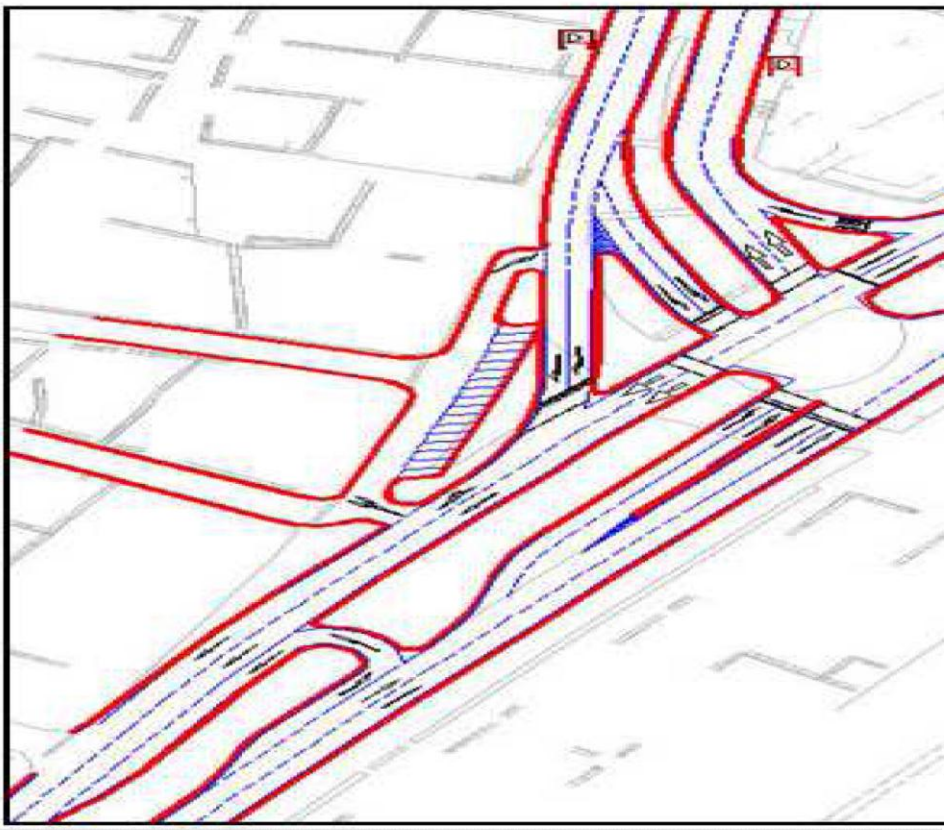
Ministry of Development, Competitiveness, Infrastructure, Transport and Networks



ITS ACTION PLAN

The Action Plan for Intelligent Transport Systems in Greece

Athens, October 2012

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CHAPTER 1: INTRODUCTION

1.1 THE NEED FOR INTELLIGENT SOLUTIONS

Mobility is a key social need and is a prerequisite for economic and social development. As mobility needs grow dynamically, it is now necessary to manage the - continually growing - transport volume in a sustainable and environmentally and socially equitable way.

During the last decades, the population and the economy of Europe showed increased growth rates resulting in the expansion of networks and transport infrastructure, the increase of mobility and economic activities, as well as significant production gains. As mobility is a prerequisite for progress, social and economic prosperity, but also a key social need, the odds of **efficient and effective transport** is an increasing necessity for the economies of European countries and for society as a whole, especially now that we are called to address and overcome the effects of an unstable economic environment.

Large-scale investments made in Greece in recent years must now be efficiently used and enhanced through **consistent development** and use of modern technology in order to accelerate growth, to address the territorial concentration of activities and inequalities in local communities and, finally, to bring multiplier benefits to the economy. On the other hand, optimizing the use of transport services is conditional on **infrastructure and innovation being in sufficiently synchronised development**. As integrated interventions emphasise the use of modern technological solutions, Intelligent System applications set the basis for greater advantages in the future by reducing administrative costs, increasing productivity and competitiveness, strengthening the national economy, strengthening social cohesion and improving quality of life. For these reasons, the **Intelligent Transport Systems** (ITS) should be from now on a **key component of the future transport policy**.

The challenge of the transport policy is to meet the current needs of mobility and sustainability in a balanced way. Such a change in the spirit of approaching and developing future transport systems will help to successfully meet the needs of **all potential users of networks**, providing comprehensive mobility solutions, both in urban and remote areas of the country, thus providing **equal access to work, education, and health**.

The challenges currently faced by the transport sector virtually involve every aspect of the economy and society, emphasising the role of effective and efficient transport. The required investment costs, restrictions on funding, issues related to allocation of powers, coupled with the uncertainty as to the payback period of investments, institutional inertia and the unstable economic and political environment, however, set severe restrictions on the deployment of ITS applications.

Intelligent Transport Systems are helpful when mobility, safety and environmental protection is all that matters. Deployment of ITS applications, combined with the necessary policy measures, is key to addressing the challenges faced by transport systems. The main challenges of transport in which innovation is now called upon to resolve are summarised below:

Mobility: Better accessibility for all, even in regional and remote areas. Promotion of multi-modality.

Security: Reduction of road accidents, direct response in case of an incident.

Environment: Significant reduction of greenhouse gas emissions, monitoring of emissions and spatial impacts.

Economy: Reduction of travel time and cost, reduction of administrative costs. Creation of new jobs in the areas of transport, communications and information technology, and industry.

Energy: Reduction of fuel consumption, using alternative energy sources.

Society: Equal access opportunities, facilitation of the elderly and persons with reduced mobility.

Quality of life: Easy, quick, reliable transport.

Health: Fewer traffic accidents, significant reductions in injuries and deaths.

Work: Employment and entrepreneurship opportunities in innovation and new technologies. New business models.

Science: Development of advanced technology.

Property Protection: Secure parking places for trucks, crucial to tackling crime, particularly in the freight sector.

Sustainable development: Major advantages in terms of development and progress, with multiplier benefits for all. Increase of productivity and environmental benefits.

Cost Savings: Direct and indirect cost savings in the public sector, multiple benefits for transport operators using fleet and infrastructure management optimisation systems.

Incentives for private investments: Full return on investments, high yield, multiple benefits.

1.2 PURPOSE AND OBJECT OF THE REPORT

This report completes the listing of realised, ongoing, planned and strategically necessary, and therefore, proposed actions and projects in Greece by 2020 in the priority areas of 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 transport modes.*

This report will help to shape the framework of approaching and implementing a national strategy for the development of Intelligent Transport Systems in Greece, in the light of both general and specific strategic objectives, priority areas and necessary operations and actions. The report is the National Action Plan for the development of Intelligent Transport Systems in the next five years, as it stands and is recommended by the Ministry of Development, Competitiveness, Infrastructure, Transport and Networks in collaboration with jointly competent public authorities, as well as private entities involved.

This Action Plan for Intelligent Transport Systems presents a strategy to create a future transport infrastructure system consistent with the guidelines of the European Union, identifying national priority actions and highlighting the key conditions for achieving a sustainable mobility system. The aim of the Action Plan is to maximise the benefits of intelligent transport systems as a component of an integrated transport policy that will

effectively contribute to the strategic and structural modernisation of the Greek economy. As transport has now entered the new era of technological progress, in the near future **intelligent transport systems will become the new definition of travel**.

1.3 WORKING & COORDINATION GROUP WITH ITS STAKEHOLDERS

This report has been prepared under the supervision of the Department of International Relations – Transport Division of the General Directorate for Transport, Ministry of Development, Competitiveness, Infrastructure, Transport and Networks. The editorial team consists of:

Rodanthi Sfakianaki - Department of International Relations, Transport Division (r.sfakianaki@yme.gov.gr)

Theodora Riska - Department of International Relations, Transport Division (d.riska@yme.gov.gr)

Harikleia Laboglou - Department of International Relations, Transport Division (h.laboglou @yme.gov.gr)

Georgios Synnefakis - Directorate for Certification, Directorate General for Communications (g.synnefakis@yme.gov.gr)

The following departments and agencies cooperated for the drafting of this report and provided material and information on actions performed, underway, or scheduled, as well as views on the strategic actions necessary in Greece:

- Jointly competent departments of the General Secretariats at the Ministry of Development, Competitiveness, Infrastructure, Transport and Networks
- Ministry of Shipping (Port Authorities)
- Ministry of Citizen Protection
- Ministry of Finance
- ITS Hellas
- Universities and research institutes
- Public Transport Operators (OSY, ERGOSE, TRAINOSE, OASTH, SASTH, OASA, STASY)
- Federations of Motorists
- Local Authorities
- Motorway operation & management companies (Attiki Odos, Egnatia Odos, Nea Odos, Olympia Odos, Moreas, Aegean Motorway)
- New motorway concession companies
- Operational Programme "Digital Convergence"
- Special Management Services of the Operational Programmes

CHAPTER 2: ANALYSIS OF THE CURRENT SITUATION ON INTELLIGENT TRANSPORT SYSTEMS IN THE FIELD OF ROAD TRANSPORT AND FOR INTERFACES WITH OTHER MODES

2.1 THE EU STRATEGY

The main objectives set by the key strategic axes of the European Union, as outlined in the Treaty of Lisbon, is achieving **stronger, sustainable economic growth and creating more and better jobs**. **In particular, according to the White Paper ("*Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system*"),** competitiveness and efficiency of the transport systems of Member States **and meeting the economic, social and environmental needs of society are essential components of the European transport policy.**

Towards achieving these strategic objectives, **the interim review of the White Paper of the European Commission** in the field of transport policy, stressed the key role of **innovation** in ensuring sustainable, efficient and competitive mobility in Europe. Similarly, **the EC programme for research and innovation "Horizon 2020"** closely follows **the principles and objectives of the "Europe 2020" strategy,** placing innovation at the heart of a smart, sustainable and inclusive growth, aimed at strengthening **the global competitiveness of Europe**.

Moreover, in its Communication "Europe 2020 - A strategy for smart, sustainable and inclusive growth", the Commission stressed the importance of **social cohesion, a greener economy, education and innovation** for Europe. These objectives are reflected in the various aspects of the European transport policy, with a view to ensure **sustainable mobility** for all citizens, drastically reduce carbon emissions in transport and take full advantage of technological advances.

However, against this background several major challenges have to be overcome for **Europe's transport system** to play its full role in satisfying the needs of the European economy and society. Commission Communication on the *Action Plan for the Deployment of Intelligent Transport Systems in Europe (COM 2008) 886* presents the following figures:

- Road traffic congestion is estimated to affect 10% of the road network, and yearly costs amount to 0.9-1.5% of the EU GDP.

- Road transport accounts for 72% of all transport-related CO2 emissions, which increased by 32% (1990-2005).

- Whilst road fatalities are in regression (-24% since 2000 in EU27) their number (42 953 fatalities in 2006) is still 6 000 above the intended target of a 50 % reduction in fatalities in the period 2001-2010. Latest figures from 2009 show that more than 35 000 people died on the roads of the European Union, which is equivalent to a medium-sized city, and at least 1 500 000 people were injured. The cost to society is enormous, amounting to about 130 billion euros in 2009.

These challenges are even more pressing with forecasted growth rates of 50% for freight transport and 35% for passenger transport in the period from 2000 to 2020.

The **main EU policy objectives** arising from these challenges are for transport and travel to become:

cleaner,

more efficient, including energy efficient,

safer.

It is however clear, that conventional approaches such as the development of new infrastructure, will not give the necessary results on the timescales required by the magnitude of these challenges. Innovative solutions are clearly needed if we are to achieve the rapid progress demanded by the urgency of the problems at hand. It is high time for **Intelligent Transport Systems** to play their due role in enabling tangible results to emerge.

According also to the new White Paper adopted by the European Commission on 28 March 2011, the objectives proposed are in several aspects the same as the expected results provided by Intelligent Transport System applications. Examples include the objective of establishing a framework for a **European multimodal transport information, management and payment system and moving close to zero fatalities in road transport by 2050**.

Despite that is perceived that there is a need for deploying Intelligent Transport Systems in road transport in the EU, there are significant delays between Member States, leading to a patchwork of national, regional and local solutions without clear alignment, which jeopardises the integrity of the single market. It is therefore necessary to address some major issues, such as **the geographical continuity, interoperability of services and systems and standardisation** at the European level in order to avoid creating a patchwork of ITS applications and services.

To address these problems, the European Parliament and the Council adopted **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 transport modes. **The overall objective of Directive 2010/40/EU** is to establish a framework for the coordinated and consistent deployment of ITS within the Union, especially across borders between Member States, and to establish the general conditions necessary for the development of specifications and standards for actions within the priority areas. **Specific objectives** include increasing system interoperability, ensuring uninterrupted access to it, enhancing the continuity of services and creating an effective cooperation between ITS stakeholders.

The Directive distinguishes between the following priority areas for the development and use of specifications and standards:

I. Optimal use of road, traffic and travel data,

II. Continuity of traffic and freight management ITS services,

III. ITS road safety and security applications, IV. Linking the vehicle with the

transport infrastructure.

Within the priority areas the following shall constitute priority actions for the development and use of specifications and standards:

(a) the provision of EU-wide multimodal travel information services;

(b) the provision of EU-wide real-time traffic information services;

(c) data and procedures for the provision, where possible, of road safety related minimum universal traffic information free of charge to users;

(d) the harmonised provision for an interoperable EU-wide eCall;

(e) the provision of information services for safe and secure parking places for trucks and commercial vehicles;

(f) the provision of booking services for safe and secure parking places for trucks and commercial vehicles.

Member States shall take the necessary measures to ensure that the standards established by the Commission for each of the above priority actions are applied to ITS applications and services.

2.2 LEGISLATIVE AND TECHNICAL FRAMEWORK OF GREECE FOR INTELLIGENT TRANSPORT SYSTEMS

Greece has enacted the legislative framework for Intelligent Transport Systems in the field of road transport and interfaces with other modes, transposing Directive 2010/40/EU into national law by Presidential Decree 50/2012 (Government Gazette 100, Series I, 27-4-12).

Since the EU Directive on Intelligent Transport Systems is essentially the first legislative initiative imposing obligations on Member States in meeting common specifications and coordinated deployment of interoperable ITS, it becomes apparent that we are still at an early stage of adopting a national regulatory framework . The adoption and approval (if necessary) of specifications and standards (for each of the priority actions listed above) in accordance with the provisions of the Directive is in the process of consultation and processing by the EC specific expert groups, following which **adoption of binding legislation** is expected. Presidential Decree 50/2012 on the harmonisation of the Greek legislation with the provisions of Directive 2010/40/EU of the European Parliament and of the Council of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other transport modes (OJ L 207/1 of 06.08.2010) **provides for the adoption of Ministerial or Joint Ministerial Decisions, where necessary, for the adoption of the standards to be adopted by the European Commission.**

However, the deployment and development so far of Intelligent Transport Systems becomes apparent through other similar technological application development frameworks, which incorporate many of the objectives, requirements and benefits of Intelligent Transport Systems. It is also clear that the area of Intelligent Transport Systems follows a horizontal policy, with references to advanced information, communications, sensitive personal data processing and interoperable spatial information systems, digital services, etc.

Based on the above, please find below a table showing **the applicable national legislation** within the broader framework of development and deployment of Intelligent Transport Systems:

Scope	National Legislation	Relevant Community Directive
Framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other transport modes	Presidential Decree 50/2012 (I/100)	Directive 2010/40/EU
Establishment of a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services	Presidential Decree 39/2001 (I/28), as in force	Directive 98/34/EC
- Processing of personal data in ITS applications and services - Personal data protection	Law 2472/1997 (I/50) Law 3471/2006 (I/133) Law 3917/2011 (I/22)	Directive 95/46/ EC, Directive 2002/58/ EC, Directive 2006/24/EC,
in electronic communications sector- Retention of data generated or processed in connection with the provision of publicly available electronic communications services or of public communications networks, use of monitoring systems to receive or record audio or video in public places		
Rules on processing and use of road, traffic and travel data	Law 3448/2006 (I/57), Law 3613/2007 (Article 11) Circular ref. ΔΙΣΚΠΟ/Φ17/ off.13807 /20.6.2006 issued by the Ministry of Interior	Directive 2003/98/EC
Establishment of spatial information infrastructure for integrated access to travel data	Law 3882/2010 (I/166)	Directive 2007/2/EC
Interoperability of electronic road toll systems	Presidential Decree 177/2007 (I/216)	Directive 2004/52/EC

Regarding **the technical framework for the deployment of ITS**, where standards have already been adopted by the European standardisation bodies with a view to ensure interoperability and compatibility, those standards have already been implemented in the relevant projects of national bodies. The specifications and standards to be adopted by the European Commission as provided for in Directive 2010/40/EU, shall be applied respectively to any future projects to be implemented by those bodies.

2.3 CURRENT STATUS - SUMMARY OF ACTIONS IMPLEMENTED PER PRIORITY AREA

2.3.1 Priority area I: Optimal use of road, traffic and travel data

In this area, Greece is currently implementing projects for:

- informing the public/users about the state of the road network and other relevant data (e.g. traffic and environmental measurements, spatial effects, geospatial data, etc.);
- informing pubic transport passengers;
- an integrated combined public information system for traffic, parking places and routes.

Those projects are managed by entities such as Municipalities, OASA and the Egnatia Motorway. There is an overlap in the performance of actions, as there are not clearly allocated planning and coordination responsibilities on those issues across the various levels of government (central government, local government) and transport operators.

National support is provided through www.geodata.gov.gr, a website developed and maintained by the Institute for the Management of Information Systems "Athena", aiming to provide a central point for collection, search, distribution and visualisation of information, e.g. bus routes.

Availability of real-time traffic data is supported centrally by the Ministry of Development, Competitiveness, Infrastructure, Transport and Networks and is accessible to the private sector for a fee.

2.3.2 Priority area II: Continuity of traffic and freight management ITS services

There is a tremendous development of traffic management actions implemented by Greek motorway management companies and transport operators. Municipalities have an active presence with most projects being on track.

The major traffic management centres are located in Athens and Thessaloniki.

The Athens Traffic Management Centre, supervised by the Ministry of Development, Competitiveness, Infrastructure, Transport and Networks, monitors traffic on motorways in real time and collects data on traffic at toll stations. The Attiki Odos Traffic Management Centre manages traffic data from the regional motorway (www.atticaroute.gr). Motorway traffic control systems in Greece are currently under development, depending on the progress of road construction, as several of them are under construction. In Thessaloniki, a Management Centre is running in coordination with the Region of Central Macedonia, which provides free electronic information services for the urban road network in real time through www.mobithess.gr.

Freight transport is a dynamically developing sector of the national economy despite the recession. Transport companies and logistics centres with international presence have invested in ITS applications, with a view to achieve better performance and greater efficiency. There are no nation-wide centralised initiatives other than disjointed measures in main ports, such as the one of Thessaloniki, investing in transport management and interconnection. No actions for protected parking spaces have been implemented yet.

2.3.3 Priority area III: ITS road safety and security applications

National efforts for road safety, aiming to reduce road accidents and guided by EC Communication "Towards a European road safety area 2011-2020", are implemented as part of an institutional framework governed by the Interministerial Committee on Road Safety (Ministerial Decision ref. 180/2010 B63), the National Road Safety Council, and the National Road Safety Observatory of the Professional Technical Chamber of Greece. These institutions contact and consult each other with a view to create infrastructure and road networks with improved specifications, with the adoption of a national plan of action for road safety.

Variable message signs are used in Greek motorways to provide road users with warning of incidents, and there are data collection systems informing the Traffic Control Centres of the Road Traffic Police and the Traffic Management Centre of the Ministry of Development, Competitiveness, Infrastructure, Transport and Networks.

The interoperable e-Call service, an emergency service in case of a traffic incident, is being implemented and monitored by the Ministry of Development, Competitiveness, Infrastructure, Transport and Networks. The following programmes involving priority areas I, II and III are being implemented in collaboration with various bodies:

VIAJEO

EASYTRIP (cross-border electronic support service between Greece and Bulgaria)

SEE-ITS (Intelligent Transport Systems in South East Europe)

2.3.4 Priority area IV: Linking the vehicle with the transport infrastructure

Not progress has been made in this area at the national level. However, relevant actions are performed by research institutes.

The actions performed so far in Greece are presented by priority area in subsection 2.3.5. Specifically, Table 1 details the **Projects already implemented** by stakeholders, and their funding sources. The projects implemented by the relevant bodies are summarized and grouped into 8 Actions with the following titles: *1) Traffic Management Systems, 2) Public Transport Passenger Information Systems, 3) Traffic and Public Information Management Systems, 4) Traffic Measurement Systems, 5) Multimodal Transport, 6) Equipment Operation Monitoring, 7) Freight Management-Interfacing with other modes and 8) Studies, research activities and pilot testing, in accordance with the expected results that they provide.* The relevant Actions and Projects are linked with one Priority Area under Directive 2010/40/EU on a primary level, and possibly with several other relevant Areas, on a secondary level.

2.3.5 TABLE 1: ACTIONS PERFORMED

ACTIONS	PROJECT TITLE	PRIORITY AREA	RELEVANT PRIORITY AREAS	BODY	STATE OF IMPLEMENTATION	FUNDING SOURCE
TRAFFIC MANAGEMENT SYSTEM	Tram priority at road junctions	II	IV	STASY SA-TRAM	Implemented	National and Community funds
PUBLIC TRANSPORT PASSENGER INFORMATION SYSTEM	Interactive information services for the travelling public		IV	OASTH	Implemented	Private funds
	Provision of mobile internet information services to the travelling public		IV	OASTH	Implemented	Private funds
	Bus Tracking Telematics System - Traffic Management and Passenger Information System		II,IV	OASTH	Implemented	Own funds of OASTH, 3rd CSF and Public Investments Programme The project was included in the Operational Programme "Information Society" of the Ministry of Development, Competitiveness, Infrastructure, Transport and Communications
	Provision of 200 telematics intelligent stations		IV	OASTH	Implemented	Public funds
	MOBINET-Creation of an Urban Mobility Centre for the Municipality of Kalamaria and development of internet-based information services for the travelling public		II	Transport Institute / Greek Centre for Research and Technology, Municipality of Kalamaria, Surveyor, Thessaloniki's Integrated Transport Authority (SASTH)	Implemented	Intelligent Energy Europe Programme
	Integrated Telematics System for Dynamic Public Information and Automatic Ticketing for Urban Public Transport			Greek Urban Transport Federation (POAS) / 17 city bus organisations	Implemented	Approximately EUR 10 million - The project is funded 75% by the European Regional Development Fund (ERDF) and 25% from National Resources
TRAFFIC MANAGEMENT AND PUBLIC INFORMATION SYSTEM	Integrated TMS for traffic and incident management in parts of the Egnatia Motorway	II	I,III	Egnatia Odos SA	Implemented	National and Community funds

TRAFFIC MANAGEMENT AND PUBLIC INFORMATION SYSTEM	Intelligent Management System for urban mobility and traffic control aimed at improving the quality of the urban environment in the centre of the Thessaloniki Urban Area	II	I	Region of Central Macedonia, Hellenic Centre of Research and Technology (EKETA)/ Hellenic Institute of Transport (IMET), Municipality of Thessaloniki, Thessaloniki's Integrated Transport Authority (SASTH), National Observatory of Athens, Norwegian Institute of Transport Economics (TOI)	Implemented	1,458,426 euros, 50% from funds under the European Economic Area Financial Mechanism 2004-2009 and 50% from national funds under the PIP
	Integrated TMS for traffic and incident management in the Egnatia Motorway		I,III	Ministry of Development, Competitiveness, Infrastructure, Transport and Networks, Motorway Concession Company	Implemented, 2000-2004	Co-funded from National-Community and Private Funds (EIB, Greek Government, bank loans to contractor and contractor's own resources, 40 million Euro
	Financing of public transport for developing Innovative Telematics Information and Support Services for Road Network Users		I,III	Ministry of Development, Competitiveness, Infrastructure, Transport And Networks, Contractors	Implemented	Public expenditure of approximately 8 million euros amounting to 50% of the total investment. Public expenditure funded 75% by the 3rd CSF.
	Operation and Maintenance of Traffic Management System for the Attica Prefecture		I	Ministry of Development, Competitiveness, Infrastructure, Transport And Networks	Implemented	Public funds
	Creation of Integrated Intelligent Transport System for the management of traffic data and the smooth operation of the urban municipal transport network in the Municipality of Trikala		-	Municipality of Trikala, Municipal Corporation	Implemented	Funded 75% by the ERDF and 25% from National Funds

TRAFFIC MANAGEMENT AND PUBLIC INFORMATION SYSTEM	Intelligent traffic management and travellers information system for the Prefecture of Chalkidiki	II	-	Prefecture of Chalkidiki, Contractors	Implemented	Public funds
TRAFFIC MEASUREMENT SYSTEM	Traffic measurement system along the Egnatia Motorway – 40 measuring stations	I	II,III	Egnatia Odos SA	Implemented	National and Community funds
	Opening of website tickets.trainose.qr.		II	TRAINOSE S.A.	Implemented	Public funds
MULTIMODAL TRANSPORT	Startup of programme TRAINOTAXI	I	-	TRAINOSE S.A.	Implemented	Public funds
	Integrated Information System for Combined Transport in the Attica Region		-	Regional Government of Attica, Contractor, Subcontractors	Implemented	Approximately 1.4 million euros for the entire project. Funded 75% by the 3rd CSF.
EQUIPMENT OPERATION MONITORING	Management System for Korinthos -Tripoli - Kalamata Motorway and Lefktro - Sparti section	III	-	Motorway Concession Company	Implemented, 2008-2010	National/European/Own funds
FREIGHT MANAGEMENT - INTERFACING WITH OTHER MODES	Integrated Information System of the Container Terminal (SEMPO) of Piraeus Port Authority SA	II	-	Piraeus Port Authority SA, Contractor	Completed	Public and Community funds
STUDIES, RESEARCH ACTIVITIES AND PILOT TESTING	Study on the necessary improvements to the school student transport system, as part of implementing the contemplated 21st century school	I	-	Transport Institute / Greek Centre for Research and Technology (EKETA)	Implemented	Public funds

CHAPTER 3: NATIONAL STRATEGIC PLANNING

3.1 ANALYSIS OF OPERATIONAL PLANNING ASPECTS

Challenges and opportunities

The challenges currently faced by the transport sector virtually involve every aspect of the economy and society, emphasising the role of effective and efficient transport. Integrated interfacing of transport networks is a prerequisite for proper functioning of the transport system, full utilisation of the capacity of axes and unimpeded traffic flow. Transport in every society is such a key issue that it is often taken for granted. Macroeconomic data for the transport sector are impressive, too. There are several countries that have intensified their transport development efforts aimed at their overall development at national level. The main challenge of a transport policy nowadays is to **meet the current needs of mobility and sustainability in a balanced way.**

Transport networks in Greece face significant gaps in the interfacing of infrastructure and shortcomings in terms of users' security. Firstly, investments need to be made to meet those needs, with a view to complete the functional interfacing of infrastructure and to create the conditions for safe and modern transport networks. **Integrated solutions, however, are based on synergies** and emphasise the use of intelligent technology applications that will optimise the performance of the transport system, **reducing the need for new investment**. At a time when transport demand and the requirements for infrastructure and transport services are increased, while at the same time, public investment and available funds are shrinking, maintenance and modernisation of saturated transport systems **without increasing valuable investment capital** is one of the challenges we face.

Change in the approach adopted so far with respect to capital raising and utilisation, use of existing or research of new financing and investment mechanisms and tools, development of Public-Private Partnerships, implementation of pilot applications and exchange of good practices in order to create innovative functional schemes that will lead to the generation of new business models are all issues of concern, constituting both challenges and opportunities.

A great **development advantage** of Intelligent Systems is their multiplier effect on the economy. Direct development advantages involve, among others, the following areas:

- "green" jobs,
- high technology development,
- communications and information technology,
- electronics and telecommunications;
- data processing and management services,

whereas the implementation and deployment of ITS set the foundation for greater **future benefits**, including:

- reduction of public expenditure;
- increase of the national economy productivity
- increase of competitiveness
- improvement of the quality of life.

Development of ITS applications is also an opportunity for Greece to become, due to the specificity of its geomorphology, an application development model with respect to the interconnection of islands in particular, but also of rural and remote areas with the mainland. Modern technology provides the tools necessary to create the bridge for smooth, seamless connectivity, even where there are physical constraints. This particularity of Greece due to its size, its islands' geology and its strategic position as an international hub, offers opportunities for development through smart high-tech solutions, without the need for major new investments in material infrastructure.

The potential

Although Greece has no large-scale industry, it has implemented **intelligent system applications** and has **ample scope for the adoption and implementation of innovative solutions,** expertise, research institutions and private enterprises highly engaged in technology – innovation initiatives. Whereas economic and political instability during the current period could be an obstacle for the development and efficient use of new business forms and scopes, it seems that Greece **has the opportunity to develop entrepreneurship in this area**, despite the fact that the latter currently remains largely untapped.

The **highly-trained scientific resources of the country** have the potential to develop and support innovative technological applications and to make efficient use of the expected benefits with the cooperation of institutions and the state. Greece has also experience from pilot projects and programmes in the area of ITS, such as the action He-ero and pilot actions COMPASS 4D, EASYTRIP, SEE-ITS, VIAJEO, and others, which are underway.

Supporting research and innovation will significantly contribute to **the creation of new businesses** based upon the new practices that emerge through the use of advanced technological means. New business models, such as the concentration of small and flexible businesses into business clusters, may boost employment and economic growth.

Weaknesses, threats and risks

Technological advances arising from research and development of ITS have numerous applications, whereas research is constantly evolving and there are significant achievements in the field. However Intelligent Transport Systems face many barriers, only some of which are technical in nature. The required **investment costs**, **financing restrictions, uncertainty as to the payback period - ROI**, **failure of planning** as a result of economic instability and **uncertainty about demand**, cause serious limitations and pose a threat to the development of ITS applications.

Besides those weaknesses, there is also institutional inertia, issues related to allocation of powers and incomplete structures in public administration, lack of coordination and interoperability, and political challenges. The deployment of Intelligent Transport Systems is largely fragmented and limited in geographic scope so far, mainly due to the lack of a comprehensive policy that will define the strategic objectives, national priority areas and strategic actions and operations needed. Collaboration between public (central and regional) authorities and private entities has not yet reached the desired level and the lack of defined roles and responsibilities creates gaps in the coordinated and harmonised implementation of the ITS development framework.

Meanwhile, the **lack of information for transport operators** on what are Intelligent Systems and how they can be successfully implemented, producing benefits for enterprises, has been recognised as one of the causes limiting wider deployment of ITS.

3.2 THE VISION

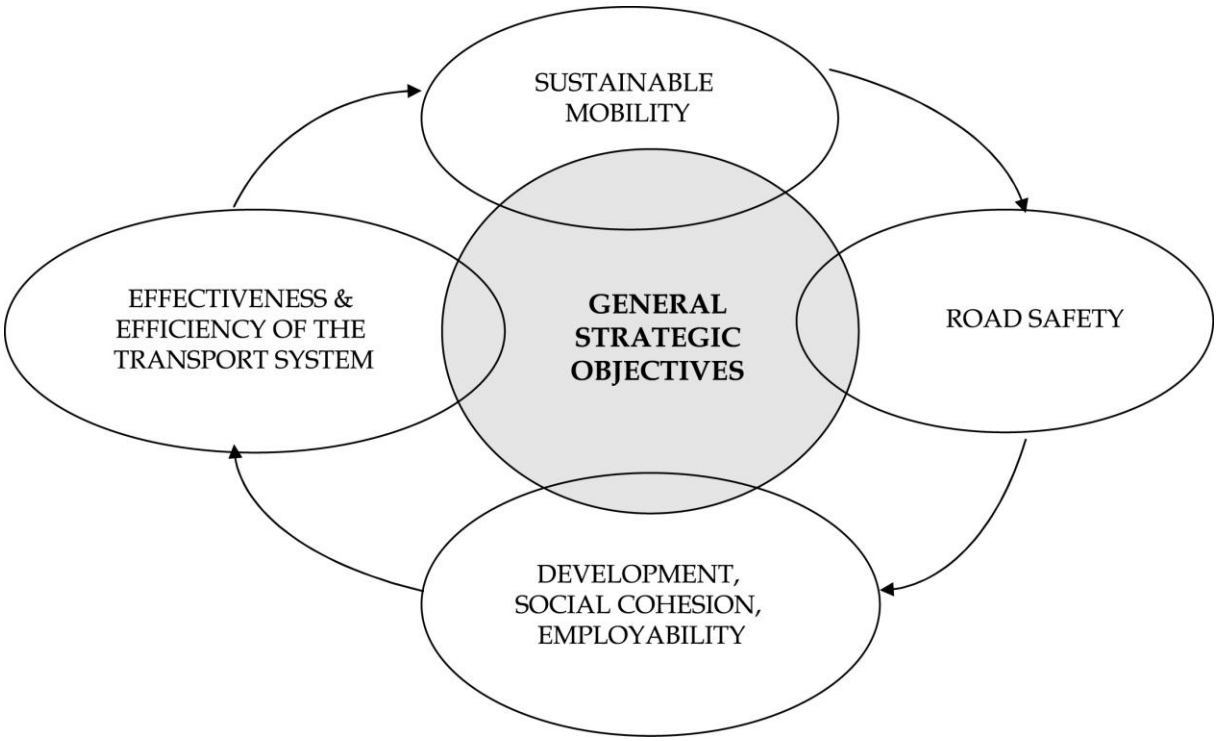
Intelligent Transport Systems will contribute significantly to the creation of an integrated safe and efficient transport network and will be a policy axis for ensuring sustainable mobility of people and goods, development, employability and social cohesion.

3.3 GENERAL STRATEGIC OBJECTIVES

The creation of a national action plan for the development of Intelligent Transport Systems has been based on the analysis of the current situation of the transport system, the European transport policy and the wider economic-business environment in Greece aiming at the best possible integrated and structured policy.

Development of transport networks, road safety, sustainable mobility and economic and social cohesion are key principles embodied in the transport policy, in general, and in the area of intelligent systems, in particular. The specific geographical and economic characteristics of Greece, as well as uncertainty caused by the economic crisis, have been identified and examined in the context of this Action Plan.

The challenges related to the specific characteristics of the economy, geography, employability, competitiveness, form the basis of strategic planning. The strategic objectives are structurally and dynamically interconnected because of their multiplier effects in different areas.



Graph 1: General strategic objectives

Based on the data analysed and their synthetic evaluation, strategic objectives and, ultimately, national priorities are as follows:

Strategic objective 1. Road safety

Road safety has been playing an important role in the common European transport policy from 2010 to 2020, since the reduction in the number of casualties is key to improving the overall performance of the transport system and to meet the needs and expectations of both citizens and enterprises. The European Commission has set Road Safety and **reduction of road accidents by 50% in the next 10 years** as a target.

However, despite that transport safety is an important goal and priority of the reform of transport policies, the number of road accidents remains unacceptably high in the EU, with major economic and social consequences. According to preliminary statistics from the Commission, about 30,500 people were killed on EU roads in 2011. The European Action Plan for Road Safety focuses on the ***systemic approach*** to the problem: responsible attitude of drivers, policing, improving vehicle safety by supporting technological progress and improving travelling conditions with the use of ICT, which is the core of ITS.

The problem in Greece is particularly important, since in the last decade about 1,500 lives on average are lost in road traffic accidents annually, whereas the socio-economic cost of road accidents is estimated over EUR 5 billion annually.

Therefore, improving safety levels and thus reducing road accidents is a **key national target**, achieved at a high level by using advanced technology.

Strategic objective 2. Enhancing the efficiency and effectiveness of the transport system

The EU transport policy sets as the key priority enhancing the **competitiveness** and **efficiency of the systems** of Member States and considers that the use of intelligent transport systems in all sectors is essential. An efficient and effective transport system has several aspects which are addressed by the countless applications of Intelligent Transport Systems. Examples include **development of Trans-European Transport Networks, creation of uninterrupted and multimodal transport, the interconnection of all transport modes, provision of real-time information for passenger and freight transport, use of an integrated national ticketing system and integrated traffic systems,** optimising the capacity of networks, reducing gaps in traffic, improving service levels and facilitating the smooth operation of the systems, without the need to invest in new physical infrastructure. Increasing the efficiency of the transport system favours all population groups and has long-term earnings and multiplier benefits for citizens and the society.

Respectively, in the area of freight transport, ITS applications support and promote all businesses in the freight, transport and forwarding industry, providing better delivery services, smart solutions, organised logistics chains and therefore better performance. The potential of ITS can be used to increase efficiency throughout the entire supply chain - logistics. A **combined transport network** with a smooth flow, as a rule-flow, without contingencies and with simplified procedures and formalities at border stations and interconnections with other modes, providing real-time information and estimates of required time and conditions, sets the appropriate context for the **efficient transport of goods**.

Strategic objective 3. Sustainable mobility

Transport has become more energy efficient, but Europe still depends on oil to meet its energy needs. Oil is expected to be increasingly scarce, its price being constantly rising, which affects the prices of goods and services to the detriment of family income. On the other hand, 28% of EU CO2 emissions come from the transport sector, and particularly from road vehicles. The European Commission supports research and development of new "green" technologies in the transport sector. As part of the Strategic Transport Technology Plan (STTP), the Commission promotes clean transport systems and standards relating, for instance, to interoperability of charging/refuelling infrastructure.

Alongside targets for the use of renewable energy sources and promotion of new, clean technology vehicles, ITS achieve effective traffic control, thus reducing bottlenecks and related variations of speed which lead to increased fuel consumption, and encourage the use of public transport, enabling the public to make more sensible choices. **The goal is public transport to compete with the car as the dominant mode of transport in urban areas,** enhancing significantly the level of service, in order to achieve a **significant reduction of fuel consumption and greenhouse gas emissions.**

The role of intelligent transport systems is to organise the entire transport system, tools and infrastructure for making sustainable choices that will meet advanced environmental targets, to ensure the preservation and strengthening of the competitive position of national/European transport services compared to that of other countries, and to also ensure the contribution of transport to the economic growth. ITS accomplish this through overall system optimisation. Reduced times, saving unnecessary vehicle-kilometres, reduced fuel consumption, fewer accidents, reduced air pollution are all translated into reduced costs for the entire production and distribution chain for goods and services.

Strategic objective 4. Development, employability, social cohesion

Transport plays an important role in society and the economy and a powerful engine for economic growth and job creation. There are several countries that have developed the transport sector aiming at their overall development. Evidence suggests that there is a rise in the GDP of around 1% which is attributed to the increase of the national traffic volume by 1.6%. According to data from the EU (www.europa.eu), the transport industry directly employs around 10 million people and accounts for 5% of the GDP, whereas transport and warehousing account for 10-15% of the cost of the final product of European enterprises.

The growth potential of Greece can be efficiently used and leveraged by means of a functional transport system that serves tourism and trade, making almost all economic activities more competitive. In particular, the implementation of ITS generates added value for transport networks, freight transport and logistics, rural economy, tourism, and better quality in the everyday lives of residents. Freight transport is streamlined, optimising their practices and profits, and opportunities in the areas of technology and innovation offer the perspective to develop new business models. By streamlining working practices, the performativity level of the production chain increases, the performance of the system is improved and the production cost, even that of the public sector, is reduced.

Increase of employment and creation of new green jobs is another key advantage of the growth and expansion of the use of Intelligent Transport Systems. Implementation of advanced technologies triggers the creation of new enterprises for the processing and analysis of data, the development of advanced computer systems and technology and organisation of transport services based on new practices. Such data benefit small enterprises that produce technological solutions, supporting entrepreneurship in this sensitive services sector. All this development is based on a savings philosophy, which is highly advantageous for the environment, meeting the conditions for sustainable growth and the creation of green jobs, which are priority objectives of the broader political agenda of Greece.

The quality of transport services greatly affects quality of life. The use of Intelligent Transport Systems makes Public Transport more comfortable, convenient, attractive, reliable and accessible to all, facilitating travellers' service, multimodal transport and equal access to all social groups. Connection of remote, sparsely populated areas with urban centres helps restoring social inequalities because of territorial discontinuity and access to key areas of everyday life (work, health, education), facilitating the population

to make relocation decisions and reducing the concentration of population in densely populated areas.

Moreover, a broader assessment of the use of intelligent transport systems, coupled with the strategic position of Greece as an international hub, enables the country to develop interconnected, efficient, competitive transport networks, playing a key role in the world transport map and generating benefits for the domestic economy.

3.4 NATIONAL PRIORITY AREAS

The general strategic objectives of road safety, enhancing the efficiency and effectiveness of the transport system, sustainable mobility and development, employability and social cohesion are broken down in specific objectives and strands of action, which are translated into national priority areas and set the schedule of priorities for their implementation.

National priority area 1. Road Safety-Reducing Accidents

Improving road safety levels, with a particular view to reducing accidents is both a strategic objective and a **key national priority** of Greece. In particular, an important element for reducing accidents is **to improve traffic flow** using intelligent traffic management systems in order to help users travel in smoother conditions, reducing unpredictable behaviours and preventing traffic accidents. Traffic management systems enable adjustment of speed limits, regulate the traffic lights, reduce traffic congestions and **inform** drivers of potential obstacles, hazards and weather conditions in order to prevent road accidents.

Specifically, they seek to better monitor the situation in networks, to manage traffic flows and to ensure intervention in case of an emergency by deploying, among others, the following applications:

a) rapid intervention of rescue teams in case of an emergency through the Public Safety Answering Point (PSAP) of 112 and e-Call, seeking to provide immediate assistance and to promptly restore traffic flow.

b) use of collaborative systems (vehicle-to-vehicle communication, V2V) for automatically informing drivers and preventing crashes.

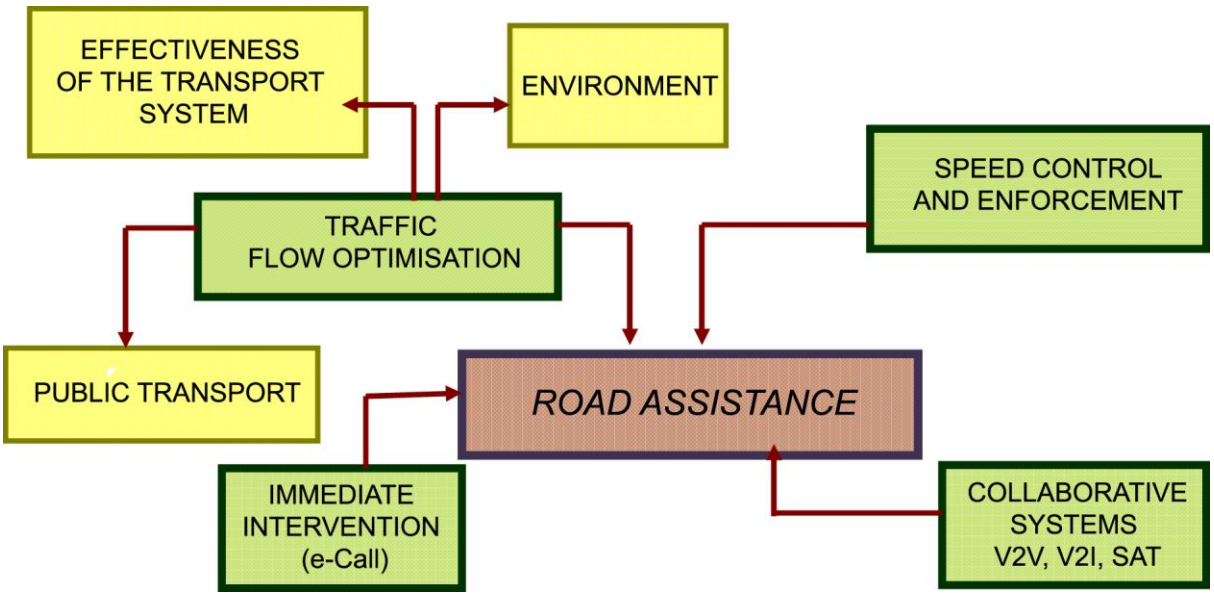
c) automatic, smart cameras and LIDAR devices, which monitor speed limits and provide information on travel times, incidents and driving behaviour.

d) autonomous **Safety Assist Technologies** (SAT) in vehicles which help drivers maintain a steady speed and distance, to drive within lane, to avoid overtaking in critical situations and to cross intersections safely, with a positive impact on safety and traffic management.

e) Digital speedometer for satellite monitoring of the speed of trucks, buses and school vehicles.

f) GPS and maps to warn drivers when exceeding speed limits.

The following graph illustrates the interaction of the different factors of the transport system with Road Safety.



Graph 2: Factors interacting with Road Safety
Source: Ministry of Development, Competitiveness, Infrastructure, Transport and Networks

National priority area 2. Development of ITS applications for connecting rural, remote and island areas (Rural ITS)

Greece is an insular country with more than 1,000 islands and 3,000 small and large ports, with a population living on islands and remote areas reaching approximately 1/3 of the country's total population.

The current status of connectivity with remote and island areas provided by transport systems is problematic due to discontinuity of service, making the accessibility of residents to services, education, work and health difficult. Bearing in mind the growing tourism during the summer months, the need to **enhance accessibility** and improve service levels becomes necessary.

Implementation of seamless connections and dynamical systems will be achieved as follows:

(i) aligning timetables to avoid gaps in connections and long waits,

(ii) addressing the seasonal fluctuations in demand, causing problems with the capacity of networks,

(iii) providing integrated accessibility solutions by connecting local and main roads.

The population of remote, sparsely populated areas (often people with reduced mobility and low income) will have the opportunity to travel using public transport or intelligent systems that respond dynamically to the demand by adjusting their timetables and routes to serve people's need of having access to services and opportunities in an easy, reliable and inexpensive way.

National priority area 3. Information & Design of Multimodal Passenger Transport.

Information and design of multimodal passenger transport systems are essential elements and, therefore, national priorities for achieving the strategic objective of improving the efficiency and effectiveness of the transport system. Necessary actions in the information and design of multimodal transportation is the **interconnection of all available modes and options in a single system** through the digital use of their data**, providing real-time information, consolidated traffic systems and national ticketing systems.**

Real-time information systems are a powerful tool for optimal decision making, because they provide access to information about the location, time, transport systems, the state of the network and possible incidents. This information is used by administrators to forecast traffic, to give priority to selected categories of vehicles (public transport, high occupancy vehicles), to adjust speed limits and traffic lights, and to inform the public. Real-time information enables road users to plan their journey and choose the appropriate mode. The use of the **national integrated ticketing system** helps in providing one-stop-shop services, better planning of travel and avoiding delays.

The interconnection of services and applications into a single, pan-European, Internet node can be a platform for multimodal journey planning in an integrated and seamless way. Moreover, **integrated traffic management systems** collecting traffic data from all sources and using them to provide information to users will contribute substantially to the optimisation of the traffic system. Physical infrastructure and a series of institutional measures are required to attain this goal.

National priority area 4. Passenger information in urban mobility centres

In large urban centres, such as Athens and Thessaloniki, the problem of congestion, poor air quality (concentration of gaseous pollutants and particulates) and noise is attributed to the increased density of the population. The wide range of choices available to transport users in urban centres requires **the provision of better information services**, with the ultimate goal of making people turn to public transport and promoting environmentally friendly travel.

Real-time reporting and information to passengers on the scheduled times vehicles arrive at stops, dynamic system update on traffic conditions in the city centre, and information on possibilities to combine and use the available transport modes, contribute decisively to engage travellers in the design of their journey, to improve the urban environment, to raise environmental awareness, and to change the urban behavioural mobility patterns.

Indicative measures to enhance the attractiveness of public transport, to improve their operation and to ensure their better coordination is the creation of "smart stops" showing the lines and the arrival times for the next buses, smart displays in buses showing the next stop, a webpage where travellers can search the optimal route and have access to information on the boarding location and time (buses, coaches, taxis), etc.

National priority area 5. Integrated multimodal freight transport systems at the urban and intercity/international level.

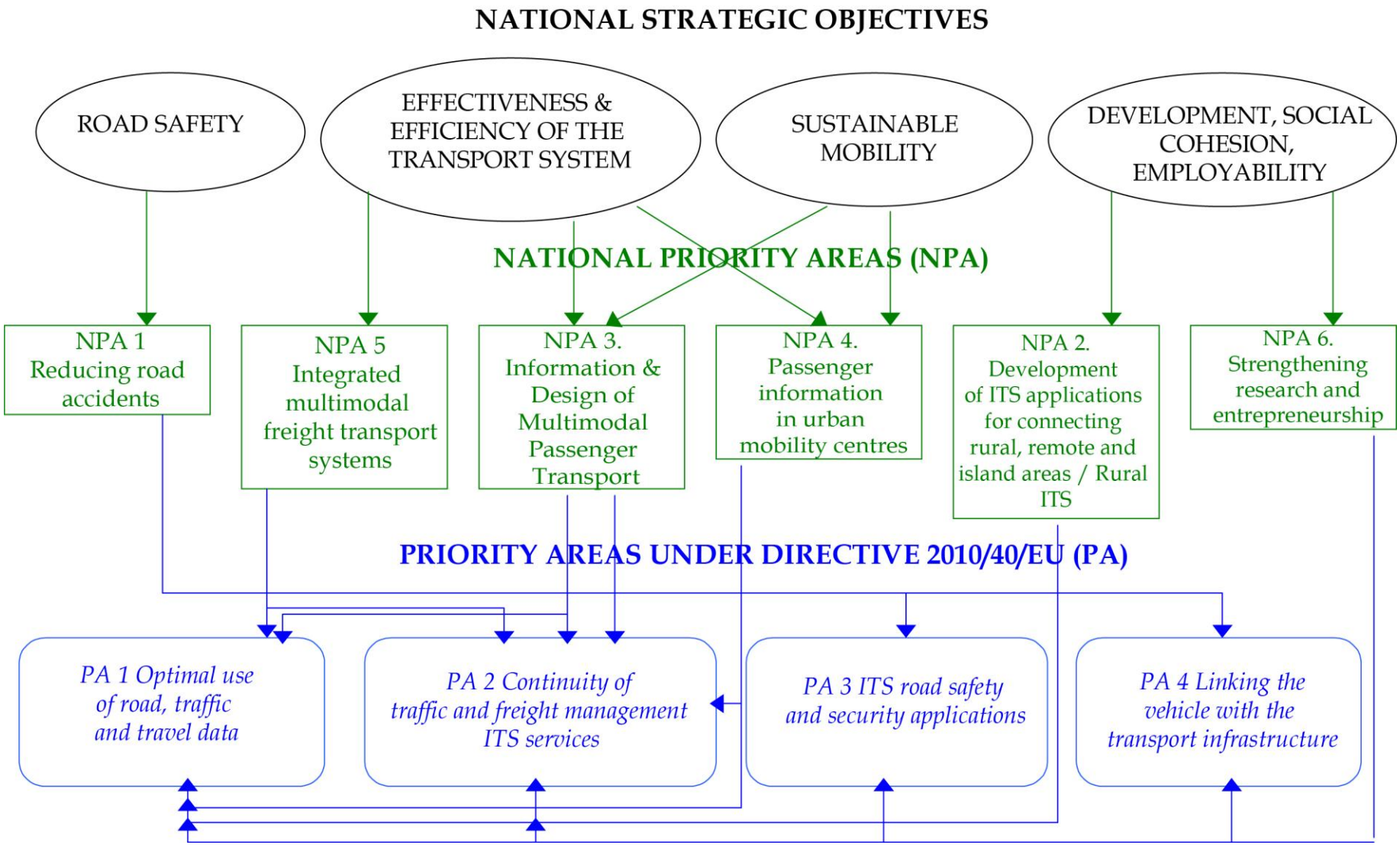
The freight transport sector benefits significantly from intelligent system applications that streamline business models, making them more competitive. Freight management systems facilitate procedures and control and make the operation of freight centres more efficient, thereby reducing delays, better organising transport and informing the parties involved on the status of shipments. They also allow continuous monitoring and/or tracking of freight, which is an added value element especially in long distance freight transport, for ensuring protection (against theft) and reliable transportation.

The possibility of collecting and organising multiple shipments through a **central information platform** in order to avoid unnecessary routes, Demand-Responsive systems where trade and transport companies give quotes and make deals on-line adjusting dynamically their schedules, are the new business models available through ITS, with many obvious benefits for the entire system. **The dynamic management of available fleet** with modern equipment and appropriate software, **electronic shipping documents** and **identities of cargo - vehicles** ensure and optimise the operation of the industry's undertakings and save costs, which translates into a direct benefit on the final prices of goods. Moreover, multiple ITS applications help save energy (fewer routes means less fuel consumption), reduce traffic congestion and protect the environment (fewer emissions).

National priority area 6. Strengthening research and entrepreneurship.

Research in the field of intelligent systems delivers benefits both for science and technology, and for the country's economy. The creation of new undertakings based upon new practices and the upgrade of existing ones using technological means, proves advantageous for strengthening national research and entrepreneurship. Moreover, use of the scientific manpower of Greece in research and development of entrepreneurship in this new market contributes to containment of recessionary trends and tackling unemployment as part of the global economic crisis.

Studies, research programmes and pilot testing conducted by research organisations and universities in Greece prepare the ground for deploying and form the basis for developing innovative applications. Specifically, maintenance and storage of research data, efficient use of primary data through transport tools, production of processed data and easy dissemination of data for research purposes using web service technologies, constitute the framework for the promotion and introduction of intelligent transport systems in all possible applications.



Graph 3: Structure of the National Action Plan

3.5 TABLE 2: STRATEGICALLY REQUIRED ACTIONS

Given that the technical and legal framework in Greece is still at an early stage of development, a series of **administrative and legislative actions** are required that will ensure the smooth operation and deployment of Intelligent Transport Systems. The table below summarises the required actions included in the Strategic Planning and forming an integral part of the National Action Plan to enable the development and creation of an integrated framework for the operation of ITS in a coordinated and consistent way, upon consultation with stakeholders. The table below provides data on the implementation schedule, the stakeholders and the objectives in terms of expected outcomes, and the required actions. Furthermore, it is noted that the national operation framework is aligned with the European framework, as formed by Community institutions.

S/N	Action	Objective	Stakeholders	Target date
1	Creating a National Strategy and a General Development Framework for ITS. - Creating a national implementation platform with the involvement of key stakeholders engaged in Intelligent Transportation Systems. The implementation platform addresses issues related with the implementation of ITS, consults with relevant institutions and bodies and prepares relevant recommendations to the competent Authority..	Completion of Institutional Framework Policy Making	Greek Government	2013
	-Developing a legal framework, where required. Creation of a legal framework is expected to be required for the implementation of certain ITS actions. Drafting of relevant legal acts will be performed where deemed necessary.	Legal acts Interoperability	Ministry of Development, Competitiveness, Infrastructure, Transport and Networks	2013-17
	- Ensuring the use of European standards and specifications for all new projects. Use of European standards and specifications is ensured by monitoring ITS projects and binding stakeholders by means of the Memorandum of Understanding. Customisation or creation of standards or technical regulations where required.		ITS Authority and Stakeholders having signed the Memorandum of Understanding only	2013-17
	- Defining minimum required information on road safety.	Ensuring provision of information free of charge to users	Ministries Motorways	2012-13

	- Creating a framework and a mechanism for the exchange of traffic data at national level	Development of national standards and interoperability requirements for integrating traffic management systems and other traffic data sources into a single national database	Greek Motorways Infomobility Providers	2013-16
2	Signing of a Memorandum of Understanding between public and private entities, which shall specify the actions under the national strategy. Upon signing of the MoU by ITS stakeholders, a well-defined group of agencies shall be created to undertake the promotion and implementation of projects required for the deployment of ITS.	Signing of Memorandum of Understanding Implementation of an Integrated ITS Policy	Ministries, private institutions, organisations and associations, research centres and companies	2013-14
3	Creating a framework for the national service architecture and ITS systems - Adopting the European framework and adapting to national needs and objectives.	Creation of framework	ITS authority and national implementation platform	2013
	-Ensuring compatibility of existing ITS technology infrastructure to meet the requirements of interoperability according to European standards and specifications There are systems currently operating, which provide ITS functionalities. A great number of these systems will need to be upgraded to be compatible with European standards and specifications, upon introduction of the latter. Consideration will be given to the possibility of upgrading existing systems where possible or otherwise installing new systems.	Ensuring compatibility of existing ITS systems	ITS authority and stakeholders having signed the Memorandum of Understanding	2013-17

4	Detailed description of actions, timelines, funding and competencies relating to priority projects. The resources and activities required for early implementation of priority projects will be analysed.	Breakdown of actions	ITS authority and national implementation platform	2013
	- Ensuring funding instruments for the implementation of projects related to intelligent transport systems. Funding instruments must be ensured for several of the ITS projects at European or national level. The relevant appropriations shall be entered in the respective funds.	Allocation of funds	Ministry of Development, Competitiveness, Infrastructure, Transport and Networks	2013-14
	- Designation of economically viable priority projects for the five years period 2012-2017. Promoting ITS involves the implementation of a variety of projects over time, given that technological developments are not expected to stop. Given the financial resources required, selecting projects for implementation that will be able to recoup in the short run their investment is required in the current economic conditions.	Selection of economically viable projects	ITS authority and national implementation platform	2013
5	Supporting research and technological development. Framework for developing innovative applications and products for ITS and promoting their use	Creation of actions addressed to research institutions, organisations, companies. Actions for promoting the project at local and international level	Ministry, General Secretariat for Research and Technology, Stakeholders	2013-20
6	Promotional and publicity activities to inform the public of new intelligent transport systems applications.	Public information	Ministries National implementation platform	2013-17

7	International good practices of cooperation	Exchange of know-how	Ministry of Development, Competitiveness, Infrastructure, transport and Networks and stakeholders having signed the Memorandum of Understanding	2013-17

3.6 TABLE 3: PLANNED ACTIONS PER PRIORITY AREA

The following Table details the projects which **are planned or being implemented** by stakeholders over the next five years, and the relevant funding sources. The projects implemented by bodies are summarised and grouped into 11 Actions with the following titles: 1) public information on the condition of the road network, 2) traffic management systems, 3) public transport passenger information, 4) traffic and public information management systems, 5) integrated combined public information system for traffic, parking places and routes of public transport modes, 6) freight management-interfacing with other modes, 7) freight transport fleet management, 8) multimodal transport, 9) EU-wide interoperative E-call service, 10) collection of traffic data, use statistics and 11) studies, research activities and pilot testing, in accordance with the expected results that they provide. The relevant Actions and Projects are linked with one Priority Area under Directive 2010/40/EU on a primary level, and possibly with several other relevant Areas, on a secondary level.

TABLE 3: PLANNED ACTIONS PER PRIORITY AREA

ACTIONS	PROJECT TITLE	PRIORITY AREA	RELEVANT PRIORITY AREAS	BODY	STATE OF IMPLEMENTATION	FUNDING SOURCE
PUBLIC INFORMATION ON THE CONDITION OF THE ROAD NETWORK	Geoportal - Egnatia Odos SA	I	-	Egnatia Odos SA	Under implementation	Operational Programmes "Digital Convergence", "Macedonia-Thrace", EUR 454,061
	Geographic Information System of the North Aegean Region "Application: road accidents"		Ill	Prefecture of Lesvos and University of the Aegean / Department of Geography	Under implementation	Public funds
TRAFFIC MANAGEMENT SYSTEM	Management System for the Elefsina - Korinthos - Patras - Pyrgos - Tsakona Motorway	II	III	Motorway Concession Company	Under implementation	National/European/Own funds
PUBLIC TRANSPORT PASSENGERS INFORMATION	Design, Funding, Installation, Operations Support, Maintenance and Technical Management of an Integrated Passenger Information and Fleet Management System for Odikes Syngkoinonies SA with PPP	I	II	Urban Transport Organisation (OASA) - Contracting Authority Odikes Syngkoinonies SA (OSY)	Under implementation	The proposed action will be implemented under a non-contributory PPP project and involves the partial financing of the initial capital investment for the system.
	Integrated multi-channel information system for public transport passengers in the Municipality of Rhodes		-	Municipality of Rhodes	Under implementation	Public funds/EU co-financing

TRAFFIC MANAGEMENT AND PUBLIC INFORMATION SYSTEM	Upgrade of Traffic Management Systems for the Egnatia Motorway	| |	II	Egnatia Odos SA	Under consideration	Funds will be sought through relevant EU programmes
	Motorway management system for traffic and incidents in section Maliakos-Kleidi of the Athens-Thessaloniki National Road (E75) - Aegean Motorway		III	Ministry of Transport, Infrastructure and Networks, Motorway Concession Company, Maliakos-Kleidi Joint Venture	Under implementation	EUR 16 million, co-financing from EU funds (EIB), Greek government, bank loans to contractor, contractor's own resources
	Implementation of Traffic Management System for the Patras-Athens-Thessaloniki Motorway		III	otorway Concession Company	nder implementation	Private funds
	Implementation of Traffic Management System for IONIA ODOS		III	Motorway Concession Company	Under implementation	Private funds
	European test field for safe, smart and sustainable road management		III and IV	Motorway Concession Company, Greek Centre for Research and Technology, Terna	Under implementation	Public and Private Funds (Funded 50% by the 7th Framework Programme)

TRAFFIC MANAGEMENT AND PUBLIC INFORMATION SYSTEM	EASYWAY II - ITHACA Euroregional project	II	II,III & IV	Ministry of Development, Competitiveness, Infrastructure, Transport and Networks, Motorway Concession Company and concessionaires through the Ministry of Development, Competitiveness, Infrastructure, Transport and Networks	Under implementation	20% EU funding for implementation and 50% for designs. The rest comes from national funds
INTEGRATED COMBINED PUBLIC INFORMATION SYSTEM FOR TRAFFIC, PARKING PLACES AND ROUTES.	Digital Traffic information Services for Municipalities of Crete	I	III	Municipality of Chania, Ministry of Interior	Under implementation	EUR 397,670.00, 100% by the European Regional Development Fund
	Integrated traffic management and monitoring platform to inform citizens about traffic conditions through multiple communication channels		II	Municipality of Ioannina, Ministry of Interior	Under implementation	EUR 213,956.80, 100% by the European Regional Development Fund
	Creation of an integrated intelligent transport system with telematics passenger information services		II	Municipality of Naxos, Prefecture of Cyclades, Ministry of Interior	Under implementation	Public funds and EU co-financing, EUR 168,208.80, 100% by the European Regional Development Fund

INTEGRATED COMBINED PUBLIC INFORMATION SYSTEM FOR TRAFFIC, PARKING PLACES AND ROUTES OF PUBLIC TRANSPORT MODES	Creation of an integrated intelligent transport system with telematics passenger information services in the Municipality of Xanthi	I	II	Municipality of Xanthi, MINISTRY OF INTERIOR, Municipality of Stavroupoli	Under implementation	Public funds and EU co-financing, EUR 190,000.00, 100% by the European Regional Development Fund
	Intelligent multi-channel information system for municipal transport passengers on the island of Kos		II	Municipality of Kos, MINISTRY OF INTERIOR, Municipality of Dikaios, Municipality of Irakleides	Under implementation	Public funds and EU co-financing, EUR 139,110.00. 100% European Regional Development Fund
	Integrated multi-channel information system for public transport passengers in the Municipality of Rhodes		II	Municipality of Rhodes, MINISTRY OF INTERIOR	Under implementation	Public funds and EU co-financing, EUR 191,504.00, 100% by the European Regional Development Fund
	Integrated multi-channel traffic management and monitoring system for the road network of the municipalities of Lamia, Domokos, Makrakomi, Stylida		II	Municipality of Lamia, MINISTRY OF INTERIOR, Municipalities of Domokos, Makrakomi, Stylida	Under implementation	Public funds and EU co-financing, EUR 255,500.00, 100% by the European Regional Development Fund

INTEGRATED COMBINED PUBLIC INFORMATION SYSTEM FOR TRAFFIC, PARKING PLACES AND ROUTES OF PUBLIC TRANSPORT MODES	Park-n-Ride: Integrated parking guidance and multi-channel passengers information system	I	III	Municipality of Corinthia, Ministry of Interior, Municipality of Assos-Lechaio, Municipality of Saronikos, Municipality of Soligia, Municipality of Tenea, Prefecture of Corinthia	Under implementation	Public funds and EU co-financing, EUR 282,215.00, 100% by the European Regional Development Fund
	Intelligent Parking and Transport Services in the Municipality of Koropi		III	Municipality of Kropia, PREFECTURE OF ATTICA, MINISTRY OF INTERIOR	Under implementation	Public funds and EU co-financing, EUR 267,871.00, 100% European Regional Development Fund
	Innovative traffic alert and parking guidance system in the Municipality of Nestos		III	Municipality of Chrisoupoli, Prefecture of Kavala, Ministry of Interior, Municipality of Keramoti, Municipality of Orinos	Under implementation	Public funds and EU co-financing, EUR 100,700.00, 100% by the European Regional Development Fund
	Integrated parking guidance system in the Municipality of Kalamaria		III	Municipality of Kalamaria, MINISTRY OF INTERIOR	Under implementation	Public funds and EU co-financing, EUR 267,871.00, 100% European Regional Development Fund
	Intelligent Transport and Parking Services System		III	Municipality of Vrilissia, Prefecture of Attica, MINISTRY OF INTERIOR	Under implementation	Public funds and EU co-financing, EUR 251,624.00, 100% by the European Regional Development Fund

INTEGRATED COMBINED PUBLIC INFORMATION SYSTEM FOR TRAFFIC, PARKING PLACES AND ROUTES OF PUBLIC TRANSPORT MODES.	Electronic Parking Guidance and Driver Information System in the Municipality of Megara	I	III	Municipality of Megara, Prefecture of Attica, MINISTRY OF INTERIOR, Municipality of Nea Peramos	Under implementation	Public funds and EU co-financing, EUR 194,733.256, 100% by the European Regional Development Fund
	Intelligent Public Information System on traffic conditions, municipal public transport arrival times and free roadside parking places via multi-channel communication in the municipality of Kordelio-Evosmos		II	Municipality of Kordelio-Evosmos, MINISTRY OF INTERIOR	Under implementation	Public funds and EU co-financing, EUR 255,000.006, 100% by the European Regional Development Fund
	Intelligent telematics traffic and parking guidance information system for drivers and citizens through multi-channel communication in the Municipality of Kalamata - "intelligent transport"		II	Municipality of Kalamata, Prefecture of Messinia, MINISTRY OF INTERIOR, Municipality of Arios, Prefecture of Messinia, Municipality of Arfara, Municipality of Thouria	Under implementation	Public funds and EU co-financing, EUR 196,650.006, 100% by the European Regional Development Fund

INTEGRATED COMBINED PUBLIC INFORMATION SYSTEM FOR TRAFFIC, PARKING PLACES AND ROUTES OF PUBLIC TRANSPORT MODES	Integrated traffic management and monitoring platform to inform citizens about traffic conditions through multiple communication channels in the Municipality of Kavala	I	II	Municipality of Kavala, Prefecture of Kavala, MINISTRY OF INTERIOR, Municipality of Filippoi, Prefecture of Kavala	Under implementation	Public funds and EU co-financing, EUR 211,761.806, 100% by the European Regional Development Fund
	Integrated public information system for intelligent transport and municipal parking places management in the Municipality of Pefki		III	Municipality of Pefki, Attica Prefecture MINISTRY OF INTERIOR, Municipality of Lykovrissi	Under implementation	Public funds and EU co-financing, EUR 226,775.006, 100% by the European Regional Development Fund
	Integrated public transport information system and parking guidance system in the Municipalities of Vyronas and Ilioupoli		II	Municipality of Vyronas, Prefecture of Attica, MINISTRY OF INTERIOR, Municipality of Ilioupoli, Prefecture of Attica	Under implementation	Public funds and EU co-financing, EUR 278,320.006, 100% by the European Regional Development Fund
FREIGHT MANAGEMENT - INTERFACING WITH OTHER MODES	Freight control application using RFID	II	8	TRAINOSE S.A.	Under implementation	Public funds

FREIGHT FLEET MANAGEMENT	Installation of FLEET MANAGEMENT systems	II	-	Private Companies	Under implementation	Private funds – Transport Modernisation Programme
	Installation of SCHEDULING OPTIMIZATION systems		-	Private Companies	Under implementation	Private funds – Transport Modernisation Programme
	Installation of GPS systems		-	Private Companies	Under implementation	Private funds – Transport Modernisation Programme
MULTIMODAL TRANSPORT	Design, Funding, Installation, Operations Support, Maintenance and Technical Management of an Integrated Automatic Fare Collection System for the companies of the OASA Group with PPP	II		Athens Urban Transport Organisation (OASA) – Contracting Authority Odikes Syngkoinonies SA (OSY) Statheres Syngkoinonies SA (STASY) - suburban rail	Under design/consideration. The proposed action is expected to be implemented over a period of 24 months (construction period) from the signing of the contract in three distinct phases, by the end of 2015.	EU co-financing and private funds, EUR 34,758,000, 100% by the European Regional Development Fund
	Mobile application for the public		I	TRAINOSE S.A.	Under implementation	Public funds
EU-WIDE INTEROPERATIVE E-CALL SERVICE	Harmonised eCall European Pilot	III	IV	Ministry of Development, Competitiveness, Infrastructure, Transport and Networks General Secretariat for Civil Protection	Under implementation	EUR 654,875.00, funded 50% by the 7th Framework Programme
COLLECTION OF TRAFFIC DATA, USE STATISTICS	Observatory of Spatial Impacts of the Egnatia Motorway	I	-	Egnatia Odos SA	Under implementation	Operational Programme "Strengthening Accessibility" Budget (2011-2015): EUR 2,464,228
	Observatory of the Environment of the Egnatia Motorway		-	Egnatia Odos SA	Under implementation	IPA Cross-Border Cooperation Programme "Greece-The former Yugoslav Republic of Macedonia 2007-2013, Budget EUR 421,380

STUDIES, RESEARCH ACTIVITIES AND PILOT TESTING	VIAJEO	1	II	Hellenic Institute of Transport (IMET)/Hellenic Centre for Research and Technology (EKETA), Surveyors	Under implementation	EUR 3,600,000 European Commission, Directorate-General for Research, 7th Framework Programme
	EASYTRIP: GR-BG e-mobility solutions (cross-border electronic support service between Greece and Bulgaria)	1	II	Hellenic Institute of Transport (IMET)/Hellenic Centre for Research and Technology (EKETA), Municipality of Bansko, EKETA - Chemical Process Engineering Research Institute (CPERI), Municipality of Thessaloniki, Municipality of Kavala, Municipality of Serres, Municipality of Thermi, Municipality of Krumovgrad, TRAINOSE	Under implementation	EUR 1,011,0256 Interreg Greece-Bulgaria
	SEE-ITS: Intelligent Transport Systems in South East Europe	I,II,III & IV		Hellenic Institute of Transport (IMET)/Hellenic Centre for Research and Technology (EKETA), Business Development Company of the Municipality of Patras, Design Companies in Austria, Bulgaria, Romania, Greece, Hungary, Italy, University of Ljubljana, University of Zagreb	Under implementation	EUR 1,541,6716 South East Europe Programme
	COMPASS4D- Cooperative Mobility Pilot on Safety and Sustainability Services for Deployment	I,II,III & IV		Hellenic Institute of Transport (IMET)/Hellenic Centre for Research and Technology (EKETA), ERTICO, Municipality of Copenhagen, Municipality of Helmond, Municipality of Newcastle, Municipality of Verona, Municipality of Vigo, Region of Central Macedonia, French Ministry of Development, Private Companies, Organisations and Federations in Sweden, Germany, France, Italy, Switzerland, Spain, Greece	Under implementation	EUR 4,998,9406 European Commission, DG CONNECT (INFSO)

3.7 TABLE 4: STRATEGICALLY REQUIRED ACTIONS PER PRIORITY AREA AND CONDITIONS FOR IMPLEMENTATION

The following Table provides an indicative inventory of **major Actions** to be undertaken by 2020 and designated as strategically required, following a comprehensive evaluation of the data that have been previously analysed in this National Action Plan. However, these Actions should not be considered as irrelevant to the strategic planning, which entails the necessary contribution of other factors that have been identified and listed as **essential conditions for implementation as part of the technical and legislative framework**.

S/N	Actions	Project title	Description	Relevant existing Actions (if any)	Conditions for implementation (Technical and legislative framework)	Other relevant Priority Areas
Priority I: Optimal use of road, traffic and travel data						
Actions of National Priority or Scope 2020 on the Optimal use of road, traffic and travel data						
1	Nationwide systems and platforms for the collection, processing and utilisation of traffic data. All the data collected will be part of a National Transport Observatory-Database	A) National integrated system for the collection, processing, control-certification and provision-exchange of traffic data B) Traffic Incident Information Centre under the Traffic Department	Implementation of a platform for real-time collection and exchange of traffic data between stakeholders on the entire main road network. The platform will process, control and provide the raw incoming traffic data to stakeholders through appropriate communication channels. The platform will serve as a national observatory for transport (Project 1A) Subproject of Project 1A is the implementation of an operational centre by the Traffic Department for real-time collection of traffic data & road incidents			Priority II

S/N	Actions	Project title	Description	Relevant existing Actions (if any)	Conditions for implementation (Technical and legislative framework)	Other relevant Priority Areas
			to address road emergencies and crises (Project 1B)			
2	Nationwide systems and platforms for the collection, processing and utilisation of public transport data. All the data collected will be part of a National Transport Observatory-Database	A) National public transport database. B) National multimodal travel planning C) National booking, ticketing and information system for buses, coaches, public transport modes and taxis, parking places, shared bikes, sea and rail transport	Implementation of a platform for the collection and dissemination of public transport data (Project 2A). The data can be used to implement a journey planning application using different modes in Greece (Project 2B). An extension of project B could be to create an interface with existing or future central booking systems of individual modes with intermodal booking feature (Project 2C). This could also support a feature for combined booking of seats in public transport modes and taxi booking for the first and last mile of the journey		Requirement of submitting data in a standardised way. Business model and PPP	
Other Priority Actions 2020 on the Optimal use of road, traffic and travel data						
3	Public transport booking and route information systems	Major ones include: A) Single booking, ticketing and passenger information system for Intercity and City Buses	Systems for individual modes at a national or regional scale or range of modes, but in certain areas.	OPTI-TRANS PLATFORM of the Hellenic Institute of Transport		

S/N	Actions	Project title	Description	Relevant existing Actions (if any)	Conditions for implementation (Technical and legislative framework)	Other relevant Priority Areas
		B) Integrated booking, ticketing and passenger information system for sea and road transport				
4	Passenger real-time information systems	A) Nationwide services in conjunction with private FCD or crowdsourcing systems B) Creation of Intelligent Mobility Centres C) Transnational traveller information systems D) Interconnected vehicles and stations E) Specific actions to implement information systems for people with disabilities	A) Development and management of collaborative networks for the collection, processing and dissemination of traffic and other road data. Also, development and provision of services associated with such networks and data. B) Creation (or extension of existing) physical and virtual (web-based) mobility centres to provide comprehensive information to travellers on sustainable travel options in a given area. Furthermore, through interconnection with traffic control centres, these centres will play a decisive role in the sustainable management of travel demand. Depending on the area, the relevant services may be specialised or adapted (e.g. islands, tourism etc).			Priority I

S/N	Actions	Project title	Description	Relevant existing Actions (if any)	Conditions for implementation (Technical and legislative framework)	Other relevant Priority Areas
			These actions also include initiatives to promote green mobility – travellers information systems in urban environments on alternative - environmentally friendly transport modes C) Provision of continuous information to travellers between Greece and neighbouring countries, where there is a real, continuous and increased travel demand for various purposes (e.g. Bulgaria and Turkey, tourism, labour, freight transport, etc.) D) Wi-Fi Internet connection and other appropriate communication technologies in all vehicles and transport stations. Development of information applications for smartphones. E) Internet and mobile information systems for accessible routes and options available for people with disabilities			
5	Information and booking systems for	Internet and mobile information system for	Internet and mobile information system for locating parking areas			Priority II

S/N	Actions	Project title	Description	Relevant existing Actions (if any)	Conditions for implementation (Technical and legislative framework)	Other relevant Priority Areas
	truck parking areas on motorways	locating parking areas, checking the availability of places and making reservations	checking the availability of places and making reservations			
6	Systems for collecting traffic information	Systems for measuring traffic, detecting incidents, etc.	Installation and operation of systems for traffic data collection and automatic incident detection at the Traffic Management Centre of Athens, Egnatia Motorway, Thessaloniki, Aegean Motorway etc. (urban and non-urban areas). Applications incorporating radar, laser scanner, machine vision, bluetooth technologies, etc.			Priorities II & III
Priority II: Continuity of traffic and freight management ITS services						
Actions of National Priority or Scope 2020 on Continuity of traffic and freight management ITS services						
7	Integrated metropolitan multimodal urban traffic management systems	A) Implementation and integration of urban and suburban traffic and public transport management systems in metropolitan areas (Athens, Thessaloniki and/or Patras/ W. Greece). B) Implementing public transport traffic signal priority systems	A) Implementation and integration of urban and suburban traffic and public transport management systems in metropolitan areas (Athens, Thessaloniki and/or Patras/ W. Greece). The integration may be material and physical into a single control centre or may involve the exchange of data and functions across different centres. B) Implementation/Upgrade and integration of traffic light & public transport management systems for giving	A) Currently, the Athens Traffic Management Centre is continuously supplied with real-time traffic data from the Traffic Management Centre of the Attiki Odos motorway. B) It is partly applied in the Athens Tram,		

S/N	Actions	Project title	Description	Relevant existing Actions (if any)	Conditions for implementation (Technical and legislative framework)	Other relevant Priority Areas
		C) Integrated public transport ticketing system in metropolitan areas D) Smart urban freight transport systems	priority to public transport modes in major urban centres C) Implementation and integration of electronic payment systems using smart cards, mobile phones for public transport modes in metropolitan areas D) Systems for the optimal operation of freight transport fleets in urban centres. Includes technologies for delivery space booking, optimal routes, optimal scheduling etc.	but needs to be further expanded. C) A relevant project is currently in the award procedure by the Athens Urban Transport Organisation (OASA)		
8	Single Traffic Monitoring Centre for the National Motorway Network	Single Traffic Monitoring Centre for the National Motorway Network	Traffic Monitoring Centre collecting information about traffic speeds, incidents, video camera recordings, meteorological data, etc., for all the motorways of Greece. Note: This is not a Single Operations Centre. It is locally operated by each Concessionaire at each Operations Centre. However, all data should be collected at a single centre providing consolidated information and thus permitting to take coordinated action in case of incidents.	There are currently 5 motorway construction projects underway, which include development of Operations Centres for each project.	As known, the projects have been halted, and they need to be resumed for completing the individual Operations Centres and considering the design of a Single Traffic Monitoring Centre for motorways.	Priority I
9	National multi-modal freight transport management system	A) National multi-modal transport booking and ticket collection system	A) Multi-Modal Integrated Payment			Priority I

S/N	Actions	Project title	Description	Relevant existing Actions (if any)	Conditions for implementation (Technical and legislative framework)	Other relevant Priority Areas
		A) National integrated booking, ticketing and passenger information system for Intercity and City Buses C) Integrated port interconnection system of Greece	Systems Design and development of integrated multimodal credit card, smart card and mobile phone e-payment system between different organisations and public transport modes B) Project B is a subset of Project A and can be implemented in case of delay in the implementation design of Project A. It involves implementation and integration of credit card, smart card and mobile phone e-payment systems for all Intercity and City Buses C) Provision of uninterrupted passenger information across ports all over mainland and insular Greece			
10	National Multi-Modal Freight Transport Management System	A) Creation of Port Interconnections to the Rail Network B) Monitoring Freight Transport Monitoring Systems,	A) Implementation of Freight Transport Monitoring Systems, with emphasis on the carriage of Fuels, Tobacco and Dangerous Goods. The integration may be material and physical into a single			

S/N	Actions	Project title	Description	Relevant existing Actions (if any)	Conditions for implementation (Technical and legislative framework)	Other relevant Priority Areas
		with emphasis on sensitive loads (Finance and Risk) C) Integrated port interconnection system of Greece D) Integrated transport management in transit centres (e.g. ports)	control centre or may involve the exchange of data and functions across different centres. C) Provision of uninterrupted freight transport information across ports all over mainland and insular Greece C) In transit centres, such as ports in mainland and insular Greece, integrated transport systems manage traffic in and around the port, as well as transit of passengers and goods between different modes, e.g. ships to private passenger vehicles, boats to trucks, boats to local buses. Creation of freight transport traffic monitoring centres in ports, and provision of access - processing information by electronic means			
Other Actions of Priority 2020 on Continuity of traffic and freight management ITS services						
11	Urban Interventions & Sustainable Transport	A) Urban public transport management system B) Management, payment and parking information systems C) Shared Vehicles Management Centre (bicycles, cars, bikes etc) Parking Sharing Systems D) Integrated Park n Ride Systems in large urban areas E) Smart electric vehicle charging stations network F) Traffic Management Systems using license plate recognition technologies. These systems	A) Implementation of public transport and passenger information management systems in urban centres B) Implementation of single payment systems for roadside parking, supervision, illegal parking management and guidance for available roadside and off-road parking places in urban centres C) Implementation of payment systems for single rent payment, supervision and management of automated rental of public bicycles and public vehicles, in general, in urban centres D) Implementation and unification of integrated parking and boarding systems in large urban centres that support, in addition to parking with conventional or electric vehicles, boarding to public transport modes and use of shared bicycles E) Integrated parking and charging information, booking and payment system	A relevant project is currently in the award procedure by the Athens Urban Transport Organisation (OASA)		

S/N	Actions	Project title	Description	Relevant existing Actions (if any)	Conditions for implementation (Technical and legislative framework)	Other relevant Priority Areas
		store the information in a database. It is possible to use white lists and black lists in the database to allow or prevent movement of vehicles. G) Information systems for parking space and hours and loading/unloading spaces in urban networks	for electric vehicles F) In urban environments: Estimation of travel time, traffic load and direction for vehicles Enforcement in the Athens Ring based on white lists and black lists. Taking photos of offenders and cost savings for the government from fines. Violation of bus lanes. G) Identification of parking and/or loading and unloading spaces and hours and drivers information systems			
12	Rural ITS	A) Transport management systems according to demand and based on users profile B) Virtual traffic management centres	A) In areas far from the major urban centres, these systems are an efficient transport solution using methods that allow vehicles to serve users only when they are close to users and depending on their profile (demand-responsive, schedule-diversion, profile-based) B) Development of traffic management and driver information capabilities through distributed systems supported by			

S/N	Actions	Project title	Description	Relevant existing Actions (if any)	Conditions for implementation (Technical and legislative framework)	Other relevant Priority Areas
			cloud computing and with minimum staffing. The aim is to meet the traffic management needs in small towns and suburban areas with the least possible investment cost and manpower.			
13	Strengthening and support of freight transport	A) Monitoring and Fleet Management Systems (tracking + on line management) B) Best Route Planning Systems C) e-logistics & e-freight	A) Combined solution of IT and telematics devices with or without sensors, with GPS, GPRS or TETRA offering targeted services to users in order to manage the vehicles controlled by them. B) Geoinformatics applications proposing best routes by means of algorithms to address specific transport situations. Their aim is to optimise routes under specific quantity and time constraints. C) ITS systems to optimise logistics and supply chain operations 1) on procedures at stations and hubs (e-logistics) and 2) on		A) Creating standards for devices and interoperability for applications. Creating a legislative framework making their use compulsory, at least in certain categories, such as dangerous or sensitive loads (fuel, cigarettes, food, etc.)	

S/N	Actions	Project title	Description	Relevant existing Actions (if any)	Conditions for implementation (Technical and legislative framework)	Other relevant Priority Areas
			goods, standardization and conformity procedures, uninterrupted information supply procedures between all stakeholders (e-freight)			
Priority III: ITS road safety and security applications						
Actions of National Priority or Scope 2020 on ITS road safety and security applications						
14	eCall	European automatic emergency call system (eCall)	Development of an emergency call system which is activated in case of accident, either automatically by a sensor on the vehicle or manually by pressing a button. The system is divided into three subsystems: 1) The system fitted in the vehicle 2) The service centre (call management, communication with rescue means, display of the location of the accident on a map, etc.) 3) 3) The network (eCall recognition, proper routing to the appropriate service centre etc.)	eCall (http://www.ecall-hellas.eu/) HeERO (http://www.heero-pilot.eu/view/en/home.html)		
15	National actions for preventing and suppressing accidents	A) Road Accident e-Form B) Road Safety Observatory	Development and implementation of an electronic system for on-site digital recording of all road accident data by the competent authorities (e.g. Road Traffic Police) based on the existing			

S/N	Actions	Project title	Description	Relevant existing Actions (if any)	Conditions for implementation (Technical and legislative framework)	Other relevant Priority Areas
			Road Accident e-Forms. Integration of GIS to accurately record the location of accidents. B) Creation of an electronic platform - observatory for capturing, processing and analysing all road accidents in Greece, aimed at promptly identifying and analysing accidents, as well as managing black spots on the road network.			
16	Creation of operational centres of national scope or safety relevance	A) Creation of centres for monitoring dangerous goods B) ITS applications for traffic management in case of emergencies (evacuation-security)	B) Development and implementation of electronic expert systems combined with appropriate field equipment for optimal traffic management in case of emergencies (such as natural disasters, technological accidents, other actions), affecting the networks and transport systems. This includes design and integration of dynamic plans (and respective models) into these systems for the mass evacuation of large areas.		A) Establishment of a national network for dangerous goods	Priority II
Other Actions of Priority 2020 on ITS road safety and security applications						
17	Local Road Safety Applications	A) Technological Systems for measuring traffic, locating incidents, etc. B) Integrated traffic safety system in non-urban areas C) Automatic signalling system in non-urban areas D) Automatic incident detection system in non-urban areas E) Integrated safety system in transit centres (e.g. ports)	A) Installation and operation of traffic data collection and automatic incident detection systems. B) Safe transport systems in non-urban areas are based on the use of GPS combined with user travel recordings to monitor the safe movement of vehicles. The system interfaces with an accurate weather forecast. C) Signalling of non-urban areas ensures visibility depending on the weather conditions for the vehicle to remain in the roadway. Traffic signs are of variable brightness and include moving targets, as needed. D) Automatic incident detection at dangerous sections of the road network E) In transit centres such as ports, integrated safety systems			Priority I & Priority II & Priority III

S/N	Actions	Project title	Description	Relevant existing Actions (if any)	Conditions for implementation (Technical and legislative framework)	Other relevant Priority Areas
			manage safety in and around the port, as well as transit of passengers and goods between different modes, e.g. ships to private passenger vehicles, boats to trucks, boats to local buses.			
18	On-board safety applications	A) Development of Driver Assistance Systems B) Development of an On-board Data Management Platform C) Development of Driver-Vehicle Interfaces	A) It involves development of systems that help drivers avoid an imminent threat on adjacent roads. This is achieved by using sensors installed on the vehicle (e.g. radars, laser scanners, cameras, etc.) that process data (data fusion) and are able to early identify possible risks on the road environment in which the vehicle is moving. Depending on the sensors used, different applications may be developed (e.g. for avoiding car crashes with pedestrians, maintaining a constant distance from the vehicle ahead, warning in case of lane departure, etc.). Using digital maps and wireless networking (cooperative systems), the scope of these systems is significantly expanded.	A) There is a variety of European projects on this kind of systems, such as for example the programme interactIVe (http:// interactive-ip.eu /) B) Similar platforms have been and are being developed as part of several European projects (e.g. PReVENT, HAVEit, interactIVe) which are the cornerstone of a successful active safety system		Priority III

S/N	Actions	Project title	Description	Relevant existing Actions (if any)	Conditions for implementation (Technical and legislative framework)	Other relevant Priority Areas
			B) To manage the great number of data on-board, i.e. data from sensors, digital maps, messages from other vehicles and infrastructure (wireless), it is necessary to implement a reliable platform that would operate in real time and would manage all these data, and the necessary algorithms (e.g. tracking, data association, etc.). This platform should have well defined interfaces to be used with minimal adjustments in as many applications. C) The method used to warn drivers (visual, auditory and/or tactile warnings) for a potential hazard on the adjacent road network and to inform drivers of alternative actions is very important to ensure that they will not be distracted and cause a worse accident. This interaction between the driver and the vehicle can be made through an onboard system already installed in the vehicle or using a nomadic device (e.g., smartphone, tablet, PDA, etc.)			
Priority IV: ITS applications on Linking the vehicle with the transport infrastructure						
Actions of National Priority or Scope 2020 on Linking the vehicle with the transport infrastructure						

S/N	Actions	Project title	Description	Relevant existing Actions (if any)	Conditions for implementation (Technical and legislative framework)	Other relevant Priority Areas
19	Development of cooperative systems	A) Installation of equipment for cooperative infrastructure mobility systems B) Development of an open platform and relevant applications C) Development of cooperative mobility systems	A) A key requirement for the development of cooperative systems and interfacing of vehicles to infrastructure is the installation of devices with wireless networking capabilities in different parts of the infrastructure and interfacing of these systems to other sensors and infrastructure (depending on the application). All these devices and data should be centrally interfaced and managed on the part of the infrastructure to deliver the best quality of service provided to drivers and travellers B) Development of an open platform with well-defined libraries, tools and interfaces will help deploying applications that in turn will support further development of systems for connecting vehicles with the transport infrastructure. In this respect, other issues with regard to the security of the data exchanged and the protection of private data should be considered. C) ITS systems aimed at improving communication and provision of information between vehicles and infrastructure (Vehicle 2 infrastructure) and between vehicles (Vehicle 2 vehicle)		A) It is legally stipulated that the frequency band for communication between vehicles and the infrastructure will be from 5875 to 5905 MHz (under EU Decision of 5 August 2008).	

3.8 FUNDING INSTRUMENTS

Directive 2010/40/EU on ITS, combined with the prioritisation of funding advanced technological applications offered by European funding instruments such as the NSRF and the Trans-European Transport Network, create a suitable context for the development of ITS in Greece and Europe.

Specifically, funding tools and instruments giving priority to the development and implementation of Intelligent Transport Systems are detailed below:

A key parameter of development regarding Intelligent Transport Systems is that their application to the Trans-European Transport Network (TEN-T) is a key criterion for selection of projects of common interest with a respective financial support. Prioritisation will contribute significantly to the development of effective, efficient and functional European Transport Systems, giving a strong boost to the logistics, freight and passenger transport industries.

Moreover, funding instruments such as the Connecting Europe Facility (CEF) currently being developed, the Cohesion Funds with funding instruments such as INTERREG and South East Europe (SEE), the national NSRF and the European FP7 and Horizon 2020, give priority to ITS actions and applications, making them eligible for financial aid.

Programmes for the development of multimodal transport corridors, such as ITHAKA/EASYWAY providing road/sea interfaces in areas of South Italy, West Greece and the Balkans, promote the use of ITS and accelerate the coordination of actions by adopting Guidelines, providing additional funding for their implementation.

Moreover, Public - Private Partnerships (PPPs) are powerful tools for building transport infrastructure and developing innovative applications.

Making effective use of funding instruments and tools, implementing pilot applications and exchange of good practices will lay the groundwork for the implementation of the proposed national actions.

CHAPTER 4: CONCLUSIONS

1. ITS applications are very effective and profitable, with multiple benefits for society and the economy. It is therefore necessary to be of high priority, especially regarding the use of available resources. The strategic objectives outlined in the policy framework of Intelligent Transport Systems, namely road safety, sustainable mobility with the components of energy saving and environmental protection, conservation of resources, economic development, social cohesion, can be achieved with the development and deployment of ITS. Greece has the expertise and capabilities to develop and deploy Intelligent Transport Systems and has clearly defined priorities.

2. Due to significant deficiencies in infrastructure, traffic signals (electronic or otherwise), non-compliance to road traffic regulations, age of vehicle fleets, scarcity of security measures, sadly Greece ranks first in car accidents, fatal or not, in Europe. There is an urgent need for transport systems to be modernised, so that they provide users with the basic safety requirements. Intelligent Transport Systems combined with investment in transport infrastructure, can solve the problem effectively, producing benefits easily valued at cost, time, human lives.

3. A major challenge nowadays, when investments are limited and it is difficult to obtain funds, is to ensure funding solutions that will pave the way for vital investment and will give further impetus to the development of the country. The Transport Ministers of the EU Member States, in the last meeting of the informal Council, agreed that it is crucial to provide funding and Community resources for the period 2014-2020, mainly through the Connecting Europe Facility for ITS deployment in the Trans-European Transport Network, focusing on the concept of corridors and a multimodal approach. Public-Private Partnerships are also effective means of implementing ITS projects.

4. It is clear that Greece, although missing a large scale industry, has several intelligent system applications, and there is ample scope for implementing solutions, a wide range of companies active in technology and innovation, and awareness of the need for solutions. The scientific human resources of the country are highly-trained to be able to develop and support innovative technological applications and to make efficient use of the expected benefits with the cooperation of institutions and the state. Greece has also experience from pilot projects and programmes in the area of ITS, such as the action He-ero and pilot actions COMPASS 4D, EASYTRIP, SEE-ITS, VIAJEO, and others, which are underway. The creation of an administrative body to deal with the development of ITS is deemed necessary.

5. Due to its particular morphology and great number of islands, the prospect of developing ITS applications for connecting islands and remote areas is an opportunity for Greece to become a pioneer in this field worldwide.

6. These interventions should combine traditional instruments and tools, namely legislative intervention and law enforcement, as well as new, innovative tools that use market mechanisms to achieve their strategic objectives. The goal is to have a proactive, comprehensive and integrated approach in terms of synergy of tools and resources that will guarantee the effective protection and rational use of transport.

7. The pursuit of strategic objectives aims, therefore, at a concurrent and simultaneous mobilisation of all stakeholders in the road and combined transport industry, the central and regional government, the competent agencies on transport, freight operators, logistics operators, governing bodies of organisations, but also research institutes and international organisations for ITS, financial institutions and others, in an open and dynamic enlisting.

8. The issue of open access to public data, which is a key action of the Digital Agenda for Europe, is generally acknowledged by the academic and business sector in Greece and was also widely discussed at the informal Council of Ministers in Cyprus. This will allow free access to traffic data and specifically public transport information, as well as their availability for re-use. The creation of a national database is necessary to subsequently set up a European open data portal, as claimed by the Ministers for Transport of the EU Member States. With a view to implementing the foregoing, it will be necessary to adopt (a) standards for interoperability, (b) measures to address data protection, security, confidentiality and quality.

9. The proposed ITS actions should be expanded, consolidated and implemented on a large scale, so that the expected results (e.g. reducing congestion, fuel consumption and greenhouse gas emissions) produce benefits and have an essential impact on relevant fields.