – Affordable and Clean Energy	2.6.3	Promote and incentivise uptake of zero-emission vehicles
	2.10.2	Provide alternative fuel infrastructure at TEN-T ports
	2.11.5	Provide Sustainable Aviation Fuel (SAF) infrastructure
SDG 9 – Industry, Innovation and Infrastructure	2.2.5	Develop and maintain a high-quality road network in line with EU TEN-T
	2.4.1	Improve service quality and modal share along public transport corridors
	2.4.2	Improve public transport service quality to outer regions and peripheral areas
	2.5.1	Improve intermodal seamless mobility (travel info, ticketing)
	2.5.2	Improve the quality of the environment at transport hubs
	2.8.2	Improve efficiency of freight deliveries
	2.10.1	Develop and maintain the ports of Valletta and Marsaxlokk (TEN-T)
	2.11.2	Develop and maintain Malta International Airport in line with EU TEN-T
	2.11.3	Improve integration of the airport into the TEN-T Core Network

SDG	Directly Relevant TMP Objectives	
SDG 10 – Reduced Inequalities	2.4.2	Improve public transport service quality to outer regions and peripheral areas
SDG 11 – Sustainable Cities and Communities	2.3.1	Develop safe, accessible cycling, walking, micromobility infrastructure
	2.3.2	Promote cycling, walking, micromobility as alternatives
	2.4.1	Improve service quality and modal share along public transport corridors
	2.4.2	Improve public transport service quality to outer regions and peripheral areas
	2.4.4	Reduce clustering of unscheduled public transport
	2.5.2	Improve the quality of the environment at transport hubs
	2.6.1	Reduce private car dominance in urban centres and congested corridors
	2.6.2	Reduce environmental, social, and economic impacts of motorised modes
	2.8.1	Reduce the impact of goods vehicles on urban areas and road network
SDG 12 – Responsible Consumption and Production	2.6.3	Promote and incentivise uptake of zero-emission vehicles
	2.8.2	Improve efficiency of freight deliveries
SDG 13 – Climate Action	2.2.2	Incorporate climate adaptation/mitigation in long-term transport planning
	2.6.1	Reduce private car dominance in urban centres and congested corridors
	2.6.2	Reduce environmental, social, and economic impacts of motorised modes
	2.6.3	Promote and incentivise uptake of zero-emission vehicles
	2.10.2	Provide alternative fuel infrastructure at TEN-T ports
	2.10.5	Reduce adverse impacts of international maritime transport
	2.11.5	Provide Sustainable Aviation Fuel (SAF) infrastructure
SDG 14 – Life Below Water	2.10.5	Reduce adverse impacts of international maritime transport

6.4 MONITORING AND GOVERNANCE

The Plan introduces a robust monitoring and evaluation framework to ensure accountability and adaptability. By establishing measurable indicators and timelines, the government and stakeholders can track progress and recalibrate efforts, as needed. Transparent governance mechanisms will foster trust and engagement among all stakeholders, from policymakers to citizens.

6.5 COMMITMENT TO INNOVATION AND COLLABORATION

Achieving the ambitious goals of the 2030 Master Plan requires innovation and collaboration at every level. Public-private partnerships, community involvement, and international cooperation will be critical in mobilising resources, sharing expertise, and fostering a culture of sustainability.

6.6 CAPACITY TO DELIVER

A central tenet of the National Transport Master Plan 2030 is the assurance that its objectives are not only aspirational but also achievable. Delivering the Plan's ambitious goals requires a structured and multi-faceted approach that prioritises capacity-building across institutional, technical, financial, and human resource domains. Recognising this, the Plan outlines a robust framework to ensure that Malta is equipped to translate strategies into measurable outcomes.

6.6.1 Institutional Capacity

Malta's transport sector institutions have been strengthened significantly over recent years, particularly in their ability to manage complex, multi-modal projects. The continued evolution of agencies like Transport Malta, Infrastructure Malta, and their collaboration with regional and local entities provides the institutional backbone for implementing the Plan. Enhanced coordination between government agencies, local councils, and private sector partners will be critical to avoid duplication of efforts and ensure efficient resource utilisation.

To further enhance institutional capacity, the 2030 Plan emphasises:

- **Streamlined Governance Structures:** Establishing clear roles and responsibilities across all levels of government and agencies to reduce bureaucratic inefficiencies.
- **Capacity Building and Training:** Providing ongoing education and training for public officials and transport professionals to keep pace with emerging technologies, regulatory frameworks, and best practices.
- **Policy Integration:** Aligning transport policies with land use planning, environmental strategies, decarbonisation strategies, and economic development objectives to ensure a holistic and unified approach.

6.6.2 Financial Capacity

Delivering the Plan will require substantial financial resources, both from domestic and international sources. The Maltese government has committed to securing long-term funding for transport initiatives, demonstrated by the significant investment in TEN-T projects and national road infrastructure. However, meeting the Plan's full scope will necessitate:

- **Innovative Financing Mechanisms:** Leveraging public-private partnerships (PPPs), green bonds, and EU funding programs such as the Connecting Europe Facility (CEF) and Cohesion Funds to supplement national budgets.
- **Sustainable Revenue Streams:** Developing new funding sources, including environmentally linked incentives, to ensure fiscal sustainability while encouraging greener mobility choices.
- **Transparent Financial Management:** Establishing rigorous monitoring and reporting mechanisms to track expenditure and maximise the value derived from investments.

6.6.3 Technical Capacity

The Plan recognises that modern transport systems demand advanced technical expertise and state-of-the-art tools. To build and maintain this technical capacity, the 2030 Plan includes:

- **Adoption of Smart Technologies:** Expanding the deployment of ITS to manage traffic flows, optimise public transport operations, and provide real-time information to users.
- **Data-Driven Decision Making:** Enhancing the analytical capabilities of agencies through advanced modelling, forecasting, and data analytics to support evidence-based planning and monitoring.
- **Research and Development (R&D):** Fostering partnerships with academic institutions and international organisations to pilot innovative solutions and integrate cutting-edge practices into Malta's transport infrastructure.

6.6.4 Workforce Capacity

A skilled and motivated workforce is pivotal to the successful implementation of the Plan. Addressing workforce challenges involves:

- **Expanding Workforce Expertise:** Recruiting and retaining professionals with expertise in transport engineering, urban planning, environmental science, and project management.
- **Knowledge Transfer:** Encouraging collaborations with international experts to bring global best practices to Malta while training local professionals to build in-house expertise.
- **Incentivising Innovation:** Providing mechanisms to reward innovative solutions and efficient project delivery within public sector agencies and their private sector partners.

6.6.5 Delivery Mechanisms

Effective delivery of the Plan's objectives will be supported by:

- **Phased Implementation:** Prioritising projects based on their urgency, feasibility, and potential impact to ensure a logical progression of initiatives. Government has already launched a series of short- to medium-term measures to address current requirements, with longer-term measures planned to be undertaken by 2030 and beyond.
- **Monitoring and Evaluation:** Establishing a comprehensive framework for regular performance reviews, using key indicators to measure progress and identify areas for improvement.
- **Stakeholder Engagement:** Fostering an inclusive approach by involving citizens, businesses, and civil society organisations in decision-making processes to build consensus and public support.

6.6.6 Overcoming Risks to Delivery

The Plan also acknowledges potential risks to successful implementation, such as financial constraints, political changes, and external economic pressures. Mitigation strategies include:

- **Building Resilience:** Incorporating flexibility into project designs to adapt to evolving circumstances and uncertainties.
- **Ensuring Continuity:** Institutionalising policies and frameworks to safeguard projects from disruptions due to political transitions.
- **Engaging International Partners:** Leveraging expertise, funding, and guidance from the European Union and other international organisations to strengthen Malta's capacity to achieve its transport goals.

With these measures in place, Malta is well-positioned to deliver the ambitious targets of the National Transport Master Plan 2030. By addressing institutional, financial, technical, and workforce challenges head-on, the Plan ensures that Malta will not only meet its transport needs but also set a standard for resilience, efficiency, and sustainability in the region.

6.7 FINAL REFLECTIONS

As Malta transitions into the next decade, the National Transport Master Plan 2030 is a blueprint for a transport system that balances economic growth, environmental stewardship, and social equity. This Master Plan is not merely a response to current challenges but a proactive step toward a future where mobility is efficient, inclusive, and sustainable.

The path to 2030 is not without obstacles, but with collective effort and unwavering commitment, Malta can achieve its transport objectives and set a benchmark for sustainable development in the region. This Plan represents a shared vision—a call to action for government, industry, and society to work together to create a transport system that enhances the quality of life for all Maltese citizens while safeguarding the natural heritage for future generations.

GOVERNMENT OF MALTA
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