



ROAD ASSET MANAGEMENT

AN ERF POSITION PAPER FOR MAINTAINING AND IMPROVING A SUSTAINABLE AND EFFICIENT ROAD NETWORK



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Introduction



Roads are one of the major financial community assets and provide large benefits to the society. But, due to poor asset management, many road networks are in danger.

In March 2013, the European Union Road Federation (ERF) published a Manifesto on Road Asset Management (RAM), called 'Keeping Europe Moving – A Manifesto for long-term, effective management of a safe and efficient European road network'.

Together with some essential facts and figures, the Manifesto highlighted the problem of the shortfall in investments all over Europe for the maintenance of the road infrastructure and its dramatic consequences: huge deterioration of the network, higher risks of accidents, problems of congestion, increased noise and a reduced service to society.

The problem is that road infrastructure is often not seen as financial asset for society and the economy, largely due to the lack of awareness of its value. The consequence of not fully valuing these assets is similar to increasing our debt - everyone becomes poorer.

The Manifesto also made some policy recommendations and called on decisions makers at European, national and local level for actions in order to:

- establish a complete inventory of the road network
- conduct regular surveys
- provide sufficient funding for timely maintenance and improvements
- develop a sustainable road's policy and invest in research and innovation
- implement at all levels coherent and balanced policies for the preservation of the road asset.

This Position Paper represents the logical development of the ERF Road Asset Management Manifesto and provides a more detailed explanation of the Road Asset Management principles and solutions.

ERF is convinced that Road Asset Management solutions contribute to achieving sustainable and effective management of a safe and efficient road network. As citizens, road users and tax payers, we don't want to see this huge community asset lose its value and level of service.

This is why we want to encourage all decision makers and main stakeholders to adopt the RAM principles in their daily activities for the preservation and improvement of the road network that the road users expect and deserve.

Stefan Gerwens
Chairman of the ERF RAM Working Group

1 http://www.erf.be/images/Road_Asset_Management_A_manifesto_to_keep_Europe_moving.pdf

KEY MESSAGES



1. Roads provide large benefits to the society

They ensure mobility, access to social life and enable integration. Roads are the core of an integrated transport system and their performance is essential for all citizens in terms of quality of life, economic competitiveness and sustainable development.

2. Roads are a huge financial public asset

In many countries, road infrastructure is the most important of all public assets. The European road network consists of **5.5 million Km** and according to ERF it represents an estimated value of over **€ 8,000 billion**, managed under local, regional and national responsibility.

3. Our roads are in danger

Lack of information and political awareness on the importance of sufficient investments for the maintenance of the road infrastructure lead to its chronic underfinancing and deterioration. As a consequence it can no more offer the required level of service and loses its value.

4. Roads require sustainable funding and spending

In any economic situation we should be aware of the importance of spending money in a very efficient and responsible way today and in the future. This requires the implementation of innovative approaches.

5. Road Asset Management (RAM) offers a solution

Road Asset Management provides decision makers with the necessary tools for efficient and sustainable management of roads. The process goes through the following steps:

- Establish a complete inventory of all road network with all its elements
- Provide a clear picture of the current condition/performance of the road network
- Estimate the value of the asset
- Predict future demand of traffic and service needs
- Estimate maintenance needs and costs
- Prioritise objectives related to the desired quality and performance of the road network
- Set up funding scenarios for the regular and timely maintenance and upgrade of the road asset
- Define a strategy (RAM Plan)
- Implement the RAM Plan

Road Asset Management is a permanent process!

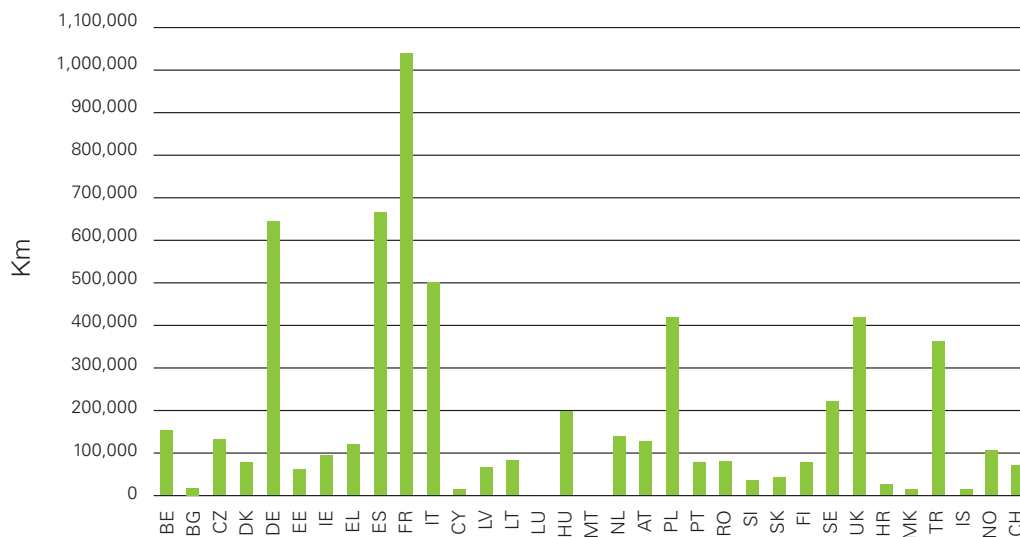
1. Roads: a huge asset which provides large benefits to the society



Infrastructure, especially the road network, keeps Europe running. Roads ensure mobility – in your neighbourhood, your municipality, the region or beyond – and enable much more. The quality of the road network affects almost everybody in daily life. Therefore users, residents, consumers, employees, businessmen or taxpayers, we all should care that roads are managed efficiently and are able to deliver good service to society.

The European Road Network consists of a multiplex of networks that range from the Trans European Network (TEN), to national (motorway and trunk) roads, to regional roads and, finally, to local roads. From the latest ERF statistics the total length of the European road network consists of more than 5 million Km. 66.700 Km are classified as motorways.

Length of total road network by country – 2010 – Source ERF European Road Statistics 2013



1.1 Services for all

We may be accustomed to find newspapers or a bottle of milk in front of the door in the morning. Kids are going to school by bike or bus. Many of us will use the car on our way to work, for shopping, visiting friends or holidays. Roads deliver services to all, even those who are staying at home, waiting for mail, e-commerce-delivery or nursing services and ambulance.

Expectations for personal mobility have grown in the past and will still do in the future. Today more than 80 % of motorised inland passenger transport is using the road – not taking into account cycling and walking. Moreover, public transport and the access to other transport modes are highly depending on roads. With very minor exceptions, every passenger or freight transport using other modes has to use the road, on or from the way to stations, terminals, airports and ports. With so much freight and personal business movement depending on the road networks, our daily life would literally be hampered without them.

OECD/ International Transport Forum:
Declaration of Ministers' Summit 2013:
"Transport infrastructure is much more than asphalt, concrete or steel; it is the backbone of national economies, providing connections for people and goods, access to jobs and services, and enabling trade and economic growth."

Roads are a major pillar of competitiveness

Transport Infrastructure is an essential factor for the competitiveness of economies and regions. Time, reliability and costs of transport have an impact on productivity. On-time delivery and free traffic flow, without congestion hinder are essential factors. The reason for congestion may not only be a lack of capacity; increasing backlogs in maintenance can generate the necessity of urgent, unplanned actions which can create major hinders, like the closing of bridges to heavy good vehicle traffic for months or years.

In its yearly Global Competitive Report the World Economic Forum (WEF) is ranking countries assessing the attractiveness of economies for investors. The report compares indicators such as the quality of transport infrastructure. The edition 2012/2013 clearly stated: “Effective modes of transport — including quality roads, railroads, ports, and air transport — enable entrepreneurs to get their goods and services to market in a secure and timely manner and facilitate the movement of workers to the most suitable jobs”². Recent reports show that the quality of infrastructure is an advantage for some European economies while others lack behind. Furthermore we can observe the impact of the different road infrastructure policies. Some national, regional or local authorities have improved significantly, while others have neglected their responsibility and are experiencing major problems.

Roads contribute to market integration

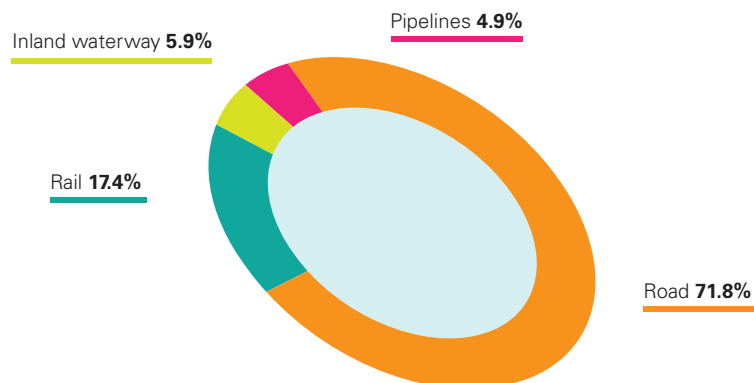
European Union’s development and enlarging during the last decades were based on mobility. The European Union, Member States, regions and municipalities invested in transport infrastructure to improve access, reliability and safety and to lower negative effects of transport on people and environment. With a total of over 5 million km, the EU road network constitutes one of Europe’s largest community assets.

Trade is the heart of the Internal Market within the European Union. Not only national economies, but also regions, cities and villages benefit from closer cooperation of their companies and a higher level of growth. Without logistics, transport and its infrastructure Europe would not benefit so much from being one unique business area.

More than 70% of all inland freight transport in the European Union is carried for all or part of its journey on roads.

Three million people are working in the sector, far more in logistics. Logistic managers rely on road transport, because it is flexible, fast (overnight), secure (freight is accompanied by a driver) and easy to trace and track. Roads enabled the European Union to manage the widening of the Internal Market towards CEEC and to activate trade within the EU-28. Roads are the core of our transport network, ensuring access to everybody, everywhere and even to every other transport mode.

Inland transport modal split in EU-27 – 2011 (% of tkm) – Source ERF European Road Statistics 2013



² WEF, ... page 21. Furthermore: “Well-developed infrastructure reduces the effect of distance between regions, integrating the national market and connecting it at low cost to markets in other countries and regions. In addition, the quality and extensiveness of infrastructure networks significantly impact economic growth and reduce income inequalities and poverty in a variety of ways.”

1.2 Roads as an asset

From a pure economic point of view spending in new or existing roads is an investment in the capital stock of our society. Investing in schools is required to educate people; similarly, investing in transport infrastructure is necessary to enable production and trade of goods and services as well as to provide citizens with mobility.

Chronic underfunding and lack of maintenance can very quickly jeopardise this huge asset, which has been built at great expense and effort in the last decades. Roads like buildings need to be maintained and have their own service life, which can be prolonged efficiently if the timely corrective action is taken in an appropriate way. We are now experiencing a critical point in time, where a continuation of status quo may entail a situation where our network is damaged beyond normal maintenance requirements and as such, would incur very costly actions to repair in the future and maybe even a permanent and irreversible partial loss of this important asset.

There is little information about the asset of roads. Only some Member States publish statistics; moreover these statistics differ from one country to another (different definitions, different modes for calculating the value and the depreciation).

According to an ERF estimation the **value of reconstruction** of the entire European road network is worth over **€ 8,000 billion!** These figures refer to the new construction of the road network and are called 'replacement value'.

Another indicator is the **value of time**, which represents the value of the road at the current time. The difference comes from the depreciation of the value over the lifecycle of a road, reflecting the decreasing condition. A growing gap between value of time and replacement value is a clear signal for an ageing infrastructure and for high requirement for replacement and maintenance.



Asset of the German road network

In 2012 the value of time of the road asset in Germany decreased. Value of local and rural roads had started to fall in 2004, but now the investment in motorways and national road is no longer sufficient to compensate losses in the other parts of the network.

Source: Deutsches Institut für Wirtschaftsforschung 2013³

³ Deutsches Institut für Wirtschaftsforschung, Verkehr in Zahlen, published by the Federal Ministry of Transport, Construction and Urban Planning, 2013.

1.3 Trends and impact on the infrastructure investments

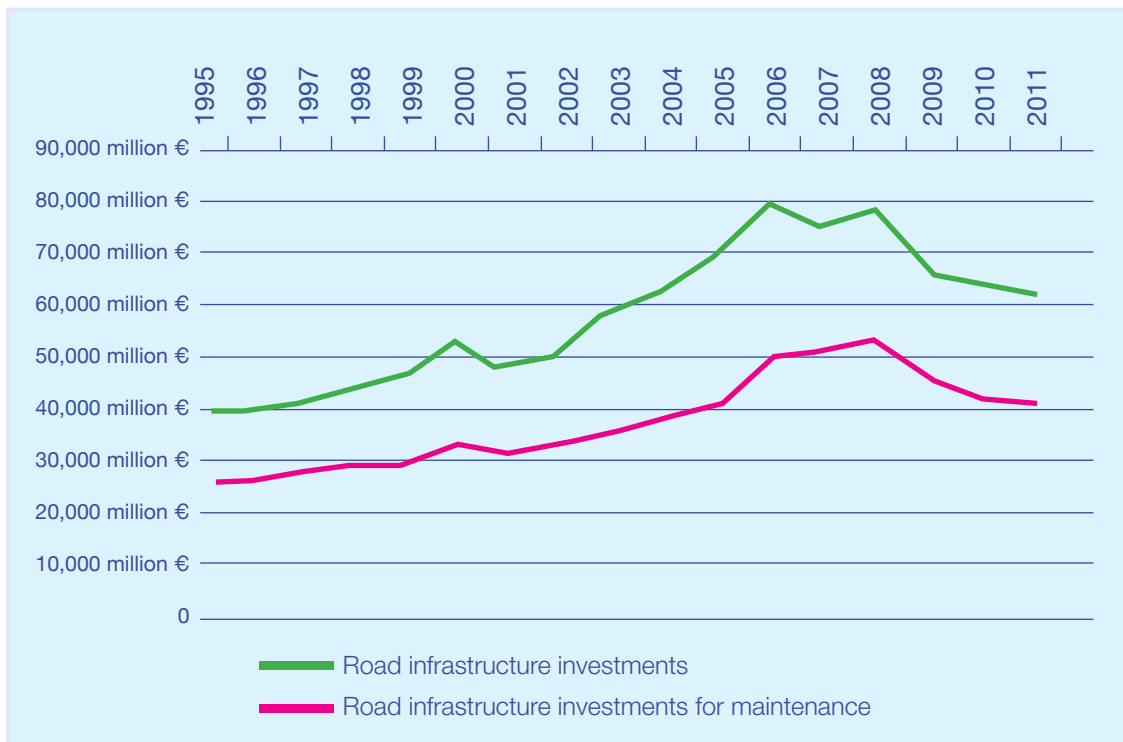
Like any physical asset, road infrastructure needs to be regularly taken care of, maintained, upgraded and renewed in order to keep on providing the citizens with the level of service they are entitled to expect and maintaining its value for society.

This requires investing regularly in the infrastructure. However, according to data (source OECD Stats), if we look at the following tables we can see that:

- In absolute values, (without considering increasing costs for road works) the amount of money invested in the road infrastructure in a selected number of EU countries has started to decline significantly since 2008
- The amount of money invested for maintenance of the road infrastructure has decreased in a similar way

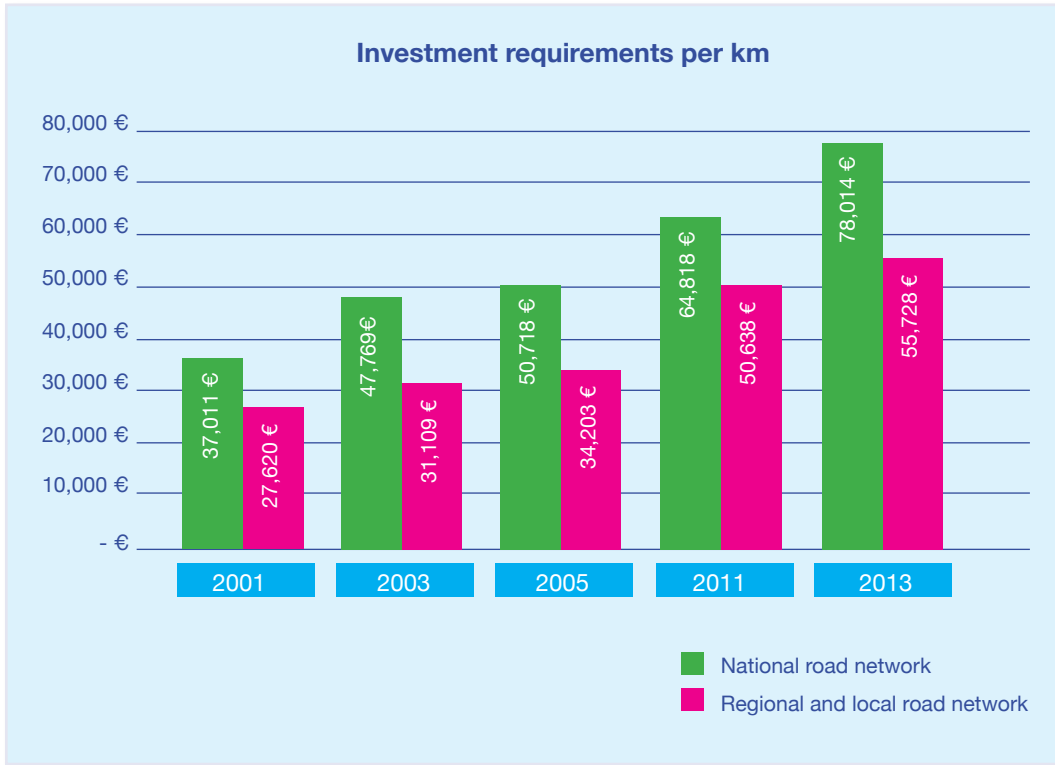
The combination of this trend in infrastructure investments (particularly in maintenance) with the fact that many European road infrastructures have now reached a critical age, as well as the constant evolution of road traffic, could lead to an irreversible decline of the quality and service levels that roads are supposed to offer, together with a dramatic loss of value of this essential societal asset.

Evolution of Road Infrastructure Investments and Road Maintenance Investments in a selection of Western European Countries*



* Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Sweden and United Kingdom

A survey carried out in Spain shows that the lack of maintenance investment on national, regional and local roads has led to a situation where the investments requirements per km have increased dramatically.



INFORME-NECESIDADES-DE-INVERSION-EN-CONSERVACION-ABRIL-2014.pdf - Source A.E.C.

Consequence of delaying road maintenance⁴

The table below shows that vehicle operating costs increase exponentially as the condition of the road deteriorates.



⁴ Source SABITA, Advancing the public interest: Why you need to maintain surfaced roads, Cape Town, 2012

2. From short-term spending to Road Asset Management

Road networks are managed in different ways. Most are under the responsibility of authorities, in charge of planning, construction, supervision, operation, maintenance and road safety. They are working with annual budgets generally decided by Parliaments. Just a few road authorities have the chance to optimise their spending on multi-annual basis, although it would help to ensuring standards at significantly lower costs, and to establishing a transparent decision process enabling a close communication between road authorities, politicians and the citizens.

2.1 The traditional approach

Traditional budgeting is thinking in spending from year to year. It allows politicians to react by changing priorities annually. But this procedure has its limits when we talk about efficient infrastructure management, and particularly maintenance. It often takes years before the consequences of investments decisions become visible to the public – which is longer than the standard duration of a legislative period. This traditional approach provides little transparency and short term spending process.

Disadvantages:

- In annual budgeting, money is not spent in infrastructure when the infrastructure needs it most, but when it is available.
- Maintenance and Management Costs of infrastructure are not optimised over the life-time of the roads.

Due to the lack of reliable data on the condition of the roads and the absence of a sound based calculation on future mid- and long- term investment requirements, it is difficult to make the decisions necessary to properly maintain the infrastructure. And it's even more challenging to integrate other political objectives like noise reduction and road safety.

Insufficient maintenance can no doubt generate deterioration of infrastructure but also increases the safety risks for road users. According to a study recently published in the USA by the Pacific Institute of Research and Evaluation entitled 'On a crash course: the dangers and healthcare costs of deficient roadway conditions'⁵, more than half of U.S. highway fatalities are related to deficient roadway conditions – a substantially more lethal factor than drunk driving, speeding or non-use of safety belts.

The US example: MAP-21*

MAP-21, the Moving Ahead for Progress in the 21st Century Act (P.L. 112-141), was signed into law by President Obama on July 6, 2012. Funding surface transportation programs at over \$105 billion for fiscal years (FY) 2013 and 2014, MAP-21 is the first long-term highway authorization enacted since 2005.

MAP-21 is a milestone for the U.S. economy and the Nation's surface transportation program. By transforming the policy and programmatic framework for investments to guide the system's growth and development, MAP-21 creates a streamlined and performance-based surface transportation program.

MAP 21 defines asset management as a strategic and systematic process of operating, maintaining, and improving physical assets, with a focus on engineering and economic analysis based upon quality information, to identify a structured sequence of maintenance, preservation, repair, rehabilitation, and replacement actions that will achieve and sustain a desired state of good repair over the lifecycle of the assets at minimum practicable cost.

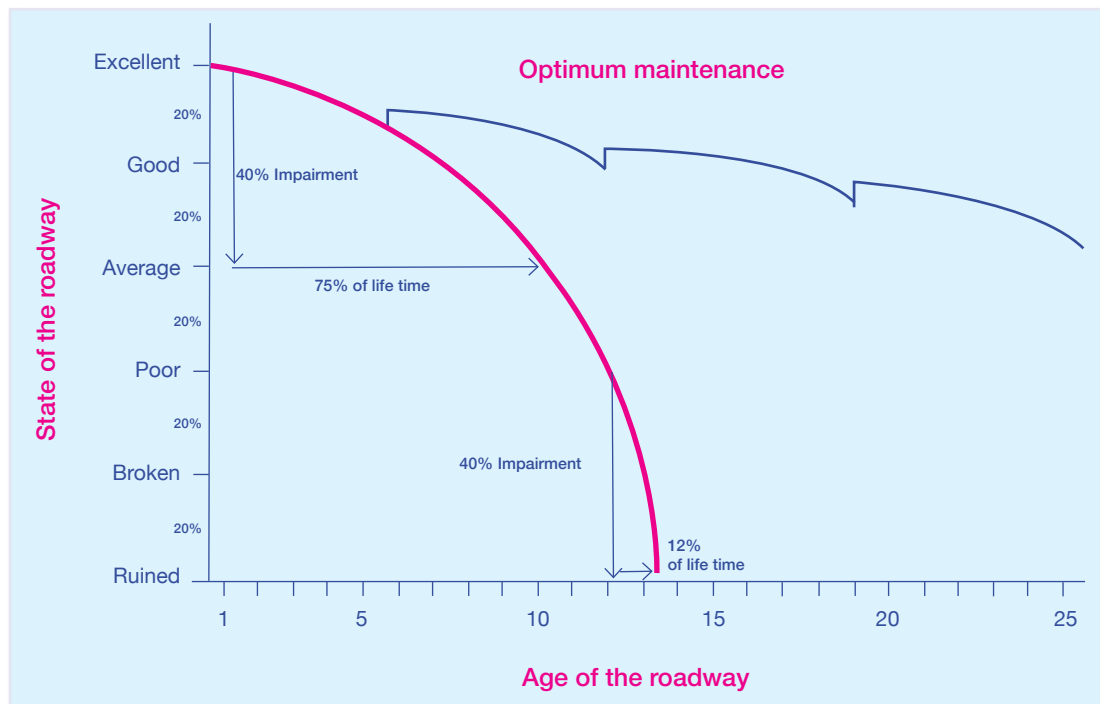
Source: <http://www.fhwa.dot.gov/asset/plans.cfm>

⁵ On a crash course: the dangers and healthcare costs of deficient roadway conditions, Ted R. Miller and Eduard Zaloshnja, a study by the Pacific Institute for research and evaluation, May 2009. (www.artba.org/mediafiles/pirestudy.pdf).

* <http://www.gpo.gov/fdsys/pkg/BILLS-112hr4348enr/pdf/BILLS-112hr4348enr.pdf>

2.2 The preventive approach

The preventive approach offers advantages regarding cost-efficiency, road safety or noise reduction. It is beneficial to public spending, because the costs of preserving a good quality network are optimised in the long run. The following diagram demonstrates that, by committing regular funding and taking regular action, the total cost is significantly less than waiting for major decline in standards.



Preventive maintenance has to be explained well, in particular the fact that roads require maintenance, although they might seem to be in a good condition. To achieve this, reliable figures and data related to the condition of the roads and costs of different measures are necessary. A common understanding on objectives and strategies in infrastructure policy is required.

In most countries, regions and municipalities, this is not the case. Only some authorities have already established a register of the elements of their road infrastructure and their condition. Other are more advanced and have a precise picture of their road asset, its depreciation, and consequently their maintenance objectives, as well as short and long term strategies, are more clearly defined.

2.3 The strategic approach - Road Asset Management

Maintenance and modernisation are the key issues of Road Asset Management. **It is a systematic and permanent process** aiming at cost effective maintenance, upgrading and operation of physical assets. Asset Management combines engineering disciplines with solid business practices and financial theories. In this way, Road Asset Management can help achieve sustainable and effective management of a safe and efficient road network.

In the PIARC TC 6 Report, Asset Management is defined as: “A systematic process of maintaining, upgrading and operating assets, combining engineering principles with sound business practice and economic rationale, and providing tools to facilitate a more organised and flexible approach to making the decisions necessary to achieve the public’s expectations.”⁶

⁶ Asset Management Practice, Comité technique AIPCR C4.1 Gestion du patrimoine routier, PIARC Technical Committee C4.1 Management of road infrastructure assets, 2008 ISBN 2-84060-211-3

The primary goal of Road Asset Management is to think, plan and act on the basis of long-term decisions aiming at optimising maintenance while keeping costs at a minimum and contributing to other political objectives while modernising the network.

Basic common RAM requirements are⁷:

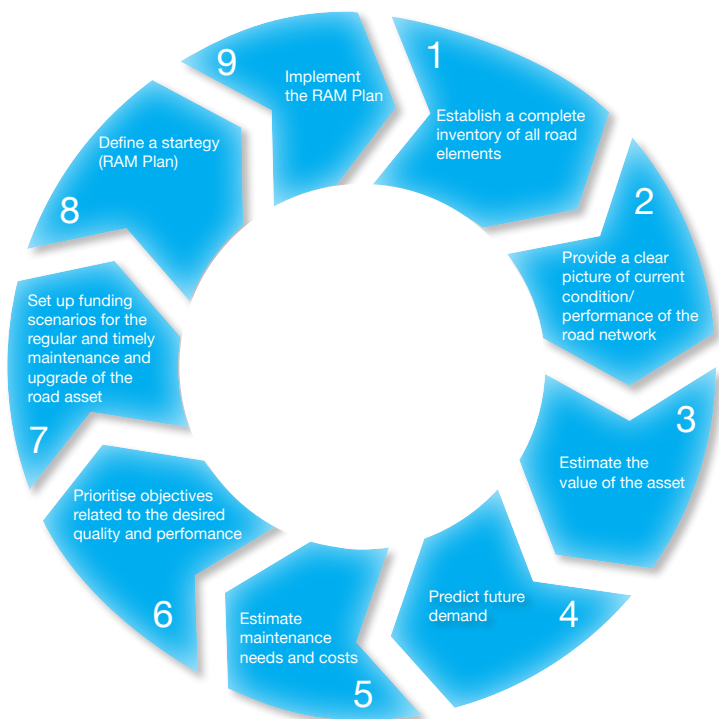
- Establish a complete inventory of all road network with all its elements
- Provide a clear picture of the current condition/performance of the road network
- Estimate the value of the asset
- Predict future demand of traffic and service needs
- Estimate maintenance needs and costs
- Prioritise objectives related to the desired quality and performance of the road network
- Set up funding scenarios for the regular and timely maintenance and upgrade of the road asset
- Define a strategy (RAM Plan)
- Implement the RAM Plan

This process is permanent.

Road Asset Management is beneficial for several reasons:

- Getting sound knowledge leads to better decisions
- Contributing to simpler and fairer prioritisation
- Ensuring that you get the best value out of the money spent on infrastructure
- Obtaining better and safer roads for every Euro spent
- Preserving the asset for future generations

By using the RAM methodology, the Norwegian municipality of Larvik found out they were losing € 2,000 EUR a day – by not maintaining their road network!



⁷ Depending on the network characteristics (local, regional, interurban, international...) the design of RAM may be different.

3. Start with the process



Infrastructure is ageing due to use and time. It requires maintenance, renewal and modernisation, which depend on specific needs and life time of each part of the asset. An inventory stating the condition of each asset, values and maintenance needs are the basics for an effective management, for political decision making and for transparency towards the community.

3.1 Full inventory

An inventory of roads is a prerequisite for improving the quality of the network in an efficient way. It should contain all the roads elements including historical data on construction and use. It should also be updated regularly.

Visually the condition of many roads may superficially be satisfactory. However, only in a few Member States political decisions on investment and network management are accompanied by any sort of quality survey data. In those Member States, the results are alarming:

- In the UK an annual survey of the local road network indicated that the build-up of outstanding road maintenance is valued at several billions of Euros, with deterioration in the network clearly evident and leading to significant claims from users for damages to person and property⁸.
- In Germany the proportion of motorway bridges which need action soon has increased from 36 to 46 % during the last decade. For example, from December 2012 to March 2013 one of the most used bridges (A1 Leverkusen) had to be closed to lorries above 3.5 tons. Social costs, caused by losses of time and additional fuel consumption, were estimated to reach 80 million euros.



A1 Leverkusen bridge - Source: Pro Mobilitaet

⁸ Annual Local Authority Road Maintenance (ALARM), AIA, published by HMPR limited, 14 March 2013 (http://www.asphaltindustryalliance.com/images/library/files/Alarm%20Survey%202013/ALARM_Survey_2013.pdf)

A road asset management system has to fit to the infrastructure which is managed. For example, in the case of urban roads, elements related to the management of public transport services, energy, water and telecommunication have to be taken into consideration. This might not be relevant for motorways. Nevertheless, the RAM strategic approach applies in all cases.

The table hereunder displays different elements of the road infrastructure that are considered in the establishment of the inventory.

Assets of a public (urban) road network		
Road	Equipment	Structures
<ul style="list-style-type: none"> • Asphalt lanes • Walking path • Parking area • Bicycle roads • Gravel roads • Curbs • Cobblestones • Shoulders • Ditches • Bus bays • Verges • Speed bumps • ... 	<ul style="list-style-type: none"> • Drainage • Signs • Markings • Street lighting • Crash barriers • Urban furniture • ... 	<ul style="list-style-type: none"> • Bridges • Tunnels • Ports • Playgrounds • Underpasses • Parks • Galleries • Noise barriers • ...

Source: DECISION AND PROCESSING TOOL FOR ROAD ASSET MANAGEMENT, Hanne W. Narvestad, Grontmij Pavement Consultants

3.2 Evaluate/calculate the asset

In order to make right decisions in prioritising investments, authorities need to estimate the value and condition of their road asset. When they do so, they often discover that roads are their biggest asset in infrastructure.

Of course values may significantly differ from one place to the other due to:

- price level (different costs of labour, raw material...)
- density of population (ground, noise avoidance)
- environmental aspects
- topography (tunnels, bridges)
- technical characteristics (number of lanes, equipment, ...)
- method of calculation (depreciation, replacement value...)

Case study - Department of Essonne (91) - FRANCE

In 2006, the Central State transferred the responsibility of approx. 250 km of roads to the Department of Essonne (91) in France.

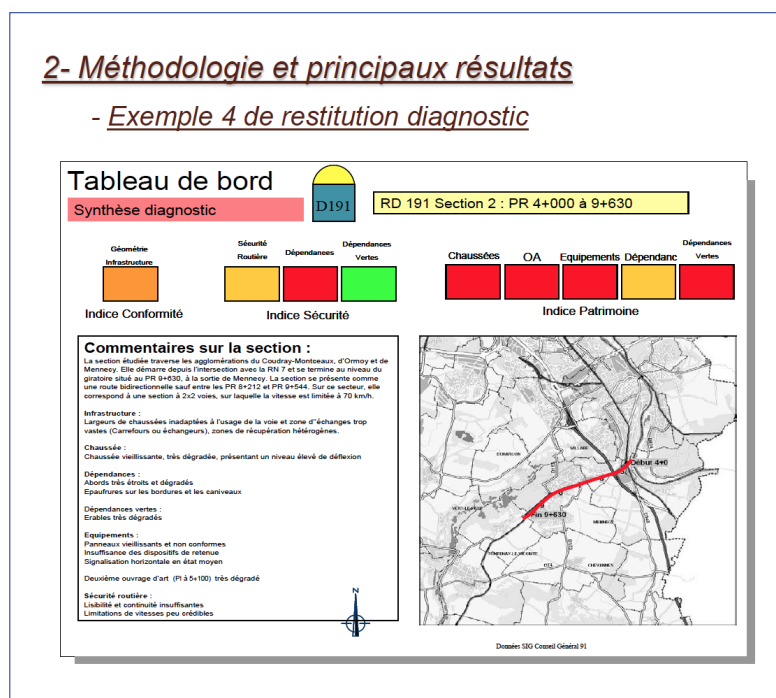
The Department appointed the company 'Technologies Nouvelles' for providing them with an exhaustive analysis and inventory of this network (including road surfaces, bridges, equipment, dependences, safety condition...) in order to have a tool allowing them to make the necessary decisions related to the ideal programming for the maintenance, preservation and modernisation of this road asset.

The study carried out by 'Technologies Nouvelles' consisted in different phases:

- full inventory and data collection on all the road elements
- diagnosis on the condition of the network according to 3 major indexes:
 - Conformity Index
 - Safety Index
 - Asset Index

with ranking of current condition (good / average / insufficient)

'Technologies Nouvelles' provided the Department of Essonne with a tool assisting them for the prioritisation and the programming of the works to be undertaken, taking into account conformity, safety and asset criteria on short, middle and long term.



Example of delivered diagnosis

It also defined the types of intervention to be carried out, costs estimations and financing tools.

2- Méthodologie et principaux résultats

- Phase 3 : aide à la programmation

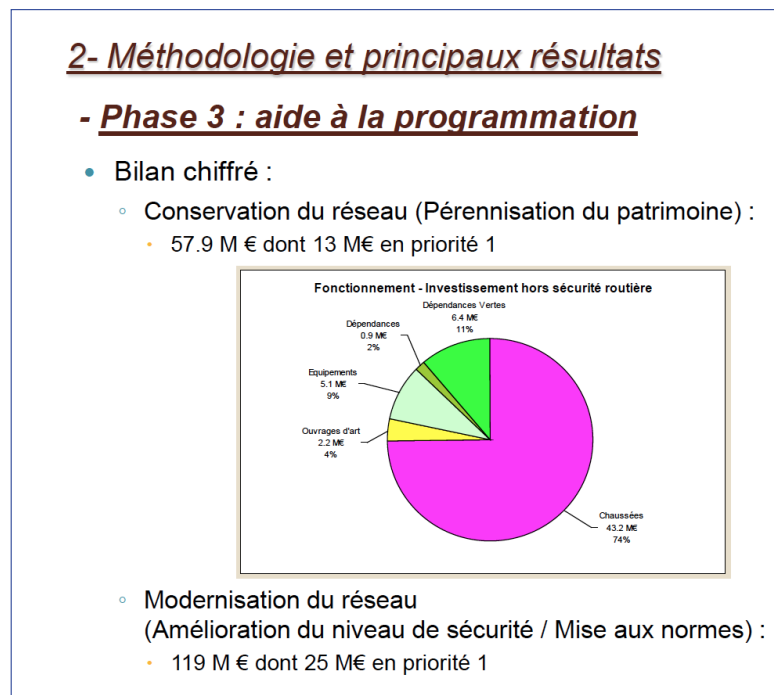
										Thématiques				
										13.0 ME		0.6 ME	0.1 ME	0.7 ME
										Sécurité Routière		Equipements	Dépendances	Dépendances vertes
										F	I	F	F	Total
ROUTE	PRD	ABD	PRF	ABF	Trafic (TMJA)	IP	IS	Priorités						
D191	5	100	6	650	10 650	3	2	-	-	1 959 000 €	-	14 880 €	5 832 €	-
D191	21	100	22	300	5 370	3	3	-	-	960 400 €	-	11 520 €	846 €	2 778 €
D191	8	200	9	630	14 190	3	2	67 000 €	2	502 300 €	502 300 €	11 760 €	4 788 €	25 220 €
D191	6	650	8	200	11 540	2	2	74 200 €	2	92 700 €	92 700 €	14 880 €	7 938 €	-
D191	4	0	5	100	10 650	3	2	52 600 €	2	1 894 500 €	-	9 744 €	4 059 €	-
D191	17	465	21	100	8 620	3	2	-	-	1 521 800 €	-	34 981 €	12 450 €	26 626 €
D191	22	300	24	185	5 370	3	2	-	-	180 400 €	-	20 358 €	1 857 €	5 120 €
D191	24	185	25	260	4 100	3	2	51 400 €	2	299 000 €	-	14 070 €	4 035 €	-
D191	27	770	33	550	4 100	3	2	103 700 €	2	848 700 €	-	74 400 €	8 046 €	39 550 €
D191	33	650	37	550	12 190	2	2	-	-	1 321 800 €	-	69 402 €	15 510 €	107 730 €
D191	25	260	27	50	3 550	1	2	32 100 €	2	171 300 €	-	21 852 €	1 134 €	56 520 €
D191	27	50	27	770	3 550	1	2	34 400 €	2	239 200 €	-	6 048 €	2 568 €	-
D191	9	630	17	485	10 120	2	1	141 100 €	2	752 500 €	-	97 176 €	15 150 €	181 701 €
D191	37	550	53	781	7 100	2	1	291 100 €	1	1 552 400 €	-	201 000 €	11 190 €	261 526 €
D191	0	0	0	185	10 650	1	1	7 900 €	1	-	-	1 380 €	891 €	-

Localisation des sections

Coûts

Example of table of intervention programming table with prioritisation and costs related

The final delivery included a complete quantified assessment, both strategic and operational, for the preservation, the adaptation and the modernisation of the road network asset of the Department.



Example of quantified assessment for the preservation and the modernisation of the network

4. Develop the process by incorporating decisive criteria

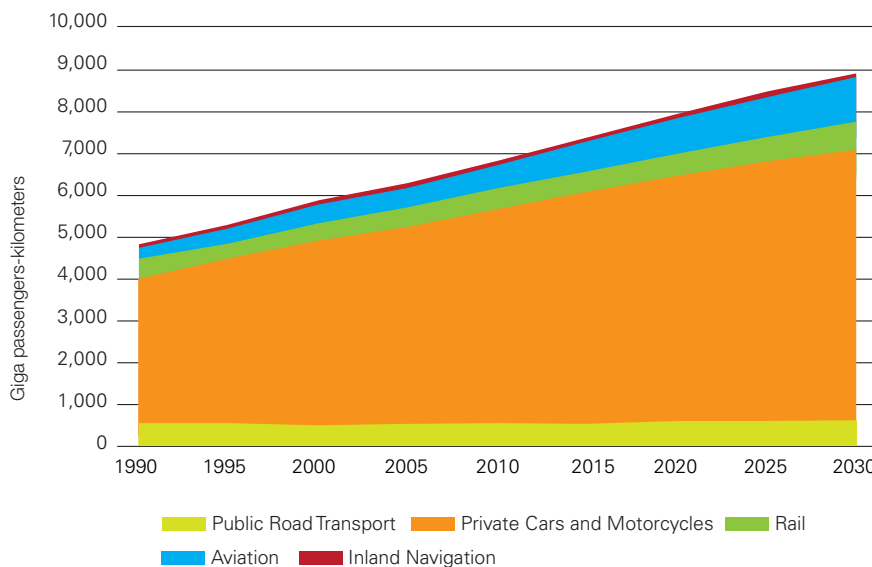


RAM has to consider that the quality of roads is influencing some other political objectives, which have to be reflected in the set of actions. When developing the process in further steps (see table page 14) you have to fix a set of objectives and prioritising them. RAM should identify and prioritise measures and their contribution to specific objectives like:

4.1 Accessibility and Mobility

- Efficient handling of traffic evolution (avoiding congestion)
The future trends in traffic demand have to be considered (see table below)
- Enabling changing patterns in mobility (co-modality, multi-modal approach)
Roads must maintain their essential role in the global future transport framework
- Urban concentration
Roads must address the new intra- and inter- urban mobility challenges
- Avoid mitigation
Regions with decreasing populations should be able to afford basic infrastructure

Trends and outlooks in passenger transport demand for the different modes of transport in EU-25 - 1990-2030 – Source ERF European Road Statistics 2013



4.2 Safety

- Road Surface
As the major interaction between the vehicle and the road, the surface must provide high quality level (friction, no cracks or potholes)
- Markings and road signs
It is essential that markings and road signs are kept to a minimum performance level and are therefore timely renewed or replaced
- Road restraint systems
These important life saving devices must be properly selected, installed and maintained
- Vulnerable road users & ageing population
The infrastructure must adapt to the specific needs and requirement of these particular road users
- Forgiving roads

A forgiving road is a road that gives the driver plenty of opportunity to recover from mistakes so as to avoid a crash, or a road that ensures that when a mistake is made, it does not result in a fatal and serious injury crash. An appropriate investment in road infrastructure contributes to make roads more forgiving

4.3 Noise

- Road Surface
The noise aspect should be considered in the road surface maintenance and improvement process
- Noise reducing devices and systems
In some cases the installation of noise reducing devices must be considered as an additional requirement

4.4 Environmental impact

- Reduce emissions
Very often delayed maintenance causes urgent interventions which can generate traffic congestion, and therefore increased CO2 emissions
- Sustainable infrastructure
The road industry can provide more sustainable solutions and techniques (recycling, local raw material supplies, durability, climate resilient materials...)

4.5 New developments

- Intelligent Transport Systems (ITS)
The infrastructure must accompany the development of the new intelligent transport technologies (vehicle to vehicle (V2V) and vehicle to infrastructure (V2I) systems...)
- New vehicles
Road infrastructure must provide the required equipment for new types of vehicles (loading stations...)

4.6 Sustainable funding

- Life cycle approach
The process of fund allocation for the maintenance and improvement of the road infrastructure must take into account the whole road life cycle
- Usage Cost
Poorly maintained roads will also result in increased costs for taxpayers, users (accidents, damages to vehicles and the use of more fuel) and consumers (e.g. increased transport costs of goods)

5. Conclusions and Next Steps



There is a huge backlog with regard to road maintenance all over Europe. It has several reasons:

- A lack of information among decisions makers and road authorities about the condition and the value of the road infrastructure
- Underestimating the economic impact of delayed maintenance and preservation of the roads
- Political decisions are more often made on short term basis, whereas a road's life cycle develops over longer periods (no long term strategy)
- Investing in road infrastructure is not seen as a “vote winner” (as most effects are not visible within a mandate period)

Overcoming the backlog and implementing Road Asset Management (RAM) benefit the whole society by:

- Improving decision making with better data and providing transparency to all stakeholders
- Ensuring mobility and its benefits to society in the long run
- Preserving a quality of roads contributing to all relevant objectives of society
- Managing your network in a highly efficient way according to your objectives, strategies and priorities
- Ensuring that the preservation of this huge financial asset is preserved for the future generations

What can you do to contribute to better roads and sustainable road management?

As a decision maker

- Recognize roads as an asset for the society
- Take initiatives to implement Road Asset Management, including objectives, financial framework and strategies
- Support road authorities by providing necessary funding for timely and sufficient maintenance and improvement of the roads
- Communicate to all the stakeholders (road authorities, citizens, road users...)

As a road authority

- Start establishing an inventory of your road infrastructure and conducting regular surveys
- Ensure transparency in the implementation of the RAM process
- Convince politicians of the benefits of RAM to the community
- Implement the process on a regular basis

As a citizen

- As a citizen and a tax payer you deserve a road infrastructure that brings you the expected level of mobility, safety and service
- Make your voice heard and put pressure on decisions makers for maintaining and improving the road as an asset and a public utility
- Ensure that roads are systematically considered as a priority by all the concerned stakeholders

Bibliography

AEC, Necesidades de inversión en conservación, Madrid, 2014

American Association of State Highway and Transportation Officials, National Cooperative Highway Research Program Report Number 20-24(11), Transportation Asset Management Guide, Washington DC, 2002

Bavarian Building Authority, Maintenance management for Bavarian roads, Munich, 2011

Department for Transport, Well-Maintained Highways: Code of Practice for Highway Maintenance Management, London, 2005

ERF, Manifiesto Keep Europe Moving, Brussels, 2013

ERF, European Road Statistics 2013, Brussels, 2014

Federal Highway Administration, Transportation Asset Management in Australia, Canada, England, and New Zealand, (FHWA-PL-05-019), Washington DC, 2005

Federal Highway Administration U.S. Department of Transportation, Asset Management Overview, Washington DC, 2007

International Transport Forum, Declaration from Ministers on Funding Transport 2013, Annual Summit, Leipzig, 2013

International Transport Forum, Discussion Paper "Road Asset Management", Paris, 2013

International Transport Forum, (Statistics on Investment), Paris, 2013

International Transport Forum, Task Force Report "Understanding the Value of Transport Infrastructure: Guidelines for Macro-Level Measurement of Spending and Assets", Paris, 2013

PIARC, Asset Management Practice, Technical Committee C4.1 Management of road infrastructure assets, Paris, 2008

SABITA, Advancing the public interest: Why you need to maintain surfaced roads, Cape Town, 2012

About the Authors

The European Union Road Federation (ERF) is a non-profit European association representing private and public entities linked to road infrastructure. It acts as a European platform for dialogue, expressing the road sector's ideas and opinions on mobility issues and promotes research into viable, efficient and sustainable transport. The current Position Paper has been elaborated by the ERF Working Group on Road Asset Management.

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