ASECAP
Association Européenne des Concessionnaires d'Autoroutes et d'Ouvrages à Péage

ASECAP Sustainability Report

Toll Road Operators strongly committed to safe, sustainable and smart mobility

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1. Introductory statement

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We are facing common GLOBAL challenges, starting with the recovery from COVID-19, which is still impacting the economy in Europe. The conflict between Ukraine and Russia has also had harsh consequences: an increase in energy costs, slower economic growth and rising inflation, just to mention a few. On top of that, we have the Climate policy, which must remain one of our highest priorities.

The consequences of climate change have been severe for the planet, as we are witnessing once again this year: overfloods, tsunamis, storms, tornados, and forest fires… taking lives and causing enormous economic, financial and social damage. These weather phenomena will worsen and become more frequent if we do not collectively change our behaviour in our daily lives.

The European Green Deal reaffirms the Commission's ambition to make Europe the first climate-neutral continent by 2050. The Paris Agreement adopted in 2015 sets out a global framework to avoid dangerous climate change's impacts by limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C. These objectives have been reaffirmed in the SDGs goals of the United Nations. We are aware that from the time being, road transport is one of the highest producers of greenhouse gases. So, there is a priority to find solutions aiming at reducing the CO2 emissions generated by road transport.

Achieving a climate neutral continent will require the full mobilisation of industry stakeholders and toll motorway operators are definitely committed to make actions to reach the target of making our infrastructure carbon-free.

Our first sustainability report, published in 2014, highlighted the social value of motorway infrastructures, and underlined the commitment of ASECAP members to an integrated, efficient, and sustainable road transport network in Europe. It showed the fundamental role of the toll system, based on the user pays principle, with the cost directly borne by the road user. The toll is therefore a resource clearly earmarked for the investments needed to maintain motorways and adapt them to face the evolution required.

The present report is the result of a flagship initiative on sustainability that was launched by Massimo Schintu, 2021 ASECAP President. The ASECAP sustainability initiative aims to illustrate how the toll motorway sector can bring its contribution to economic development, road safety, environment, and growth and measure KPIs for the progress made to reach the commitments targeted.

The projects, initiatives and KPI data outlined in the report will show that the toll motorway sector is – and will remain – a key partner that is already strongly committed to working towards a carbon-free, safe and smart mobility in order to align with the UN Sustainable Development Goals (SDGs), the EU Green Deal objectives, the Vision Zero fatality for road society, safeguard of biodiversity and to bring its contribution to building a more inclusive society.

2. ASECAP highlights

2.1 Who we are and what we do

The European Road network represents the backbone of efficient movement of goods and people around Europe. It is built, operated, maintained, and repaired with a long-term vision that ensures that the highest quality standards are reached. **ASECAP – *Association Européenne des Concessionnaires d'Autoroutes et d'ouvrages à Péage*** – is the **European Association of Operators of Toll Road Infrastructures.** The ASECAP network comprises more than 82,000 km of toll motorways, bridges and tunnels across 19 member countries and managed by 128 companies.

ASECAP's purpose is to defend and develop the system of motorways and road infrastructures in Europe applying tolls – the user/pay model principle - as a powerful tool to ensure the financing of their construction, maintenance and operation.

Moreover, ASECAP exchanges among its members experience, technical expertise, best practices and information regarding the construction, financing, maintenance, operation and improvement of toll infrastructures, and promotes and organises annual conferences and webinars for its members on technical, administrative and financial issues aimed at the deployment of efficient traffic management, providing to the end users a high-quality road service at an appropriate cost. For that purpose, it also collects technical and statistical data and participates in select projects.

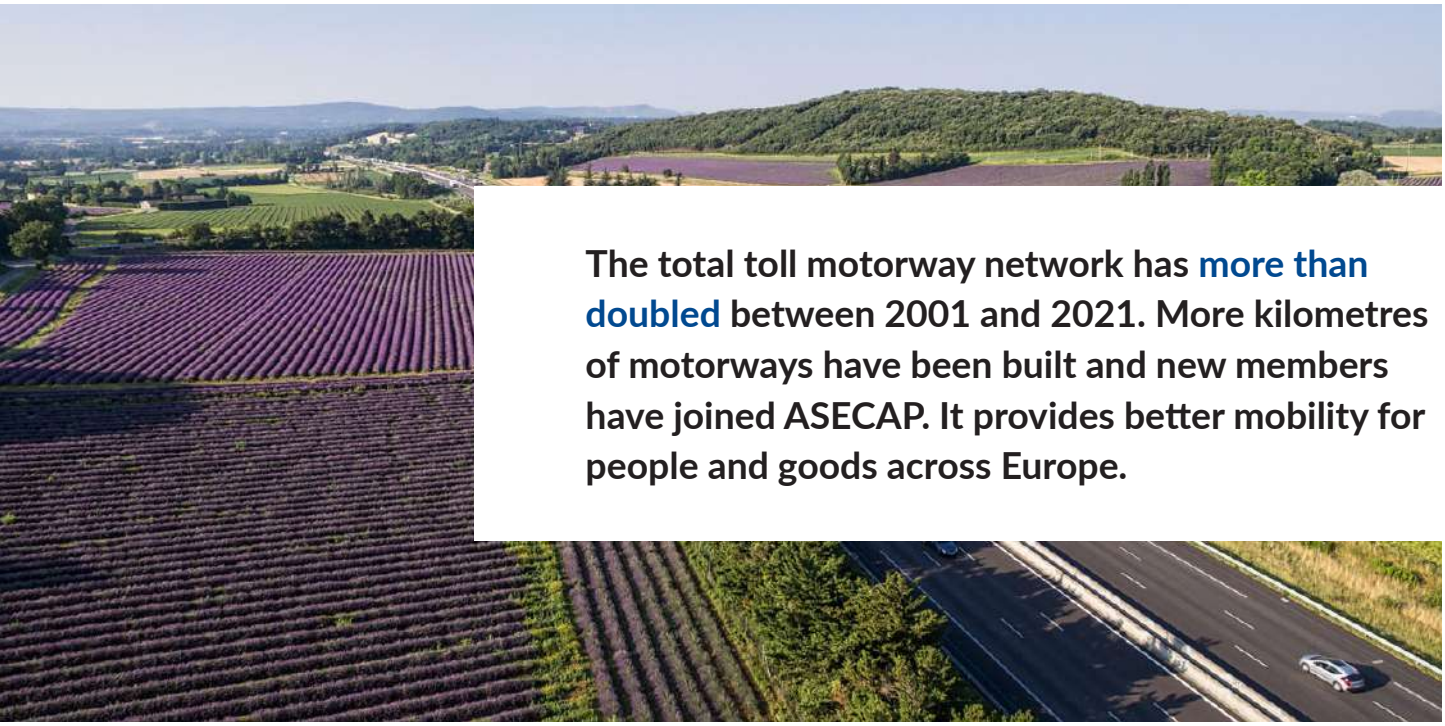
In addition, ASECAP maintains permanent relations with relevant international organisations, the EU institutions and the industry's main stakeholders, protecting the interests of ASECAP members regarding the deployment of a holistic cooperative transport approach at the service of all citizens.

Furthermore, the toll road operators represented in ASECAP bring into the spotlight their crucial role in the development of a sustainable, safe and smart transport system in Europe. They want to highlight their engagement and commitment to improving the transport sector by making it more efficient, socially equitable and more sustainable from different standpoints: safety, environment, mobility and finance.

In their search to improve the environmental-friendly aspect of their activities and bearing in mind that they represent a driving force for the economic development of our continent, toll road operators seek to fulfil their responsibilities through a collective effort to foster sustainable development. In particular, they are willing to make their core business, the "toll", become the key instrument to achieve this fundamental objective.

The requirement for toll road operators to answer the climate change challenges has led to the launch of the flagship initiative on Sustainability by Massimo Schintu in December 2020. ASECAP set up a Sustainability Taskforce bringing together ASECAP members' experts in the sustainability field. Within the taskforce they exchanged their experiences and best practices and built up shared commonly defined key performance indicators (KPIs) that have revealed their commitment to safe and sustainable transport solutions towards low-carbon/carbon-free motorway.

For road operator companies members of ASECAP, this sustainability requirement is of paramount importance and will remain the key priority for the future. ASECAP members are shouldering their responsibility as nationwide land developers, playing a major role in the social and economic development of the regions they serve and connect. These achievements are showcased throughout the report.



The total toll motorway network has more than doubled between 2001 and 2021. More kilometres of motorways have been built and new members have joined ASECAP. It provides better mobility for people and goods across Europe.

Toll road operators fully uphold the "user pays principle" enabling them to invest massively in road construction, road maintenance, innovative tolling technologies, digitalization of road infrastructures for road usage optimization, and sustainable transport solutions towards low carbon motorway.

Tunnels and bridges are among the most important infrastructure of the network. End of 2021 ASECAP members operated more than 900 tunnels longer than 500 metres or more than 1,500 kilometres of tunnel tubes, and more than 4,600 bridges longer than 100 metres.

Our customers travelled more than 330,000 million kilometres on the ASECAP network in 2021.

2.2. Social and environmental commitment

Sustainable organizations create long term value for all the stakeholders involved, through a continuous process of improvement, in which organizations incorporate social, environmental, charity, ethical and economic considerations into their overall management in a voluntary, systematic and coherent way. In the context of sustainability, companies are no longer evaluated only from an economic perspective, but also from a societal, environmental, ethical and philanthropic one. Consultation with the company's stakeholders is an integral part of this process. Sustainability is based on a range of tools - norms, standards and labels - which make it possible to measure the authenticity of these practices and their added value, and to maximize their effects for both the company and society.

Toll road operators recognize the importance of their responsibility to promote sustainable development and observe the universally accepted standards on environment, human rights and transparency. In a globalized world, corporate social responsibility is increasingly becoming a fundamental parameter for customers and stakeholders.

Corporate responsibility means compliance with relevant national and international laws and regulations. But it goes further to cover social and sustainable efforts in the fields of business ethics and strategy. For toll road operators this means strengthening their focus on safety, environmental protection and long-term sustainable development.

Toll road operators want to ensure that transparent and efficient dialogue is maintained between procurement and supply chain management. Codes of conduct are often referred to in contracts in order to secure a high level of corporate social responsibility, including a commitment to zero tolerance of human rights abuses and any attempts at bribery/facilitation payments.

Achieving transparency during the contractual process and the subsequent management of the motorway infrastructure itself represents a crucial aspect for toll road operators. It underlines their good will and sense of responsibility towards the good of society as a whole.

In past decades, toll road operators have established more and more standards and core indicators for measuring and assessing the effectiveness and reliability of their corporate social responsibility policy. This continuous process of improving ethics and values has been the driving force for drawing much more attention to the sustainable development of the toll road transport sector.

Members' projects:

- **Sustainability rating** Autostrade per l'Italia S.p.A. (ASPI) / AISCAT, p. 28
- **"I drive and walk safely" interactive exhibit for children 3 – 12 years of age, at the Hellenic Children's Museum, Athens, Greece** Attiki Odos S.A. & Attikes Diadromes S.A. / HELLASTRON, p. 30-31
- **Let's take care of each other** AWSA / PAK, p.32-33
- **AmberOne Close to Us** GTC / PAK, p. 34-35
- **International Network of Abertis Chairs** Autopistas España, A4 Brescia-Padova, Sanef– Abertis Group / SEOPAN, p. 36
- **"Saúde no Trecho 2021" Campaign** ROADIS / SEOPAN, p. 37

3. The environment

3.1 Toward carbon-free transport to answer climate change challenges

Nobody can ignore the current severe climate change consequences the European countries and the other regions of the planet are facing: overfloods, tsunamis, storms, tornados, hurricanes, forest fires…taking lives and causing tremendous economic, financial and societal damage. These climatic phenomena will increase if we do not change collectively our behavior in our daily lives. The countdown has started and, although this is not yet too late to reverse the trend, we must act now to sharply reduce CO2 emissions.

The examples of projects that are described later in this chapter show that toll road operators are already working very hard to reduce their carbon footprint. And, even if the challenge ahead – a carbon-free mobility on their motorway network by 2050 – is a huge one that will imply massive investments, they are ready to take it up: they will intensify their efforts in the next years and decades to align all their activities with the climate change targets that have been set both at international level and EU levels.

At international level, the targets are set out in the **2030 Agenda for Sustainable Development that includes 17 Sustainable Development Goals (SDGs)**, and by the **2015 United Nations Framework Convention on Climate Change** – the so called 2015 Paris Agreement. Countries are inter alia committed to hold the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels in the 21st century.

At EU level, toll road operators will have to fulfil the **European Green Deal**, a robust political EU document presented in 2019, which aims make Europe the first climate-neutral continent by 2050 by proposing three main objectives: achieving zero net carbon emissions by 2050; decoupling growth from resource use; preserving biodiversity and reducing pollution. To achieve these three objectives, the EU has adopted the following key policy initiatives: the **2020 EC Communication on Sustainable and Smart Mobility Strategy**, the **2021 European Climate Law**, and the **EC Communication 'Fit for 55': delivering the EU's 2030 Climate Target on the way to climate neutrality.**

These policy documents contain milestones that will have major implications for toll road operators:

a) By 2030: greenhouse gas emissions (GHG) reduction target of at least -55% by 2030, compared to 1990 levels; average emissions of new cars to come down by 55%, compared to 2021 levels; at least 30 million zero-emission vehicles shall be in operation on European roads; large-scale deployment of automated mobility and seamless multimodal passenger transport; scheduled collective travel under 300 km to be carbon neutral between EU cities of over 1 million people.

b) By 2035: average emissions of new cars to come down by 100% compared to 2021 levels. As a result, all new cars registered shall be zero-emission by that date. In summary, combustion engine vehicles shall be forbidden from 2035 across the EU.

c) By 2050: a 90% reduction in overall transport emissions; a fully operational, comprehensive TENT-T Network equipped with smart traffic management systems; full internalisation of all external costs of EU transport; almost all cars, all new vans and heavy-duty vehicles shall be zero-emission.

d) As part of the 'Fit for 55' package, **the future Regulation on the deployment of Alternative Fuels Infrastructure**, currently discussed in EP and Council, will oblige EU countries to install charging and fuelling points at regular intervals on major highways: every 60 kilometres for electric charging and every 150 kilometres for hydrogen refuelling. It will require huge investments, both private and publc.

At EU level, the **2021-2027 Multiannual Financial Framework and the Recovery and Resilience Facility under NextGenerationEU** will support Member States to finance the green transition. The **EU taxonomy** is another EU instrument that will help scale up sustainable investment and contribute to implement the European Green Deal.

All the above-mentioned EU policy actions and legislative tools will deeply impact toll road operators. To work towards a carbon-free footprint on their networks, they need to strengthen their efforts to:

- Develop new services: deployment of high-capacity electric/hydrogen charging stations.

- Propose a better use of the road (HOV lanes: fast lanes for buses, carpooling, carsharing, etc.).

- To make the most of C-ITS technologies: they shall indeed contribute to a safe and digitalized carbon-free mobility by assisting road operators in collaborative traffic management and congestion management to reduce CO2 emission and external cost of roads, enabling energy-efficient driving, and fostering decarbonisation achievements in the medium term via incentive measures such as promotion of cleaner vehicles.

The huge benefits and potential of C-ITS have been brought into the spotlight in the **ASECAP Manifesto on C-ITS**. ASECAP and its members also strongly support the European Commission proposal on the revision of the **ITS Directive** because it represents a good opportunity to set up proper framework for C-ITS deployment and applications to boost the deployment of green, safe and innovative transport solutions (including multimodal, autonomous transports and driving, as well as the deployment of alternative fuels infrastructure).

ASECAP environmental impact

	2019	2020	2021	Scope (*)
CO2 emissions (in tons) – direct and indirect emissions related to own activities (Scope 1 and 2)	612,765	550,341	508,624	Partial 2
Energy produced by motorway operators renewable resources (in MWh)	2,562	3,367	3,688	Partial 2
Energy consumption (in GWh)	2,435	1,355	1,035	Partial 2

(*) see methodology section

CO2 emissions (in tons) generated by ASECAP members in their operations have been 612,765 in 2019, 550,341 in 2020 and 508,624 in 2021. The data refers to Scope 1 and 2, therefore to direct emissions from owned or controlled sources (Scope 1) and indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the reporting company (Scope 2). The emissions declined both in 2020 (probably also due to the restrictions imposed in most countries to limit Covid-19) and in 2021.

It is important to notice that transport is one of the main sources of CO2 emissions in Europe: about 30% of total EU emissions are due to transport[1]. Out of this amount, most of the CO2 emissions are due to the vehicles travelling on the network rather than to the network operations. In other words, most of the CO2 emissions are users travel emissions: it is reasonable to estimate that, for each Scope 1 and 2 CO2 ton emitted by network operators, there are about 10 tons of user travel emissions[2]. The efficiency of vehicles travelling on the network is therefore of paramount importance to reduce CO2 emissions.

Other relevant data refer to the amount of energy produced by motorways operator renewable resources (3,688 MWh in 2021, significantly higher compared to 2019) and energy consumption (1,035 GWh, lower than pre-Covid 19 levels).

Members' projects:

- **Adapting infrastructure to climate change: the Kassandra project** Concessioni Autostradali Venete S.p.A. (CAV) / AISCAT, p. 41-42
- **Self-consumption Photovoltaic Project** Società Autostrada Tirrenica S.p.A. (SAT) / AISCAT, p. 43
- **Installations of electric chargers for internal EV fleet** APCAP, p. 44
- **Electric mobility: Via Verde Electric** Brisa/APCAP, p. 45
- **Eco Driving** Norscut / APCAP, p.46
- **Developing an extensive network of electric fast-charging stations** ASFA, p. 48-49
- **Best bidder principle with sustainability criteria** ASFINAG, p. 54
- **DarsGo** DARS d.d., p. 58-59
- **Green Bridge project** Gefyra S.A. / HELLASTRON, p. 61
- **LED Motorway Lighting Upgrade in the Road Section 185.8 – 191.8 km** Moreas S.A. / HELLASTRON, p. 62
- **E-vehicle charging stations** Nea Odos S.A. / HELLASTRON, p. 63
- **Adaptive lighting** Olympia Odos S.A. / HELLASTRON, p. 66-67
- **Electric Vehicle Toll Incentive (EVTI)** ITIA, p. 70-71
- **Road Lighting change from SON to LED** Directroute (Fermoy) Ltd. / ITIA, p. 72

[1] https://www.statista.com/statistics/1240108/road-transportation-greenhouse-gas-emissions-eu/#:~:text=Breakdown%20of%20CO2%20emissions%20in%20the%20EU%2D27%202019%2C%20by%20sector&text=Transportation%20was%20the%20main%20source,a%20share%20of%2029%20percent.

[2] https://www.transurban.com/content/dam/transurban-pdfs/01/sustainability-reports/FY19-Sustainability-Data.pdf, p. 5

3.2. Responsible management of the environment

Toll road operators have always been committed to the protection of the environment in view of the proximity of their motorways to natural landscapes and of their impact on the surrounding environment.

Actions taken by motorway operators are developed throughout the three successive phases of the life of a motorway: its design, its construction and finally its operation/ maintenance and reinvestments.

During these different phases, the environmental aspects lie always at the core of every single activity.

Initially, the issues confronting road operators have always been the protection of water resources and the reduction of noise pollution. Significant remedial responses have been made and efforts have never wavered. Insertion into the countryside, enhancement of the landscape, preservation of biodiversity and wild animals have become crucial challenges to which satisfactory solutions have been proposed and adopted (e.g., noise fences; noise-reducing road surfaces; infrastructure dedicated to fauna crossing only, such as under/upper/over passes culverts, and other infrastructures allowing animal crossings such as tunnels, bridges and viaducts).

Furthermore, motorway construction has increasingly involved operations to rehabilitate deteriorated natural or urban sites, going even as far as creating extensive areas offering a new terrain of expression for biodiversity. Important environmental upgrading programs aiming to rebuild old networks up to modern environmental standards (water, noise, biodiversity protection in compliance with regulations currently in force) have all been financed through tolls.

But to tackle the already visible and severe climate change consequences, toll road operators have the duty to intensify their actions in view of preserving landscapes, ecosystems, fauna and biodiversity, and to find new innovative solutions to develop low carbon / carbon free motorways, in full compliance with EU environmental standards and programs.

In order to achieve a carbon-free mobility and therefore improve air quality, motorway operators have to pursue and strengthen their efforts to sharply reduce their greenhouse emissions through the wide and balanced deployment of alternative fuels infrastructure - namely electric and hydrogen charging stations - along their networks, which requires huge investments, both public and private. To reduce their carbon footprint, they are also committed to investing in green mobility (replacement of existing fleets with low- and zero-emission vehicles), improving the energy performance of their buildings, being supplied with renewable energy (solar and wind energy; green electricity; green gas…) they produce themselves or purchase, and recycling their waste from operations & routine maintenance and road construction & heavy maintenance.

In addition to the legislative proposals that have been tabled as part of the **'Fit for 55' package**, several other core EU programmes and pieces of legislation will (continue to) guide and shape the work of the toll road operators for the years to come and the next decade, including the **EU Biodiversity Strategy for 2030**, **the 8th EU Environment Action Programme (EAP) to 2030, the EU legislation on recycling/reuse of batteries, waste, packaging, etc**. All these legislative tools will greatly help turn the motorway sector into a fully sustainable sector.

Responsible management of the environment

	2019	2020	2021	Scope (*)
Number of electrical charging stations along the network operated by the members	549	678	1,365	Partial 2
Number of hydrogen charging stations along the network operated by the members	1	1	1	Partial 2
Number of water protection systems/basins along the network operated by the members	11,718	11,794	11,751	Partial 2
Number of infrastructures dedicated to fauna crossing only (under/upper, over passes culverts)	6,471	6,469	6,484	Partial 2
Number of other infrastructures allowing animal crossings (tunnels, bridges, viaducts, etc.)	17,360	18,970	18,713	Partial 2
Waste (operations and routine maintenance) recycled or reused (in tons)	101,778	56,478	73,538	Partial 2
Waste (road construction and heavy maintenance waste) recycled or reused (in tons)	2,004,263	2,622,235	2,431,126	Partial 2
Total waste (in tons) from operations and maintenance	145,549	91,214	126,323	Partial 2
Total waste (in tons) from road construction	4,830,284	5,669,303	4,423,087	Partial 2
Waste recovery rate (in %)	38%	37%	47%	Partial 2

(*) see methodology section

The number of electrical charging stations along the network increased sharply: along the ASECAP network there were 1,365 charging stations in 2021. Such number was significantly lower in 2019 (549) and in 2020 (678).

ASECAP aims to respect and have a positive impact on the environment: in 2021 there were 11,751 water protection systems/basins along the network. The number of infrastructures dedicated to fauna crossing only (6,484 in 2021) and the number of other infrastructures allowing animal crossing (18,713 in 2021) have been increasing compared to 2019 and 2020.

60% of the total amount of waste generated in operations, routine maintenance, road constructions and heavy maintenance has been recycled or reused. In other words, the waste recovery rate is 47%, with an improvement compared to 2020 (37%).

Members' projects:

- **Brennerlec's testing has concluded: the model can now be replicated** Autostrada del Brennero S.p.A. / AISCAT, p. 80
- **The service areas of Milano Serravalle protecting the environment** Milano Serravalle-Milano Tangenziali S.p.A. / AISCAT, p. 83-84
- **Lighting at the Andornaktálya roundabout** AKA Zrt., p. 85-86
- **Installations of photovoltaic systems in Maintenance Operation Centres and headquarter** APCAP, p.87
- **Ascendi's Biodiversity Action Plan and Biodiversity Policy** Ascendi / APCAP, p. 88-89
- **Sustainability and Energetic Efficiency on AEA** AEA / APCAP, p. 94-95
- **Climate change risk assessment** Brisa / APCAP, p. 96
- **Replacement of road lighting on both bridges (Vasco da Gama and 25 de Abril)** Lusoponte / APCAP, p. 98
- **State-of-the-art animal crossings** Vinci Autoroutes / ASFA, p. 102-103
- **New home for three million bees along the highways** ASFINAG, p. 104-105

- **LIFE SAFE CROSSING Project with the title: "Preventing Animal-Vehicle Collisions – Demonstration of Best -Practices targeting priority species in SE Europe"** Egnatia Odos S.A. / HELLASTRON, p. 116-117
- **Recycling in MSS & Parking Areas** Nea Odos S.A. & Kentriki Odos S.A. / HELLASTRON, p. 125
- **Marine Pollution Detection Project** ICA, p. 130-131
- **Pollinator-friendly management of Transport Corridors** ITIA, p. 132
- **Monitoring of Natura 2000 sites and animal migration** AWSA II / PAK, p. 133-134
- **Achievement of ISO 50001 for Energy Management Systems** Autopistas España-Abertis Group / SEOPAN, p. 137

4. Infrastructure safety: Working towards Road Safety Vision Zero objective

The European Commission is currently implementing its **EU Road Safety Policy Framework 2021-2030 – next steps towards 'Vision Zero',** its long-term strategic goal to get close to zero fatalities and zero serious injuries on EU roads by 2050 (Vision Zero). As an intermediate step, its medium-term objective is to reduce deaths and serious injuries by 50 % by 2030, as already enshrined in the **2017 Valletta Declaration on Road Safety**. The framework includes a system monitoring fatalities and serious injuries at EU level based on 10 key performance indicators (KPIs) with timed targets for the reduction of casualties and serious injuries.

Road safety is the first priority of the toll road operators. The social contract of motorway companies is to safeguard the safety of road users and their workers first and also to guarantee congestion-free traffic on their network. The motorway infrastructures are designed and built with highest quality and technological standards which make them the safest infrastructure than any other road infrastructure. Nevertheless, the ambition of the toll motorway sector is to reach the objective set by the European Commission: Vision Zero. To reach this target, the toll road operators represented in ASECAP already put in place, on a daily basis, actions aimed at ensuring high road safety standards for the users, therefore fulfilling the EU Road Safety Policy Framework 2021-2030 and implementing directly, at the same time, the **EU Directive on road safety infrastructure management** along the TEN-T road network.

Key actions performed by toll road operators to safeguard road safety

Road safety is the result of the efficient and close interaction between the infrastructure, the vehicle and the driver. A motorway is an infrastructure specially designed and built according to the highest quality and technological standards, in order to guarantee to all drivers 24/7 the best safety conditions, high levels of service and driving comfort in all weather conditions. To make the network safe, the maintenance and operation is done all year long by patrollers 24 hours a day and operators managing the traffic control centres in order to make appropriate road management decision and actions.

Toll road operators permanently act at four levels on their network to improve road safety and reduce the number of road casualties:

- **Appropriate accident prevention measures:** e.g. fast removal of stopped vehicles and other possible dangers; providing high quality service areas where drivers/users can rest; road safety audits and inspections; providing real time traffic information…
- **Quick accident response:** to save lives, reduce the impact of an accident and restore the traffic conditions on the infrastructure.
- **Collection and analysis of data accident:** to investigate the main causes of accidents and then implement successful strategies with proper actions on the infrastructure and / or drivers' behaviours.
- **Awareness-raising campaigns:** to encourage drivers to have a responsible behaviour on the motorway, ASECAP members run awareness & education campaigns using different communication tools (videos, spots, books, games).

C-ITS as a public goal to safeguard safe mobility and efficient traffic management

C-ITS – the cooperative intelligent transport systems – deployment and applications will play a crucial role in achieving the "Vision Zero" goal in road safety by

establishing the vital direct link between vehicles themselves, road infrastructure and other road users, delivering warnings to road workers and vehicles and helping to prevent accidents and to reduce their severity. Therefore, ASECAP members foresee that C-ITS has a great potential to further improve the health and safety for road users and workers on road works sites. Furthermore, with increasing penetration rates of cooperative connected and, in future, also automated vehicles, C-ITS will contribute enabling collaborative traffic management to reducing congestion and to creating a smooth traffic flow: it has a positive impact on fuel consumption that is reduced and, hence, CO2 emissions and air pollution are reduced. ASECAP members are already investing massively to upgrade, adapt & modernize their motorways for full deployment of autonomous vehicles.

Infrastructure safety

	2019	2020	2021	Scope (*)
Network in construction (Km)	699	788	1,181	Full
Network widening (Km)	281	241	221	Full
Total Investments (M€)	6,715	6,963	7,597	Full
Injured persons	25,515	15,678	17,592	Partial 4
Fatal Accidents	567	417	472	Partial 3
Fatalities	643	465	521	Partial 3
Personal injury rate	9.10	7.30	6.93	Partial 4
Fatal accident rate	0.20	0.19	0.18	Partial 3
Fatality rate	0.23	0.21	0.20	Partial 3
Km travelled (Mio Km)	284,401	217,632	257,048	Partial 3
Km travelled (Mio Km)	280,482	214,909	253,958	Partial 4

(*) see methodology section

The safety of the infrastructure is one of the main objectives of ASECAP members and it requires significant investments and efforts. In 2021, there are 1,181 km of network in construction (they were 699 in 2019 and 788 in 2020). Out of this amount, 221 km of network were being widened. Total investments (including both existing and new investments) have been 7,597 million euros in 2021. They were 6,715 in 2019 and 6,963 in 2020.

One of the most relevant indicators for measuring infrastructure safety is the number of injured persons: in 2021, 17,592 persons have been injured while travelling on the network. The amount is higher compared to 2020 (15,678 people), but we need to consider that the number of km travelled in 2020 is significantly lower compared to the pre-Covid 19 period. In 2019, the number of injured persons has been 25,515. Please notice that this figure does not refer to the whole ASECAP network (please see methodology section). Fatal accidents declined over time: they have been 567 in 2019, 417 in 2020 and 472 in 2021. Fatalities in 2021 amount to 521, 465 in 2020 and 643 in 2019.

In order to understand the safety trends over time it is relevant to look at personal injury rate, fatal accident rate and fatality rate. These indicators consider the number of Km travelled and therefore are particularly well suited in order to compare different years.
In 2021, there were 6.93 injured persons for each 100 million Km travelled. The figure has been improving over time: it was 9.10 in 2019 and 7.30 in 2020.
The fatal accident rate has been improving as well: in 2021, there has been 0.18 fatal accidents for each 100 million Km travelled. In 2019 they were 0.20.
Finally, fatality rate also decreased from 0.23 (2019) to 0.20 (2021).

2 fatalities per billion kilometres driven on European motorways in 2021 (ASECAP fatality rate: 0.20)

122 fatalities less in 2021 compared to fatalities in 2019.

19% less deaths in 2021 compared to 2019.

1,807 rest areas in 2021, accounting for an increase of over 30% compared with 2001.

1,412 services areas in 2021, accounting for an increase of 37% compared with 2001.

More than 290 safe and secure parking areas for trucks along motorway network in 2021*.

* 2021 is the first year the data was collected.

Members' projects:

- **Data detection and preselection system for vehicles equipped with intelligent tachograph** Società di Progetto Brebemi S.p.A. (BEBREMI) / AISCAT, p. 139
- **Doubling of the Frejus T4 Tunnel** Società Italiana per il Traforo Autostradale del Frejus S.p.A. (SITAF) / AISCAT, p.140
- **Service and safety tunnel** Società Italiana Traforo del Gran San Bernardo S.p.A. (SITRASB) / AISCAT, p. 141
- **Ascendi's Road Safety Action Plan** Ascendi / APCAP, p. 142
- **Isolated Worker App** Norscut / APCAP, p. 143
- **Road Safety** Aegean Motorway S.A. / HELLASTRON, p. 146-147
- **„GREAT ONES DRIVE RESPONSIBLY - driving is the only activity behind the wheel!"** Hrvatske autoceste d.o.o. / HUKA, p. 148-149
- **CROCODILE 3 Croatia** Hrvatske autoceste d.o.o. / HUKA, p. 150-151
- **Highway to school** AWSA / PAK, p. 152-153
- **Count to zero** GTC / PAK, p. 156-157
- **Pilot project on how to reduce the formation of ice on roads with the aim of increasing driver safety and reduce environmental impact** Autopistas España, A4 Brescia-Padova, Sanef– Abertis Group / SEOPAN, p. 159

5. People and stakeholders

5.1 People and stakeholders

Motorway concession and toll companies provide work across Europe. It is important to point out that in some regions the concession company is the leading employer, and this confers both rights and obligations. One of the major tasks for companies is to achieve harmonious human resources management. The sustainability aspect is also a crucial component of the internal management structure of toll companies.

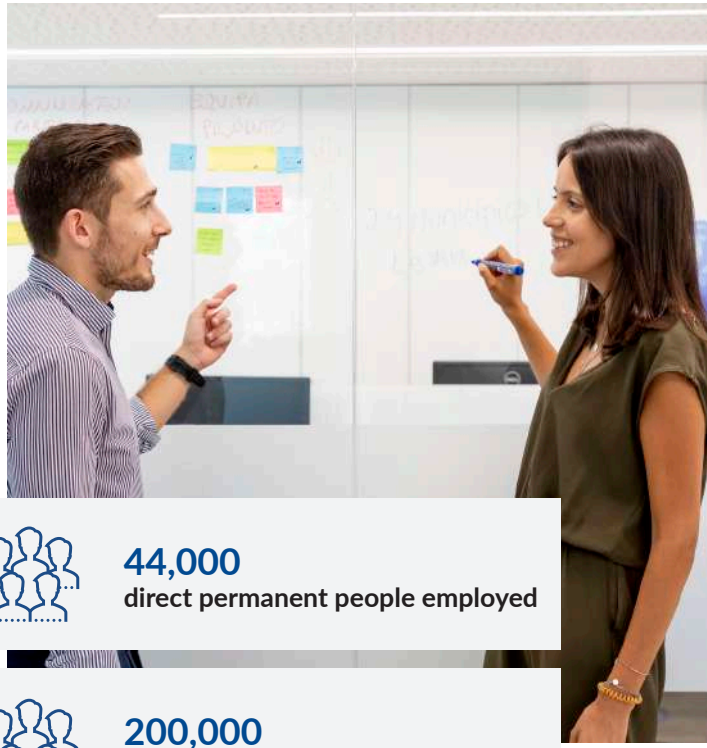
In consequence, actions have been taken to develop employee awareness of sustainable mobility issues so that they may take this approach on board. If required, this action may be accompanied by special training plans integrating all aspects related to sustainable development, with a significant place being reserved for the safety of staff working in the network. Identifying motivated managers, then appointing them to positions of responsibility regarding sustainable development, constitutes a logical extension of the toll road operators' policy.

Major training efforts are necessary to meet current demand for new skills as our professional sectors inevitably evolve to cope with the techniques and services expected by our customers nowadays. Having motivated and well-educated employees is a must for toll motorway operators. Due to the increasing demand for real-time communication with the customers, new developments that encourage interaction with the customers should lead to the development of more customer service tools and jobs.

What is more, the demand for safer and more efficient operations contributes to better health and safety conditions for the workers, given that accidents can be minimized through improved education and training, risk management, technology, automation and focus on correct use of equipment.

ASECAP Members consider it their priority to ensure the safety of their employees and external workers in roadwork zones by always ensuring that signage is sufficient and of good quality and that there is equipment available for marking road works zones on motorways. Very often, other special equipment may be used to guarantee adequate levels of safety, items such as crash absorbers (Dumpers), stroboscopic lamps on the signalization vehicles at construction sites and "smilies" paneling for adequately alerting drivers.

Furthermore, another priority of the toll motorway operators has been the promotion of gender equality on the workplace.



44,000
direct permanent people employed

200,000
indirect people employed

People and stakeholders

	2019	2020	2021	Scope (*)
Permanent staff – total	45,522	44,328	42,600	Partial 2
Permanent staff – women	14,702	14,463	14,101	Partial 2
Permanent staff – men	30,821	29,865	28,499	Partial 2
Number of women in executive and management positions (board and executive levels, directors and heads of departments & leading positions in companies)	1,109	1,144	1,230	Partial 2
Number of men in executive and management positions (board and executive levels, directors and heads of departments & leading positions in companies)	2,828	2,854	3,015	Partial 2
% of women in executive and management positions	28%	29%	29%	Partial 2

(*) see methodology section

The total number of people working for ASECAP members is 42,600 in 2021. This amount is lower than 2019 (45,522) and 2020 (44,328). Men represent around 67% of the total workforce: in 2021 there are 28,499 men and 14,101 women. Similar proportions hold when we focus on management positions: 29% of executive and management positions are held by women. The indicator is slightly increasing over time (from 28% in 2019 to 29% in 2021).

Member project:

- **Internal compliance awareness project** Autostrada Brescia Verona Vicenza Padova S.p.A. and the A4 Holding Group/ AISCAT, p. 161-162

5.2. More inclusive and equal transport mobility

A digital, automated and multi-modal mobility is one of the objectives outlined in the **EC Communication on Sustainable and Smart Mobility Strategy - putting European transport on track for the future** which will strongly affect our societies and economies and will deeply impact all transport modes, including road transport.

Planning multimodal journeys and purchasing the necessary tickets is often cumbersome, as a framework for EU-wide, integrated, multimodal travel information, ticketing and payment services is currently lacking.

In its communication, the European Commission has set as an objective that by 2030 automated mobility is deployed on large scale, and seamless multimodal passenger transport is enabled by integrated electronic ticketing and enhanced passenger rights. To make this a reality, there is a need to overcome issues related to the availability and accessibility of data, sub-optimal cooperation between suppliers and vendors and an overall lack of interoperability, for example.

The European Commission will consequently propose regulatory measures to enable innovative and flexible tickets that combine various transport modes and give passengers true options for door-to-door travel. This multimodal ticketing initiative shall be included in the revision of the Directive on Intelligent Transport Systems.

In addition, digital solutions are also supported by the general public: citizens are also interested in solutions allowing them to pay tolls, parking and other charges in real-time and directly from a smartphone or other device as well as in simple procedures to access areas subject to UVARs (Urban Vehicle Access Regulations) in different European cities.

This is crucial for toll road operators to take account of these new mobility trends and new models of shared mobility. To guarantee a better use of their road, they thus have to develop new services such as HOV lanes: fast lanes for buses, carpooling, carsharing.

These new mobility solutions will contribute to making a smart, sustainable, digitalized and automated European transport system.

Member project:

- **Mercury.Smart Sustainable Mobility** Autostrade per l'Italia S.p.A. (ASPI) / AISCAT, p. 167-168

5.3. Offering high level services to the users through innovation

Toll collection is not simply a tool: road users pay a toll directly to road operators when using the road network in question. This makes the users of the road infrastructure the key focus of attention for motorway companies. The modern road operator does not simply offer a "transit service" to road users, but a real "product" requiring massive investments.

Over and above duty of a toll road operator as a public service provider, they also have an obligation to provide customers with a high-quality of service (high availability and accessibility of road infrastructure), ensure the highest possible level of security and safety for both people and goods, offer high-quality service areas where drivers/users can rest and guarantee smooth traffic flows.

The principal purpose consists of offering the best possible conditions of travel to customers. In general terms, actions undertaken by toll road operators must contribute to increasing comfort and safety throughout the customer's journey since this is the way in which toll road operators will best be able to fulfil their essential function of ensuring that travelers and goods arrive at their destination in the best possible conditions.

Road users are constantly provided with efficient mobility information services. Europe-Wide Traveler Information Services, made available to motorway users, comprises comprehensive travel information with a broad perspective allowing for well-informed travel decisions, both pre-trip and on-trip. The key goal is to provide the road users with relevant information in a harmonized manner which is easy to understand and process.

This includes road traffic status, weather conditions, and warnings of accidents or road works zones. The Europe-Wide Traffic Management Services also give guidance to the European travelers on the condition of the road network. They detect incidents and emergencies, implement response strategies to ensure safe and efficient use of the road network and optimize the existing infrastructure for all vehicles, including those crossing borders. ASECAP Members, all road operators, work in close collaboration to provide consistent and seamless travel information across Europe.

Furthermore, members of ASECAP firmly work towards fully interoperable electronic toll collection (ETC) systems across Europe, which further guarantees optimal traffic flows and significantly increases the average traffic speed through the toll plazas.

But the obligation to fulfil the Green Deal objectives implies that the toll road operators have to bring innovative solutions to shift towards carbon-free/carbon low motorway: that will be achieved by providing new services (high-capacity electric/hydrogen charging stations) to the road users and by guaranteeing a better use of the road (HOV lanes: fast lanes for buses, carpooling, carsharing, etc.) to take account of the new mobility needs and trends.

Moreover, C-ITS will help deploy autonomous driving by providing an instant and low latency data exchange amongst infrastructure and vehicles. ASECAP members have started their deployment activities: C-ITS systems thriving ITS-G5 and long-range cellular communication together. ASECAP members follow the hybrid approach: combining the short-range communication environment and cellular long-range communication. Currently, ITS-G5 is the only one short range technology ready for C-ITS deployment. In future, it will become part of the wider digital communication environment that includes 5G and future WLAN or cellular communication systems. However, they need to avoid co-channel and adjacent channel interference to and from other ITS technologies: there is indeed the need for C-ITS to technically co-exist with the systems currently used on Europe's motorways: EETS, Electronic tolling system, the digital tachograph and the remote enforcement of vehicle weight control. C-ITS technologies have a therefore a great potential because they will be increasingly beneficial for road users, but their wide deployment will require huge investments from toll road operators.

Also, toll road operators have also understood the great potential of artificial intelligence (AI) that will help switch from the old physical traditional toll system to a free flow tolling system in order to prepare a future seamless transition for customers. AI software has already been developed to fully automatically determine the toll classification of vehicles. In a very near future, AI will be used for other complex tasks such as the complex identification of vehicles for complex tolling (transport of dangerous goods, transport of disabled people), the enforcement on vehicle detection, and enhancements on subscriber detection. The challenge that will have to be taken up is to have a high level of confidence in AI detection to reach the current level of physical toll operated manually.

All these technologies will definitely contribute to building a sustainable, seamless, cashless, automated and interoperable tolling system at the service of road users aiming at reducing carbon footprint.

More than 71,000,000 Electronic Toll Collection (ETC) subscribers have taken advantage of this service in 2021. The number of ETC subscribers has almost tripled since 2011. (over 24,000,000)

1,412
Service areas with petrol stations in 2021, an increase of 37% compared with 2001.

1,193
Restaurants in 2021, an increase of almost 90% compared to 2001

120
Hotels in 2021, an increase close to 50% compared with 2001

There were 15,462 toll lanes on the members' network in 2021, 75% of which were ETC lanes or mixed lanes.

70% or 57,270 km of the tolled network was tolled in a multilane free flow system in 2021.

Members' projects:

- **Sicily Smart Road** Consorzio per le Autostrade Siciliane (CAS) / AISCAT, p. 170-171
- **"Arena of the future" project, testing of the ERS - DWPT system** Società di Progetto Brebemi S.p.A. (BEBREMI) / AISCAT, p. 172-173
- **Expansion of Park&Ride systems** ASFINAG, p. 174
- **Water from the air** Olympia Odos S.A. / HELLASTRON, p. 175-176
- **AWAI APP for toll payment with mobile phone** Autopistas España-Abertis Group / SEOPAN, p. 177-178

6. Sustainable mobility: impact on communities

Economic observatories have brought evidence that there is a link between a good road infrastructure network and the growth of GDP. Indeed, when there are robust toll road infrastructures, these areas usually grow faster than in other regions without toll roads. ASECAP members are shouldering their responsibility as nationwide land developers, playing a major role in the social and economic development of the regions they serve and connect. The toll road network indeed supports the daily lives of us all. It gives access to the goods and services that citizens need. It connects people with their families and friends. It is also the lifeblood of the economy, performing a crucial function in supporting jobs and growth. It provides critical connections by linking major economic centers and connecting major ports and airports. Moreover, factories and companies tend to expand near a toll road providing better connections and communication links, thereby creating new jobs and revenues to the surrounding communities and ultimately fostering economic development.

The construction of motorways financed by tolls contributes, together with other economic advantages, to society as a whole. The completion of road construction works is brought forward by several years as there is no longer any need to rely on the availability of public funds. The use of private funds secures a stable and constant financing of new road infrastructure projects over the whole economic cycle. Therefore, the national and European economies find stability during phases of economic recession. Private funds in concessions are levelling out the effects of austerity programs that usually lead to cuts in public spending. In fact, the "user pays" principle is the fairest way to finance Infrastructure projects as taxpayers no longer have to bear the cost of infrastructure. Public funds are therefore released and can be allocated to other social priorities such as health, education or public transport.

Furthermore, the toll revenue can be used to optimize operation and maintenance on a long-term basis and ensure that the focus is on the long-term optimization of new investment and maintenance activities. Using tolls and earmarking revenues from the road users will thus guarantee the constant investment in the tolled road facility during the entire duration of the concession.

In toll concession schemes, the private sector takes on important risks, mainly those related to construction costs and traffic demand, in favor of the public interest. Through tolls it is also possible to control traffic demand and this leads to a more efficient and balanced use of the road network. It is also an effective mechanism for internalizing external costs produced by the transport sector.

Toll road operators are also huge contributors to national government treasuries since they are eligible to pay VAT and many other taxes (land tax, company tax, income tax).

The motorway companies will always maintain **that the toll system is a powerful tool for sustainable development and mobility that makes possible:**

- financing a wide road infrastructure network based on the "user/pays principle".
- providing innovative and lasting financing schemes
- clearly earmarking the funds necessary to build, manage, maintain and repair the road network.
- providing a reliable alternative to scarce public funds.
- building an environmentally friendly network.
- delivering efficient and reliable mobility services.
- offering a safe and secure network with high availability to customers.
- ensuring jobs and workplaces that respect human rights and offer good and secure working conditions.

Over € 31 billion toll revenues (VAT excl.) collected by ASECAP members in 2021 (€ 26.8 billion in 2020), revenues dropped because of lockdowns due to the COVID-19 pandemic.

Toll concessions are infrastructure paid by users instead of taxpayers. The contracts signed between awarding administrations and concessionaire companies transfer the responsibility to build, operate and maintain road infrastructure and the risk associated. As a result, public funds are not affected, neither Member States' public budgets nor public deficits, and public funds are made available to support and finance other public services.

Over € 7.5 billion

ASECAP companies' investments in 2021 (€ 6 billion in 2020).

More than € 5 billion

VAT generated by ASECAP members in 2021 (€ 4 billion in 2020).

Over € 12.5 billion

allocated to any other social priorities in 2021 (€ 10 billion in 2020).

Regulatory milestones & references

Links to the international and EU legal texts, as well as to the legislative proposals currently under discussion within the EU institutions are provided here below.

ASECAP documents:

- 2022 Statistical Bulletin
- 2021 Statistical Bulletin
- 2020 Statistical Bulletin
- 2021 Manifesto on C-ITS
- 2020 Manifesto on toll road concessions
- 2019 Road Safety leaflet

United Nations documents:

- 2015 United Nations Framework Convention on Climate Change
- 2030 Agenda for Sustainable Development
- 17 Sustainable Development Goals (SDGs)

European Union documents:

- The European Green Deal
- EC Communication on Sustainable and Smart Mobility Strategy - putting European transport on track for the future
- Regulation (EU) 2021/1119 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law')
- EC Communication 'Fit for 55': delivering the EU's 2030 Climate Target on the way to climate neutrality

  The 'Fit for 55 package includes the following main legislative initiatives:
  - Legislative proposal for an EU Regulation on the **development of alternative fuels infrastructure** and repealing Directive 2014/94/EU
  - Proposal for an EU Directive amending Directive 2010/40/EU on the framework for the **deployment of Intelligent Transport Systems** in the field of road transport and for interfaces with other modes of transport
  - Proposal for an EU Regulation on Union guidelines for the **development of the trans-European transport network,** amending Regulation (EU) 2021/1153 and Regulation (EU) No 913/2010 and repealing Regulation (EU) 1315/2013
  - EC Communication on **The New EU Urban Mobility Framework**
  - Proposal for an EU Regulation amending Regulation (EU) 2019/631 as regards **strengthening the CO2 emission performance standards for new passenger cars and new light commercial vehicles** in line with the Union's increased climate ambition
  - Proposal for an EU Directive restructuring the Union framework for the **taxation of energy products and electricity** (recast)
  - Proposal for an EU Directive amending Directive (EU) 2018/2001 and Directive 98/70/EC as regards the **promotion of energy from renewable sources**, and repealing Council Directive (EU) 2015/652
  - Proposal for an EU Directive on **energy efficiency** (recast)
  - Proposal for an EU Directive amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757 **(EU Emissions Trading System-ETS)**
  - Proposal for an EU Regulation establishing a **carbon border adjustment mechanism**

  - Proposal for an EU Regulation on the **inclusion of greenhouse gas emissions and removals from land use, land use change and forestry into the 2030 climate and energy framework** and amending EU Regulation No 525/2013 on a mechanism for monitoring and reporting greenhouse gas emissions and other information relevant to climate change
  - Proposal for an Regulation amending Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement (‘**Effort Sharing Regulation**’)

- EC Communication on the EU Biodiversity Strategy for 2030 - Bringing nature back into our lives
- 8th EU Environment Action Programme (EAP) to 2030
- EU taxonomy and sustainable finance
- Recovery Plan for Europe: EU 2021-2027 Multiannual Financial Framework/ NextGenerationEU/Recovery and Resilience Facility
- EU Directive 2008/96/EC on road infrastructure safety management
- 2017 Valletta Declaration on Road Safety
- EU Road Safety Policy Framework 2021-2030 – next steps towards Vision Zero

Acknowledgements

This report was built with the methodological support of Prof. Chiara Mio and Prof. Marco Fasan from the Ca’ Foscari University of Venice.

Methodology

ASECAP collected data from its members as of December 31, 2021. If KPIs were not available for all members, we used the mean value of the available data to infer the value for missing members. We reported in this report only KPIs with a sufficient coverage, that is with a relatively high percentage of available data compared to missing data. On average, KPIs have 89% of available data and 11% of missing data.
Some indicators refer to the whole ASECAP network, while some indicators refer to a subset of the ASECAP network. More specifically, KPIs of this report refer to one of the following scopes:

- “Full”: data refer to the whole ASECAP network (87,937 km in 2019, 86,174 km in 2020, 82,255 km in 2021).
- “Partial 1”: data refer to a subset of the ASECAP network (35,450 km in 2021, 35,225 km in 2020 and 29,136 km in 2019).
- “Partial 2”: data refer to a subset of the ASECAP network (29,070 km in 2021, 29,664 km in 2020 and 30,157 km in 2019)
- “Partial 3”: data refer to the whole ASECAP network with the exclusion of Toll Collect, ADM, AVTODOR, PE Roads of Serbia, ICA, Midland Motorways Group, Kapsch.
- “Partial 4”: data refer to the whole ASECAP network with the exclusion of Toll Collect, ITIA, ADM, Westerscheldetunnel, AVTODOR, ICA, PE Roads of Serbia, Midland Motorways Group, Kapsch.

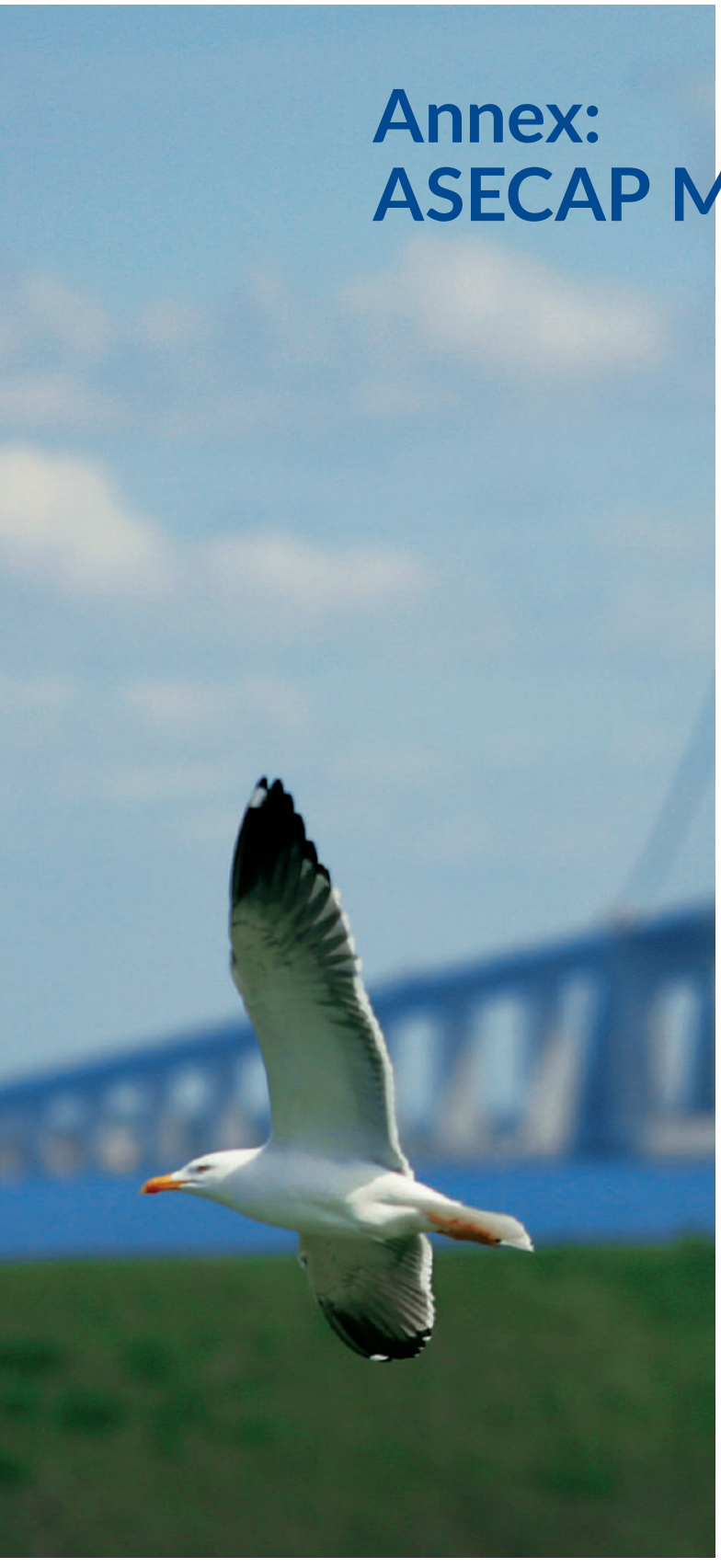
We make explicit in each table what is the scope of each KPI. In the future, as the data collection process will further improve, we will be able to report on more and more significant portions of the network.

Glossary

This glossary presents in alphabetical order the abbreviations and acronyms that have been used in the chapters 1 to 6 of the report.

Note: The acronyms related to the ASECAP members and the members of the ASECAP members can be found in the **2022 Statistical Bulletin**

AI: Artificial Intelligence
ASECAP: Association Européenne des Concessionnaires d'Autoroutes et d'ouvrages à Péage
C-ITS: Cooperative Intelligent Transport Systems
Council: Council of the European Union
€: Euro
EAP: Environment Action Programme
EC: European Commission
EETS: European Electronic Toll Service
EP: European Parliament
ETC: Electronic Toll Collection
EU: European Union
GDP: Gross Domestic Product
GHG: Greenhouse gas emissions
GWh: Gigawatt-hour
HOV: High Occupancy Vehicle
ITS: Intelligent Transport Systems
Km: Kilometre
KPI: Key Performance Indicator
m: Metre
M€: Million €
Mio Km: Million kilometres
Mio/mio: Million
MWh: Megawatt-hour
SDGs: Sustainable Development Goals
TEN-T: Trans-European Transport Network
UN: United Nations
UVARs: Urban Vehicle Access Regulations
VAT: Value Added Tax
WLAN: Wireless Local Area Network



Annex:
ASECAP Members' projects

Autostrade per l'Italia S.p.A. / AISCAT

Project title

SUSTAINABILITY RATING

Project description

The path of sustainability undertaken by Autostrade per l'Italia has also been positively reflected in the assessment of financial analysts. In fact, in January 2022 Autostrade per l'Italia obtained an A2 rating ("robust" rating) from Moody's ESG Solutions, a value that places the Group in the second quartile of companies in the sector. Among the factors supporting the Sustainability Rating are the investments planned for the period 2020-2024 for the modernization of the motorway network, with the reduction of environmental impact in terms of emissions, noise and light pollution. Furthermore, the company was rated positively for its planned investments for the construction of major works (such as the Bologna Bypass project), essential for decongesting the key centres of the motorway network, the planned installation of 100 high-power recharging points for electric vehicles along the road network, and the recent creation of Elgea, a Group company established for the production of renewable energy through the installation of photovoltaic panels located on the motorway. Finally, the Group's positioning in the areas of "Human Capital" and "Social" was also appreciated.
In July 2022, the Group received an ESG "Negligible" Risk Rating of 6.2 points from the **Morningstar Sustainalytics** rating agency, ranking first in the transportation infrastructure sector and among the top twenty out of the over 14,000 companies rated worldwide. The score obtained confirms the concrete implementation of the Group's sustainability strategy and the results it has achieved in the environmental, social and governance areas.

Milano Serravalle-Milano Tangenziali S.p.A. / AISCAT

Project title

STAKEHOLDER ENGAGEMENT AND MATERIALS ANALYSIS

Project description

Milano Serravalle was involved in the 2021 priority analysis process, a process of evaluating and updating the materials matrix aimed at reviewing the material issues for the FNM Group. The update was necessary precisely due to Milano Serravalle's entry into the Group, in order to integrate the ESG risks and opportunities applicable to the "Construction of roads and highways" sector (NACE F42.1.1).

The process of prioritizing the issues involved both internal and external stakeholders, including a panel selected from the academic world, NGOs, foundations, media, industry and motorway sector representatives, with considerable engagement: 85% of internal stakeholders and 46% of external stakeholders.
The issues of environmental sustainability and safety are recurring, even when attention is focused on the Group's entry into the motorway sector. On one hand, sustainability, as it applies to the motorway sector, concerns activities such as the installation of refuelling points for low environmental impact, the maintenance and adaptation of structures (e.g. bridges and viaducts) for the needs of freight transport. On the other hand, issues such as health and safety become an essential condition. Infrastructure safety, careful selection of materials, periodic maintenance, user safety, as well as safety for those working on motorway construction sites and innovation in safety systems are just some of the issues mentioned by the stakeholders.

The 2021 update to the materiality matrix highlighted eight top material issues:

- energy consumption, atmospheric emissions and climate change;
- the quality of service and security of clients in the station and in motion (Security and Safety);
- health and safety in the workplaces;
- accessibility of services and infrastructure;
- intermodality and integration of services;
- sustainable infrastructure management;
- business ethics and integrity;
- technological and digital innovation.

Attiki Odos S.A. & Attikes Diadromes S.A. / HELLASTRON

Project title

"I drive and walk safely" interactive exhibit for children 3 – 12 years of age, at the Hellenic Children's Museum, Athens, Greece.

Project's aim

The country, as a whole, ranks 6th in road accident mortality rates among children, adolescents and young people up to 24 years old, according to recent data from Eurostat, Road Transport Safety Database. Despite the above negative numbers, there is no coordinated institutional intervention within schools, to prevent road accidents among people of young age.

One of the main objectives of the companies behind ATTIKI ODOS has been the education of future road users through various programmes, in order to support them in setting the foundations of safe road use as pedestrians, cyclists, skateboard users and car passengers. Additionally, a main long-term objective is to contribute to the reduction of road accidents, not only among young people, but also among all road user ages and types.

Benefits of the project

The educational programme **"I drive and walk safely"** targets children of 3 – 12 years of age that, often, function as pressure controllers towards adults.

The exhibit was made with the aim of offering different levels of reading and understanding of the road safety awareness topics it develops, according to the needs and expectations of its target audience.

Therefore, young children are involved in many activities and stay busy by practicing skills, by being part of a broader team, while also by learning to interact with the "adult" world. Moreover, the exhibit aims at contributing to the social, emotional and cognitive development of children by encouraging critical thinking, initiative, creativity and discovery.

From its opening to the public till the end of 2021, 1.453 children between 3 – 12 years of age were educated on road safety issues together with 1.032 adults.

Project timeline

The exhibit started its limited operation, due to Covid-19 pandemic restrictions, during the summer 2020. However, since June 2021, it came back to full operation.

Attiki Odos S.A. & Attikes Diadromes S.A. / HELLASTRON

Project description

Attica Tollway collaborates with the Hellenic Children's Museum, one of the most experienced Organizations in young people's education, and launches an interactive exhibit, for children aged 3-12, in order to promote the value of Road Safety titled "I drive and walk safely".

The exhibit is situated in the premises of the Hellenic Children's Museum at the Athens Conservatoire building and consists of city street simulations where children interact with "real" road situations, with the support of specialized experts.

Streets, traffic lights and mini vehicles compose a three-dimensional environment where, through role playing, children learn the basics of the highway code, how to recognize basic road signs, how to be conscious pedestrians by protecting themselves and others.

Ilustrations

Websites

- www.aodos.gr/en/road-safety/road-safety-awareness-programmes/
- www.hcm.gr/
- www.facebook.com/ellinikopaidikomouseio/

Autostrada Wielkopolska (AWSA) / PAK

Project title

Let's take care of each other

Project's aim

The aim of the campaign was to make people aware that simple gestures and simple actions during this extraordinary time of the epidemic can ensure everyone's safety and thus contribute to the achievement of the SDG goal no. 11: Make cities and human settlements inclusive, safe, resilient and sustainable.

Benefits of the project

Autostrada Wielkopolska and the Operator of the concession A2 supported the health service of Wielkopolska in their combat against the coronavirus by:
- Donation a state-of-the-art USG device to diagnose the lungs and heart performance to the Hospital at Lutycka Street.
- Donation USG equipment for the Ob-gyn department of the hospital to diagnose pregnant women with suspected coronavirus infection.
- Donation almost 1.5 thousand coronavirus diagnostic tests.
- Donation 5.5 thousand protective masks for hospitals' staff.
- Handing 30 thousand practical gel bottles for disinfecting hands and cockpit for motorway users as a gift.
- Donation modern equipment worth PLN 150,000 for operation of the MTP [Międzynarodowe Targi Poznańskie, Poznan International Fair] Temporary Hospital in Poznań.

Project timeline

2020-2021

Autostrada Wielkopolska (AWSA) / PAK

Project description

The “Let’s take care of one another” campaign was aimed, on the one hand, at making the travelers on the concession A2 aware of what the staff of the concessionaire and the operator were doing to ensure safety to all drivers and, on the other hand, at showing the users that only if we took care of one another, we would have comfort of feeling safe during outbreak. In concern of the public health, Autostrada Wielkopolska encouraged the drivers to use contactless methods of payment at toll plazas with their smartphones or bank cards, provided the latter support such functionality. Also, all entry ticket dispensers in the concession section Świecko - Gołuski ejected tickets automatically, without the need to push the button. The staff members of the Operating Company whose faces appeared earlier on the posters urging the drivers to drive safely, during pandemic focused on reminding them of the basic guidelines of the Sanitary Authority such as: washing hands regularly, refraining from touching one’s face, social distancing and disinfecting the steering wheel and the dashboard in cars.
The “Let’s take care of each other” campaign also supported the health service of Wielkopolska in their combat against the coronavirus.

Ilustrations

Website

- www.autostrada-a2.pl/corporate/media/press-release/222

Gdańsk Transport Company (GTC) / PAK

Project title

AmberOne Close to Us

Project's aim

Engagement and development of local communities.

Benefits of the project

Our help has already reached nineteen organizations from the municipalities through which the A1 AmberOne Motorway runs, so far the subsidies from the competition have reached the municipalities: Lubicz, Subkowy, Pelplin, Lisewo, Kowalewo Pomorskie, Stolno, Morzeszczyn, Chełmża, Pruszcz Gdański, Starogard Gdański, Dragacz and Grudziądz. We estimate that more than 39,000 people are already using or have benefited from ongoing projects.

Project timeline

The project is realized since 2017 on yearly basis.

Project description

The idea of the *AmberOne Close to Us* program is to support small social initiatives, important from the point of view of ecology and road safety, in municipalities located around our motorway. Local communities have the best knowledge of their needs and the greatest willingness to improve the infrastructure of their area, contributing to the improvement of the quality of life of these communities. As part of the program, the company organizes an annual competition in which projects of local organizations from municipalities located between Rusocin and Nowa Wieś are awarded and financed. Thanks to the funds obtained, local communities gain new meeting places, increase their knowledge about road safety and carry out pro-ecological activities

Gdańsk Transport Company (GTC) / PAK

Ilustrations

Website

- www.a1.com.pl/en/kampanie/amberone-close-to-us/

Autopistas España, A4 Brescia-Padova, Sanef–Abertis Group / SEOPAN

Project title

International Network of Abertis Chairs

Project's aim

Aware of the importance of the academic world for social and economic progress, **Abertis, through this international network of Chairs, fosters training, research and the transfer of knowledge between Universities and Business.**

The Abertis Chairs network is made up of those established in **Spain** (Polytechnic University of Madrid and Polytechnic University of Barcelona, BarcelonaTech), **France** (École des Ponts-ParisTech), **Puerto Rico** (University of Puerto Rico), **Chile** (Pontificia Universidad Católica de Chile) and **Brazil** (University of São Paulo). Now, two new chairs have been added in **Italy** (University of Padua) and **Mexico** (National Autonomous University of Mexico).

Benefits of the project

Through the International Network of Abertis Chairs, the generation and dissemination of new knowledge and innovations in the various fields of activity is encouraged, placing them at the service of society as a whole and of the technical and educational community, and caring for and helping the talent that universities are capable of bringing to the surface and channeling.

Project description

Abertis Awards for Infrastructure and Road Safety in France, Spain and Italy.

ROADIS / SEOPAN

Project title

«Saúde no Trecho 2021» Campaign

Project's aim

The aim of this project is to bring better health care to local communities at Bahia (Brazil).

Benefits of the project

With these campaigns, we contribute to improve the quality of life of the communities surrounding the concession at Bahia (Brazil).

Project timeline

This project has been carried since 2018.

Project description

Health campaigns, conducted in partnership VITALMED, in three Bahian municipalities consisting of a van, staffed by a physician and team of nurses who carried out consultations and check-ups; measured blood pressure, checked blood sugar levels, etc. ROADIS, together with the cooperative Forte Saúde and the municipal health authorities in areas where the campaign took place, had the opportunity to update the vaccination booklet, provide dental care, rapid STD tests, and offer psychological support. All of this free of charge.

Illustration

Autostrada Brescia Verona Vicenza Padova S.p.A. / AISCAT

Project title

ELECTRONIC TOLLS SAVE MORE THAN 3000 TONNES OF CO2 ON THE A4 BRESCIA - PADUA SECTION

Project's aim

A case history demonstrating sustainable mobility and a lower environmental impact thanks to the adoption of electronic toll systems

Project description

The A4 Holding Group and Telepass have come together to develop a successful case study on sustainable mobility. The study, commissioned by the Ca' Foscari University of Venice, quantified the reduction of polluting emissions resulting from the presence of electronic toll stations that do not require vehicles to stop for the collection and payment of the motorway ticket. The study considered the section of the A4 included between Brescia and Padua, managed by Autostrada Brescia Verona Vicenza Padova, and one of the busiest highways in Italy and Europe.
The research applied a specific mathematical-scientific model developed by the academic team, and calculated a reduction of 3,350 tonnes of CO2 emissions in 2019 thanks to the use of Telepass toll collectors (2,880 tonnes of CO2 in 2020). Translating this figure in terms of car trips from Rome to Milan, the savings correspond to more than 35,000 trips, or about 1,500,000 litres of fuel, with a huge advantage for the environment but also for people in terms of noise pollution, traffic congestion and related costs.
The conclusion of the project is that the electronic toll payment infrastructure can provide greater advantages than the traditional infrastructure and a better service to motorists thanks to the optimization of flows, but also in terms of environmental benefits: long-term conservation of nature and biodiversity, reducing the carbon footprint and air pollution in the transportation sector.

Autostrada Brescia Verona Vicenza Padova S.p.A. / AISCAT

Illustrations

Autostrade per l'Italia S.p.A. / AISCAT

Project title

AUTOSTRADE PER L'ITALIA CHOOSES SUSTAINABILITY

Project description

Taking up the challenge posed by the UN 2030 Agenda for sustainable development, and sensing the urgencies posed by the climate crisis as well as the social crisis resulting from the Covid-19 pandemic, in 2020 the Autostrade per l'Italia Group began a path of transformation that has placed sustainability at the centre of its mission and its relationship with the Grantor and with all stakeholders.
It is a long-term path that is articulated along some key guidelines:

- Develop a management system that integrates the entire life cycle of the infrastructure, further strengthening elements of resilience and security;
- Reduce the Group's environmental footprint, with the goal of being a best practice in combating climate change and achieving the Net Zero goal by 2050;
- Define a new relationship with the customer to make the travel experience safer, more connected and more enjoyable, and to promote "smart" integration between highway and urban infrastructure;
- Strengthen its sustainability governance system and build a wealth of people, knowledge and experience where diversity and talent are valued.

In line with this process, the company has formalized a public commitment to the "Net Zero" goal aimed at limiting global warming to a level not exceeding 1.5° compared to pre-industrial levels by 2050 (see Aspi Net Zero box).

In March 2022 the Group achieved the Envision certification (the first highway infrastructure in Europe to do so) for the "Passante di Bologna" project, achieving the Platinum level. In the future the objective is to extend the certification to other infrastructure works, thus confirming the adoption of sustainable design criteria.
Governance on ESG issues has also been strengthened with the establishment of an internal board committee, a management committee and the identification of "ESG Ambassadors", colleagues who are leading change inside and outside the company.
With the objective of promoting the definition of a sustainability strategy throughout the entire supply chain and implementing ESG criteria in the evaluation of suppliers, Autostrade per l'Italia has joined the Open-Es platform (see Aspi OpenEs box).
At the beginning of 2022 Elgea was formed, the Group's new company that designs, builds and manages photovoltaic systems, making use of the areas along and around the motorway network.
These are the guidelines with which the Group intends to further strengthen its commitment, taking up the challenge of offering the country safe infrastructure that is resilient to climate change, destined to last over time, and where the travel experience becomes increasingly pleasant and connected thanks to the use of new technologies (see Mercury project).

Concessioni Autostradali Venete S.p.A. (CAV) / AISCAT

Project title

ADAPTING INFRASTRUCTURE TO CLIMATE CHANGE: THE KASSANDRA PROJECT

Project's aim

To define an adaptive and predictive model that allows increasing the adaptability of infrastructure and minimizing vulnerability to climate change

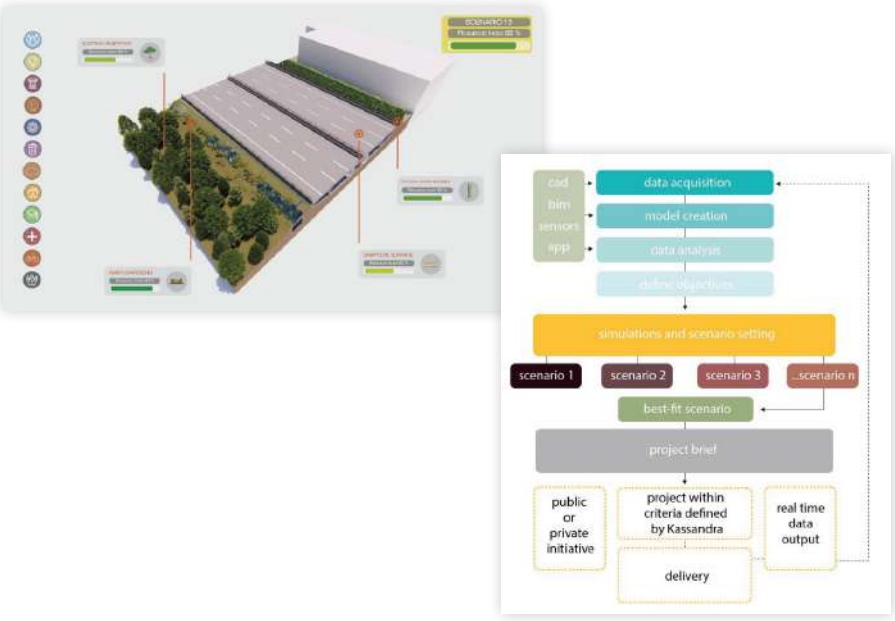
Project description

The A4, Passante and Tangenziale di Mestre will become "resilient" to the effects produced by climate change. This result is possible thanks to a software platform called Kassandra, which is being applied to motorway infrastructure for the first time, leading to a qualitative leap in their design and maintenance: in fact, from now on every intervention will be managed considering its interaction with the surrounding area, thus not only evaluating the work itself, but also taking into consideration nearby settlements, the environment, the land, vegetation and other human works. Therefore, all the effects produced by climate change on the infrastructure and conveyed by the infrastructure to the territory are taken into account.
The pilot project envisages a new concept of sustainability: the greenery along the transport infrastructures no longer has only an ornamental function, or that of contrasting atmospheric and acoustic pollution. If properly designed, it will also have the function of mitigating risk for other factors, thus reducing the impact that climate change can have on the infrastructure itself and on the surrounding area. The goal of the new design approach through Kassandra is to increase the adaptability of infrastructure and minimize vulnerabilities. The platform used is able to do this through its ability to constantly monitor and collect data on the health of the managed infrastructure, producing details that allow better planning of necessary interventions. The perspective is extremely dynamic, because the collection and processing of data through the application of the algorithm allows for modifying priorities and intervention procedures as needed. The process can also define, when necessary, the measures (technical, technological and organizational) to be adopted for increasing the resilience of the infrastructure.
Kassandra is a decision support software platform that has already been used successfully in several urban situations. Adopted here for the first time for motorway infrastructure, the platform allows one to imagine the evolution of a system, in this case motorway infrastructure, in relation to 12 standard indicator parameters, including water, air, buildings, health, mobility, waste, energy and more. Kassandra's goal is to help the decision-maker make the correct assessments in order to transform the managed infrastructure to make it more "resilient" to climate change, and at the same time, to improve the quality of life of those who use or otherwise have a some relationship with those roads from a general cost-benefit perspective.

Concessioni Autostradali Venete S.p.A. (CAV) / AISCAT

The platform analyzes the collected data, producing processed data together with forecast data in the form of information made available to those who will then have to make decisions on interventions, maintenance and organization. In the case of the pilot project, three motorway sections, located in different contexts representative of the infrastructure-environment relationship were examined for experimental purposes: the first on the Mestre bypass in a highly urbanized area, the second on the Mestre bypass in mainly agricultural area and the last on the A4 Padua-Venice in a stretch characterized by a strong anthropogenic presence on one side and a rural area on the other.
The simulation of an optimal scenario through the application of Kassandra will allow us to hypothesize eco-sustainable environmental mitigation and compensation measures that can subsequently be the object of a detailed design. These studies and analyses will also make it possible to identify the best interventions for optimization of the maintenance and management plans for the infrastructure and the relevant green areas, both in technical and economic terms.
The monitoring of climatic factors that can impact on the infrastructure is fundamental in order to make the infrastructure itself more resilient and therefore "adaptive" to the inevitable dynamics and variations produced by the environment. This process is made possible through the application of "machine learning", which is meant to identify the best predictive scenarios, thus allowing the adoption of adequate measures in every aspect.

Illustrations



Società Autostrada Tirrenica S.p.A. (SAT) / AISCAT

Project title

SELF-CONSUMPTION PHOTOVOLTAIC PROJECT

Project description

The SAT Company, in line with Autostrade per l'Italia's sustainability strategy, will work on the development of technological solutions for the production of energy from renewable sources, from the design and construction of renewable energy plants to their management and maintenance. The Company's goal is to build the facilities without further soil consumption by exploiting the artificial tunnels of the northern section of Livorno-San Pietro in Palazzi.
SAT will build these photovoltaic systems for the purpose of generating energy from renewable sources to satisfy the consumption needs in band F1 of the artificial tunnels.
The new facilities are in addition to another 2 completed in recent years, for a total of 8 plants. These additions are aimed at considerably increasing the size of SAT's photovoltaic park with a significant increase in the production of renewable energy (+400 kWp to be installed, +480 MWh/a energy produced).

Illustration

APCAP

Project title

Installations of electric chargers for internal EV fleet

Project's aim

Allow the electrification of the internal fleet.

Benefits of the project

- Environmental - reduce the GGE.
- Economical – reduce the fuels costs.

Project timeline

2021 - 2022

Project description

Providing of several electrical charging points (42 electrical EV sockets) to allow the increase of the internal EV fleet.

Ilustration

Brisa / APCAP

Project title

Electric mobility: Via Verde Electric

Project's aim

Develop a network of fast and superfast electric charging points along its motorways.

Benefits of the project

The Via Verde Electric network is BCR contribution to the transition to electric mobility as a solution for road transport decarbonisation, by facilitating the use of electric vehicles in medium and long-distance journeys.

Project timeline

2021-2022

Project description

- This network will include 82 electric charging points installed at 21 Service Areas (fast and super-fast).
- The Via Verde Electric network is a partnership with BP, Cepsa, EDP Comercial, Galp Electric, Ionity and Repsol.

Ilustration

Norscut / APCAP

Project title

Eco Driving

Project's aim

Delivering Eco Driving training.

Benefits of the project

- Reduction of carbon footprint and heavy metal emissions.
- Reduction of fuel consumption and respective costs.

Project timeline

It begun in 2021 and will proceed until the end of 2022.

Project description

The training has already been provided to the Operator and Concessionaire' staff and it will be extended to service providers, municipalities staff through a theoretical and practical training on site.
A24 users will have access to the theoretical training.

Ilustration

Norscut / APCAP

Project title

Installation of Photovoltaic panels in non-used areas

Project's aim

To improve the self-production of clean energy.

Benefits of the project

- Reduce electricity consumption.
- Reduce carbon footprint.

Project timeline

End of 2023

Project description

Installation of photovoltaic panels in areas which are not being used (3rd phase).

Photovoltaic panels have already been implemented in Control Centers (Lamego and Pedras Salgadas) and on Tunnels' Technical buildings (Castro Daire, Varosa and Régua).

Ilustration

ASFA

Project title

Developing an extensive network of electric fast-charging stations

Project's aim

To set up fast-charging stations on all service areas on the French toll road network.

Benefits of the project

Facilitate the transition to alternative fuels.

Project timeline

2023

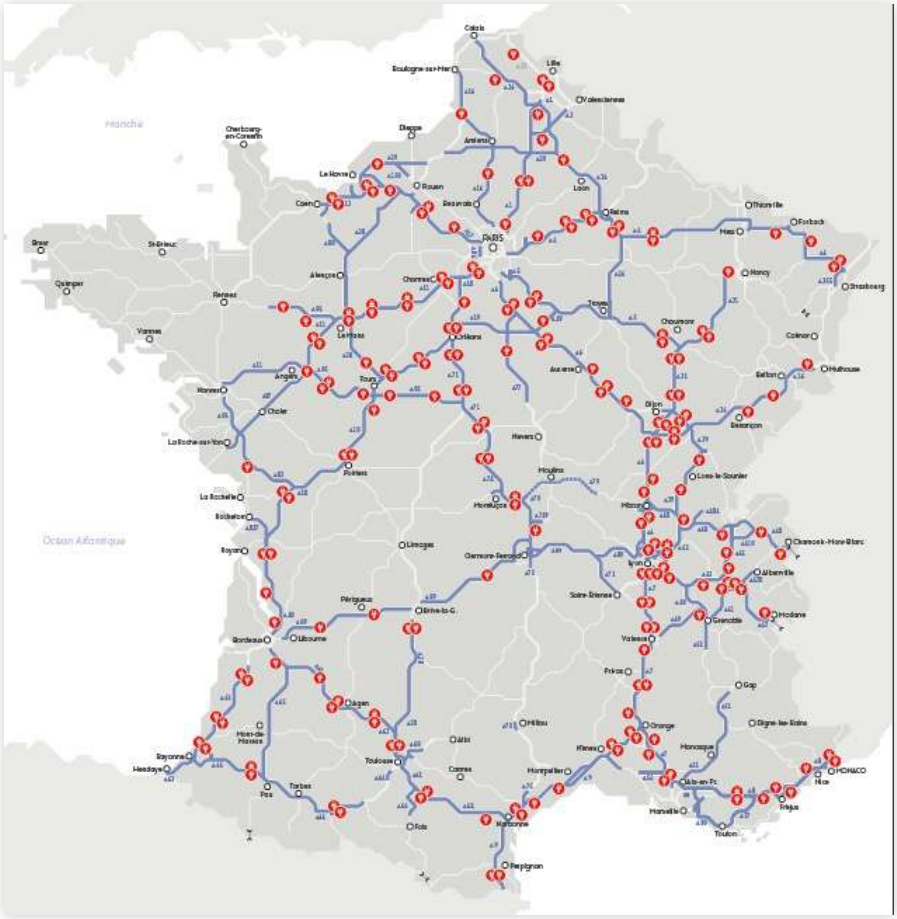
Project description

Since 2020, despite the covid crisis, electric vehicle registrations have been rising sharply in France, contributing to a significant change in the composition of the national vehicle fleet. In order to meet the future growth in demand, all service areas on the toll road network will be equipped with fast charging stations by 2023. Deployment at a fast pace is already underway with more than half of service areas covered in 2021.

ASFA

Illustration

State of deployment (end of December 2021)



Website

- www.autoroutes.fr/fr/bornes-recharge.htm

APRR / ASFA

Project title

Testing environmentally friendly bio-sourced asphalt

Project's aim

Improving the environmental performance of pavements by lowering the application temperature of asphalt and using bio-sourced binders instead of bitumen.

Benefits of the project

Use of renewable resources and energy savings, reduction of CO2 emissions.

Project timeline

2020-2025

Project description

Toll road operator APRR is actively involved in the reduction of its CO2 emissions. As part of the contract for pavement maintenance awarded to Eiffage Route, APRR is testing the innovative Biophalt® process, using a plant-based binder developed by Eiffage Route, on a 2-km section of motorway.

Biophalt® is a warm asphalt mix with high technical and environmental performance. It makes a major contribution to meeting the low-carbon target set by APRR, thanks to a combination of several innovations:
- The use of a bio-sourced binder (unlike the bituminous binders usually used) made from pitch, a by-product of the pine and paper industry.
- A 40% reuse rate of the asphalt aggregates from the previous pavement. This reduces the natural resources needed for road maintenance (aggregates and binder).
- Lowering the temperature of the asphalt mix by 30°C compared to normal. This reduces CO2 emissions significantly.

Bio-sourced asphalt mixes have the same technical characteristics and performances as traditional asphalts.

APRR / ASFA

Illustration

© Eiffage

Website

- https://presse.aprr.com/chaussees-bas-carbone-biophalt/

Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

Project title

Holz-Challenge – the wooden offensive for Austria's motorways

Project's aim

As a complementary measure to reduce CO_2 emissions, ASFINAG increases its focus on the use of wood. The aim of this challenge and the innovation dialog is to learn about innovative uses and new areas of application for wood.

Benefits of the project

With the challenge, ASFINAG is in the market research phase and is looking for companies that have innovative and new applications for wood in the form of products and solutions that are as specific as possible in the portfolio.

Project timeline

In autumn 2021, ASFINAG launched, in cooperation with the national compentense center for innovative procurement, the "Holz-Challenge – the wooden offensive for Austria´s motorways".

Project description

In the course of this innovative project, companies and individuals are invited to register projects and ideas for new applications for wood as a construction material in the area of motorways and expressways.

ASFINAG is already using wood as a building material in the following areas:
- Timber sound barriers along motorways
- Timber used partly in building construction
- External facade of toilet systems at service stations made of wood
- Pilot project on wooden road signs
- Salt silos made of wood
- Company-internal hogged wood heating systems
- Wooden carports for employee parking spaces

Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

Illustrations

Website

- https://www.asfinag.at/ueber-uns/verantwortung/nachhaltigkeit/

Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

Project title

Best bidder principle with sustainability criteria

Project's aim

ASFINAG is taking several steps to introduce sustainability principles into the supply chain. Social and environmental criteria shall be taken into account in determining the best bidders for all major procurement procedures in the construction sector.

Benefits of the project

As part of the best bidder assessment, suppliers are examined with regard to various environmental criteria, including the existence of measures to reduce transport mileage, to promote CO2 neutrality in steel production or to reduce the use of primary building materials. In this way, ASFINAG also promotes innovation in the supply chain.

Project timeline

Since 2015, ASFINAG has been relying on the best-bidder principle for all construction tenders over one million euros. In 2021, mandatory eco-social criteria in the construction sector were included, depending on the project type and size.

Project description

A catalogue of criteria with a total of 31 main criteria and 34 sub-criteria relating to economic, quality and sustainability aspects is available when determining the best bidder. For example, companies can earn more points by demonstrating higher occupational safety, reducing the environmental impact during construction or employing more specialists. The project managers decide which criteria are appropriate for the respective building project and which are applied. If appropriate criteria are included in the invitation to tender and are offered by the suppliers (contractors of construction, service and delivery services), compliance with these criteria is monitored continuously and documented accordingly. Failure to fulfil a quality criterion is linked to a penalty. The height of the bonuses is fixed with 1.5 times the allocation advantage. All suppliers must additionally sign a bidding declaration from an order amount of EUR 20,000.

Website

- https://www.asfinag.at/ueber-uns/verantwortung/nachhaltigkeit/

Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

Project title

Climate Impact Day: all eyes on climate protection

Project's aim

Climate Impact Day 2021 was focused squarely on the issues of climate change, reducing CO_2 and protecting the environment to raise awareness throughout the company for more climate protection.

Benefits of the project

As a plus, so-called "climate rangers" were recruited throughout Austria, who also participated in campaign in Vienna. In the future, they will act as ambassadors for sustainability and climate protection at their respective locations.

Project timeline

21 September 2021 *aka Climate Impact Day*

Project description

The Climate Impact Day 2021 information package was discussed with a sustainability team from all areas of the group in workshops and discussions with experts. The future of mobility will be a sustainable one – and we are making a significant contribution to this mobility turnaround. The key components are CO2 reduction, use of innovative, alternative energy suppliers for mobility and highway operations, and eco-social award criteria.

Websites

- https://www.asfinag.at/ueber-uns/verantwortung/nachhaltigkeit/
- https://www.asfinag.at/ueber-uns/presse/pressemeldungen/climate-impact-day/

Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

Project title

Expansion of charging stations

Project's aim

Construction of additional electric charging stations at service stations

Benefits of the project

ASFINAG promotes sustainable mobility, in particular through the expansion of electric charging stations on the network. With the further expansion of the e-charging stations along our network, we provide our customers with the infrastructure for e-mobility.

Project timeline

ASFINAG and its service station partners have set themselves the goal that by the year 2025, possibilities for charging electric vehicles should be created at all relevant service stations and thus on average all 40 km charging stations with at least 4 charging points will be available to customers.

Project description

The infrastructure for e-mobility is also being continuously expanded on our motorways and expressways. As an important step towards the CO2-neutral motorway, 11 ultra-fast charging stations (the output of these charging stations is 350 kW) are currently in operation along our section network. This corresponds on average to an ultra-fast charging station every 200 km. This allows full charging in around 15 minutes. At the end of 2021, 31 service stations were equipped with charging stations (a total of 186 charging points of different charging power levels) for electric vehicles. This already provides a good coverage of our road network: On average, electric charging stations are already available every 72 kilometres along the motorways and expressways. The charging stations are equipped with all common plug types (CHAdeMO, CCS and type 2) and are connected to an open e-roaming platform. All national and also international customers will thus have easy access to the charging stations. This makes long-distance electric driving easy and convenient.

Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

Illustration

Website

- https://blog.asfinag.at/technik-innovation/e-mobility-autobahnen-und-schnellstrassen-oesterreich/

DARS d. d.

Project title

DarsGo

Project's aim

The introduction of a new, electronic toll system in multilane free flow for vehicles weighing over 3.5 tons.

Benefits of the project

- Tolling without stopping or reducing speeds as a result of the removal of toll booths (34), which contributes to less pollution, noise, fuel consumption and traffic congestion.
- Yearly savings due to the free flow DarsGo system. The estimate is based on data from 2018 and 2019:
  - 600 000 working hours
  - 6% of total fuel consumption of HV
  - fuel saved: 14.190 tons, 168 GWh
  - less CO_2 emissions: 43.640 tons
  - less NOx emissions: 78 tons
- Tolling for a distance travelled.
- The possibility of differentiated charging by time periods (for example, hours in the day, the day of the week or other time periods).
- Flexibility in the event of adding new toll sections.

Increase in revenue for DARS by tolling heavy vehicles on the entire toll network.
- No more cost for toll both employees.
- Digitalisation of the enforcement.

Project timeline

27 September 2016 – 1 April 2018

DARS d. d.

Project description

On 1st April 2018 DARS d.d. introduced a modern, DSRC Electronic tolling system in multilane free flow for vehicles weighing over 3.5 tons, called the DarsGo system. Obsolete tolling system was replaced with a modern microwave system that collects toll for heavy vehicles with a help of 128 gantries. Users have a fully automated procedures using the equipment in the vehicle - DarsGo units (on board units) based on the technology, consistent with the Directive of the European Parliament and Council Directive 2004/52/EC of 29th April 2004 on the interoperability of electronic road toll systems in EU. Users have non-discriminatory and rapid access to the fulfilment of the conditions for the use of a toll network.

Illustrations

Enforcement gantry:

Website

- www.darsgo.si/portal/en/home

Gefyra S.A. Rion-Antirion Bridge / HELLASTRON

Project title

Promoting electrification of vehicles

Project's aim

Phase out fossil fuel use.

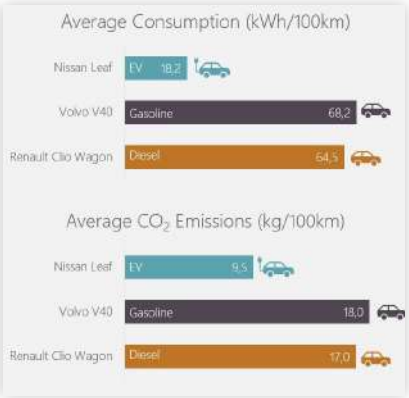
Project timeline

September 2019

Project description

In September 2019, the first electric vehicle was added to the fleet of the Bridge. Additionally, two parking spaces on either side of the tolls of the Bridge have been equipped with chargers for electric vehicles and are available to the public. The fact that the chargers are powered by zero footprint RES enhances the benefits of using electric vehicles on the Bridge.
The average actual energy consumption of the EV was 18,2kWh/100km compared to Gasoline (68,2 kWh/100km) and Diesel (64,5 kWh/100km) vehicles. Accordingly, the average CO2 emissions of the EV per 100km were almost half of the other vehicles.

Illustrations



Gefyra S.A. Rion-Antirion Bridge / HELLASTRON

Project title

Green Bridge Project

Project's aim

Switch to a 100% renewable energy electricity provider.

Benefits of the project

- Zero emissions from electricity.
- Reduction of carbon footprint by more than 60%.

Project timeline

September 2019

Project description

As of September 2019, the Rion-Antirion Bridge is supplied entirely by electricity produced exclusively from renewable energy sources, achieving zero CO2 emissions from electricity consumption. A necessary condition in this transition was to find a provider who could certify that 100% of the supplied energy is "green".
The switch of electricity provider resulted to savings due to reduced pricing, deduction of CO2 emissions charges and return of warranty. This way the Bridge radically reset its electricity footprint, which corresponded to 67% of its total emissions for the years 2016-2018 and nearly 50% of total energy consumed. For 2020, electricity from renewable energy sources resulted in avoiding 350 tons CO2.
The electricity provider is giving GEFYRA S.A. an official G.O. Guarrantee of Origin Certification with a Unique Guarantee Number, issued by DAPEEP (Renewable Energy Sources and Guarantees of Origin).

Ilustration

Website

- www.gefyra.gr/company/Green-GEFYRA/

Moreas S.A. / HELLASTRON

Project title

LED Motorway Lighting Upgrade in the Road Section 185.8 – 191.8 km

Project's aim

80% electrical energy savings in the Section.

Benefits of the project

- Operating cost reduction.
- Carbon footprint reduction.

Project timeline

2019: Motorway Lighting Upgrade Study submission to the State.
2020: Study Approval from the State, Call for tender, Materials procurement.
2021: Project commissioning.

Project description

The aim of the project was to upgrade the Motorway lighting system in a 6 km section (from Mallota Cut & Cover (km 185.8) to Lefktro Interchange (km 191.8)) to LED technology. It involved the replacement of 320 Sodium high pressure vapor lamps and the corresponding control systems with LED ones, with adaptive lighting capability depending on the Motorway's traffic.
The design targeted an 80% reduction in the Section's electrical energy consumption (approximately 0.5 GWh/year), with the possibility of further savings through the implementation of adaptive lighting technology.
The project was commissioned in January 2021 and the targeted energy savings were realised.

Ilustration

Nea Odos S.A. / HELLASTRON

Project title

E-vehicle charging stations

Project's aim

Promote e-mobility and provide better service for the user.

Benefits of the project

- Reduce environmental footprint.
- Provide better services.

Project timeline

2020

Project description

The Concessionaire, in 2020, proceeded to the installation of electric vehicle charging stations in all company premises (over 20 locations), intended for internal company use. To date, out of the 18 MSS operating in its motorways, the Concessionaire has installed 16 electric vehicle charging stations each with the ability to charge up to 3 vehicles simultaneously.

Ilustrations

Website

- LinkedIn's dedicated post

Nea Odos S.A. / HELLASTRON

Project title

Solar panels 2020

Project's aim

Meet part of the project's energy needs with clean green energy from the sun.

Benefits of the project

- Improve sustainability and energy consumption from green sources.
- Reduce environmental footprint.

Project timeline

2020

Project description

The Concessionaire has been systematically trying to reduce electricity consumption through the installation of solar panels in order to meet the energy needs of its facilities. Such facilities include water wells, SOS telephones along highways and administration buildings.
An indicative example of this effort is the electricity from the solar panels in the HQ Athens building, which in 2020 amounted to 21,385kWh compared to 4,444KWh in 2019.
Future targets include the installation even more solar panels in various areas of the concession project.

Ilustrations

Nea Odos S.A. / HELLASTRON

Project title

E-mobility

Project's aim

Transition to the era of E-mobility.

Benefits of the project

- Reduce environmental footprint.

Project timeline

2020 - present

Project description

In 2020 the company proceeded to the acquisition of the first electric "green" van which is used as a vehicle for maintenance works. The replacement of 100% of the privately owned vehicle fleet with new, electric, hybrid and environmentally friendly vehicles will be completed gradually within the following years. In this way, Nea Odos becomes the first motorway Concessionaire in Greece which implements a comprehensive plan to replace its fleet of vehicles with 100% electric, hybrid and environmentally friendly cars and using such cars as its business vehicles.

Ilustration

Websites

- LinkedIn's dedicated post on green electric van
- LinkedIn's dedicated post on electric vehicles

Olympia Odos S.A. / HELLASTRON

Project title

Adaptive lighting

Project's aim

Adaptive Lighting of Olympia Odos, is an innovative, intelligent software platform, based on machine learning and AI technologies, which determines the brightness of LED luminaires in the open road sections of highways, through the processing of traffic and meteorological data.

Benefits of the project

Key advantages of the system are the optimization of electricity savings, the minimization of the respective carbon emissions, the reduction of equipment wear, the reduction of light pollution and, most importantly, the increase of road safety and comfort.

Project timeline

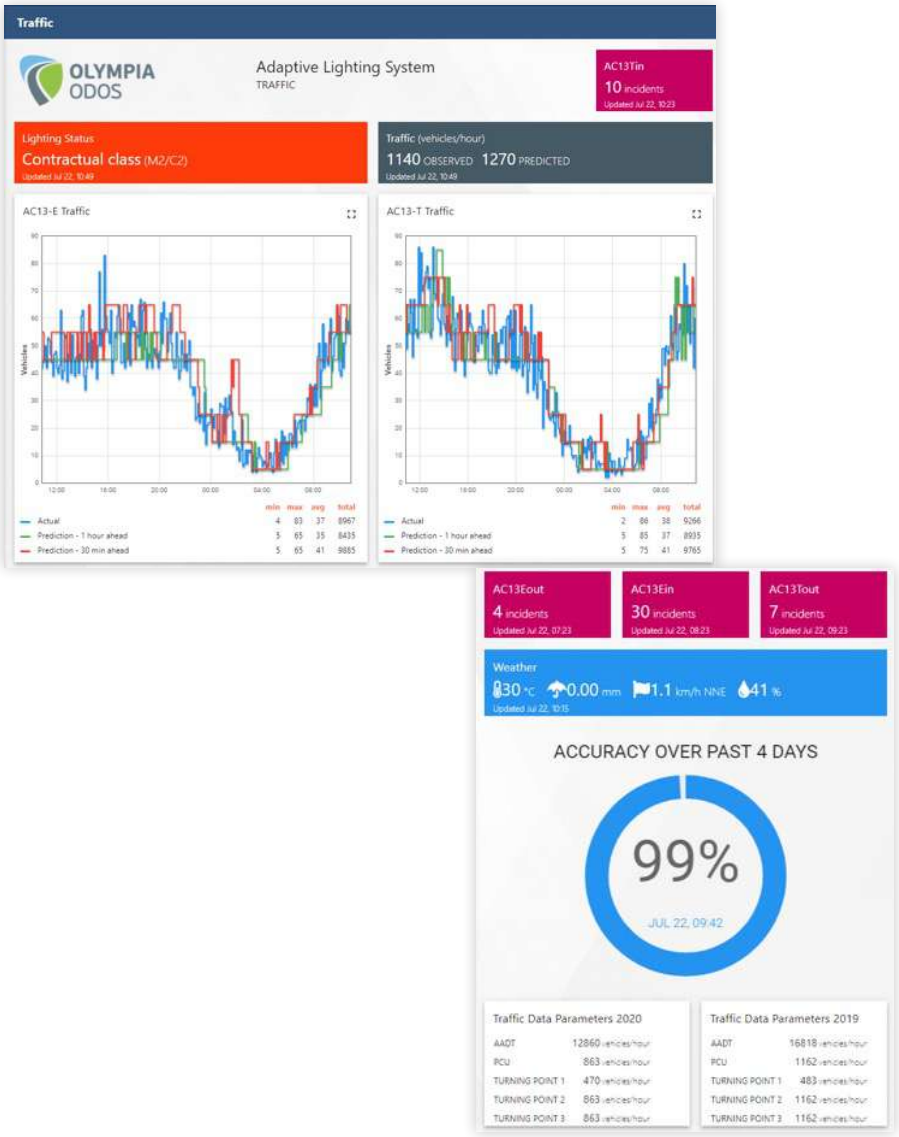
2021-2023

Project description

The system is based on data reception from the respective devices (induction loops, cameras and weather stations with the ability among others to count the number of vehicles) from controllers. Using traffic load data, the system will be able to predict the average traffic load in the near future using the capabilities of neural networks and machine learning.
The expected degree of traffic load is combined with the expected weather conditions and other events on the highway and through a set of rules and appropriate algorithms the required percentage of brightness (or dimming of the LED luminaires) is calculated to meet the predicted needs, but be limited to the minimum level allowed by the conditions.

Olympia Odos S.A. / HELLASTRON

Illustrations



Website

- www.olympiaodos.gr

Olympia Odos S.A. / HELLASTRON

Project title

Hybrid tolling system

Project's aim

The Hybrid system is applied as an extension to the existing open type toll system and allow for distance travelled charging to ETC equipped vehicles only. It is for the first time in the Greek motorway network that such a system operates.

Benefits of the project

The utilization of the hybrid system contributes to the optimization of the free flow conditions along the motorway and significantly helps reducing the carbon emissions from the vehicles stopping at toll booths.

Project timeline

2017-2020

Project description

The operation of the Hybrid system is based on applied rebates (ETC account credits) depending on the vehicle's entry/exit point on the motorway, towards regular mainline/ramp toll charges (fixed charging zones). As such and while the vehicle is charged the regular toll fees passing through conventional toll stations, by exiting or entering the motorway at specific interchanges, an appropriate (distance based) rebate is also applied.
To that effect and for monitoring and recording the passing of ETC vehicles from specific interchanges (entry/exit points), appropriately equipped (DSRC, licence plate capturing cameras, etc.) and dedicated to the Hybrid system gantries are installed at these interchanges.

Olympia Odos S.A. / HELLASTRON

Illustration

Website

- www.olympiaodos.gr

All Toll Roads Ireland, Government initiative / ITIA

Project title

Electric Vehicle Toll Incentive (EVTI)

Project's aim

The Electric Vehicle Toll Incentive (EVTI) encourages more road users to consider electric vehicles. Electric vehicle owners registered with a Tag will pay a reduced tolling fee of up to 75% on Irish toll roads.

Benefits of the project

Reduced CO2 emissions and cost savings to road users.

Project timeline

July 2018 – Dec 2022, subject to change/extension.

Project description

Government funding to support a reduced tolling scheme for Electric Vehicles. The scheme is referred to as the 'Electric Vehicle Toll Incentive (EVTI) Scheme'. The scheme commenced on the 1st of July 2018 and is expected to run until 31st December 2022 (or up to a maximum of c. 50,000 EV's.) However, the scheme rules and applicable incentives / refunds are subject to change, with the new refunds and relevant terms and conditions being announced in advance of each calendar year.
The scheme refunds are capped at €500 per calendar year for private vehicles and €1,000 per calendar year for goods vehicles.

All Toll Roads Ireland, Government initiative / ITIA

Illustration

Scheme Refunds Available*

Toll Road	M50			Dublin Tunnel			All Other Toll Roads
Applicable Days	Mon-Fri		Weekend/ public hol.	Mon-Fri		Weekend/ Public Hol.	Everyday
Applicable Period	Off Peak	On Peak	All day	Off Peak	On Peak	All day	All day
Private Vehicles							
Battery Electric Vehicle	75%	50%	75%	50%	Not App.	50%	50%
Plug in Hybrid Electric Vehicle	50%	25%	50%	25%	Not App.	25%	25%
Goods Vehicles							
Battery Electric Vehicle	75%	50%	75%	50%	Not App.	50%	50%
Plug in Hybrid Electric Vehicle	50%	25%	50%	25%	Not App.	25%	25%

*maximum refund cap of €500 for private vehicles / €1,000 for goods vehicles

Website

- www.directroute.ie/EVTI.aspx

Directroute (Fermoy) Ltd. / ITIA

Project title

Road Lighting change from SON to LED

Project's aim

Carbon footprint and maintenance reduction.

Benefits of the project

- Carbon footprint, maintenance and cost reductions with better visibility and comfort for road users at nighttime.
- Removed Irish Authorities requirement to replace lighting every 3 years, regardless condition and performance.
- 2021 recorded an Energy reduction of 56% and 23,943kg CO2 versus 2019.

Project timeline

Installation during the period January-April 2020.

Project description

All of the 159 Phillips high pressure sodium road lighting fittings (400, 250 and 150Watt) in Fermoy were upgraded to Voltica in 2020. The benefits of led lighting is near daylight natural light colour with a reduction of electricity consumption by 93,329 KWH per year reducing carbon emissions by 23.9 ton of C02 Gas per year.

Illustrations

Camera images halfway during installation:
'white' LED vs 'yellow old' SON lighting.

Voltica slim design light:

Directroute (Fermoy) Ltd. / ITIA

Project title

Light Energy Controller system (LEC)

Project's aim

Carbon footprint, energy and maintenance reduction.

Benefits of the project

Carbon footprint, maintenance and cost reductions and a more stable energy supply to the SON road lighting.

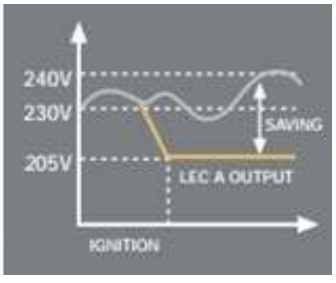
Project timeline

Installation November 2011 and still in place.

Project description

All of the 159 Phillips high pressure sodium road lighting fittings (400, 250 and 150Watt) in Fermoy were connected to LEC systems in 2011.
These units work on the basis of reducing the Voltage going to the lights from approx. 235V to approx. 205V. The thinking behind this that road, or any other lighting, will shine just as bright on 205 Volt as on the mains power of 235V. They dynamically control and stabilize the voltages from the energy network and are providing a more constant balanced output to the lights which extended the lifespan of lights considerably.
These units saved us 300,000KwH (23%) of our energy bill and approx. 74 Ton of CO2 emissions during the period 2011-2019. A further comparison cannot be made as this project changed to LED road lighting in 2020 but the units are still in place and continue to contribute to energy savings on top of the introduction of LED's.

Illustrations



Directroute (Limerick) Ltd. / ITIA

Project title

Tunnel Lighting change from SON to LED

Project's aim

Carbon footprint, maintenance and cost reduction.

Benefits of the project

- Carbon footprint, maintenance and electricity cost reductions.
- Providing a more natural light colour, increased comfort for road users and much better visibility for control room operators helping safety and incident responses.
- A reduction of electricity consumption by 933,500 KWH per year, a reduction of 76% and reducing carbon emissions by 237 ton of C02 Gas per year.
- Increased warranty up to 17.5 years (!).
- Also removed the Irish Authorities requirements to replace lights, regardless condition and performance, every 3 years.

Project timeline

04-2022

Project description

All 569 tunnel luminaires (400W/150W) in the Limerick Tunnel to be replaced by Broll tunnel luminaires in 2022.

Illustration

Directroute (Limerick) Ltd. / ITIA

Project title

Road Lighting change from SON to LED

Project's aim

Increasing safety, Carbon footprint, maintenance and cost reduction.

Benefits of the project

- Carbon footprint, maintenance and electricity cost reductions.
- Providing a near daylight natural light colour, increased comfort for road users and much better nighttime visibility for control room operators helping safety and incident responses.
- A reduction of electricity consumption by 591,884 KWH per year, reducing carbon emissions by 150 ton of C02 Gas per year.
- Also removed the Irish Authorities requirements to replace road lighting, regardless condition and performance, every 3 years.

Project timeline

Installation in November-December 2020.

Project description

All of the road lighting on the Limerick Tunnel Road network (763 luminaires) were upgraded from 400 and 250 Watt Phillips high pressure sodium light fitting to Philips luma LED Lighting in 2020.

Ilustration

Before and after installation: ' Dark yellow old' SON lighting vs 'white' LED.

Directroute (Limerick) Ltd. / ITIA

Project title

Solar Panel installation in 4 locations Limerick Tunnel

Project's aim

Carbon footprint and energy cost reduction.

Benefits of the project

- Carbon footprint and energy cost reductions.
- Generation of approximately 185,000 KwH electricity, resulting in a reduction of emissions by 45,8 Tonnes of C02 Gas per year.

Project timeline

2022/23

Project description

Installation of Solar PV Systems on 2 Toll Plaza buildings and both entrances/exits from the Limerick Tunnel.

Illustration

Gdańsk Transport Company (GTC) / PAK

Project title

A1 Motorway carbon footprint assessment

Project's aim

Calculate A1 Motorway project carbon footprint.

Benefits of the project

Understanding how A1 Motorway project operation affects the climate (level of CO2 emissions) and how negative effects thereof could be mitigated.

Project timeline

01-2020 – 12.2021

Project description

The purpose of this study is to assess the carbon footprint accompanying the operation and maintenance of the A1 Motorway in the year 2020 – including the variants reflecting the potential changes of certain elements of the motorway.
The carbon footprint calculations (calculations of the greenhouse gas emissions) for the A1 Motorway were performed in compliance with the concept presented in the international standard: the GHG Protocol Corporate Accounting and Reporting Standard. The document formulates the requirements and guidelines for companies and other organizations preparing for compilation of the inventory of greenhouse gas emissions at the corporate level.

Conclusions from the study:
1. The traffic has the highest share in the CO2 emission (indirect emission).
2. Reduction of the CO2 emission from the traffic is possible by holding educational campaigns on the speed for the drivers.
3. It is theoretically possible to reduce the CO2 emission related to the on-going maintenance of the motorway or the wastes produced. However, this would have to involve reduced consumption of the materials, which may prove difficult in practice considering the legal requirements and the safety of the road users.
4. Emissions falling under scopes 1 and 2 account for 1% of the traffic emission.
5. The emissions falling under scope 2 (electricity consumption) are more than twice higher than the emissions of scope 1 (fuel combustion in stationary and mobile sources).
6. Reduction of the emissions of scope 2 is possible by replacing the sources of light to those of the LED type – here, the attainable reduction of the emission is up to 80% current emission related to the consumption of electricity.
7. Currently the green areas fully compensate the CO2 emissions of scopes 1 and 2. The introduction of additional activities related to green areas would allow for:
    a. Additional CO2 emission compensation of 288 tons as a result of a replacement of 40 ha of lawns with flower meadows, or
    b. Additional CO2 emission compensation of almost 3 500 tonnes annually as a result of stopping the grass mowing.

Autopistas España – Abertis Group / SEOPAN

Project title

Carbon footprint calculator for customers journeys

Project's aim

Autopistas launches a tool that allows calculating the carbon footprint. Thus, customers can calculate CO2 emissions as they pass through the highways through the company's website www.autopistas.com.

Benefits of the project

- Sustainable positioning
- Fight against climate change
- New customer service on the web

Project timeline

Project completed.
78.145 visits on the website on 2021.

Project description

In order to use the tool, it is only necessary to select the following parameters:

- The origin / destination of the journey.
- The fuel consumption of your vehicle (l or kg/100km). For electric vehicles, the capacity (kWh) and autonomy (km) of the battery. For Plug-in Hybrids, the fuel consumption (l/100km), the capacity (kWh) and the range (km) of the vehicle's battery.
- The type of vehicle among the options available for different types of fuel or motorization (car, motorcycle, coach, bus, van, refrigerated or non-refrigerated truck).
- Emissions derived from fuel consumption / type of vehicle.

Website

- www.autopistas.com/planifica-tu-viaje/mapa/

Autostrada del Brennero S.p.A. / AISCAT

Project title

A22, A NEW, GREEN CONNECTION WITH THE A1

Project description

The third lane between Verona north and Campogalliano is getting close to becoming a reality. The Board of Directors of Autostrada del Brennero, chaired by Hartmann Reichhalter, has in fact approved the executive project for the first of the three lots for work that will enhance the mobility offering in one of the most productive areas of the country. This is the junction between the A22, the A1 and the Campogalliano-Sassuolo route. A 138 million euro operation, it represents not only the first functional step towards the third lane, but also the solution to the problem of frequent congestion on the current connection between the Autostrada del Sole and the main connection between Italy and Europe: the A22
The entire project for the construction of the third lane between northern Verona and Campogalliano is based on the most rigorous environmental sustainability. In fact, the intervention will be carried out within the current motorway area in the free space that currently separates the two thoroughfares, without further soil consumption. As Autostrada del Brennero has been doing for years with all of its new creations, in this work of art too we do not merely see a functional element to be camouflaged with inevitably imperfect and sometimes even clumsy attempts at mimicry, but an architectural element conceived according to aesthetic canons that allow it to fit into the landscape by expressing and renewing its anthropic dimension. This does not mean that the green area will not be cared for. On the contrary: the project will bring back the existing vegetation in the low and medium plains, which were originally characterized by forest. The focus of the work will be the 87 meters of single span of the A22 overpass, destined to dominate the Autostrada del Sole: the deck will be supported by wire ropes to two bipod side portals consisting of two circular struts and a hollow sphere in the top towards which the suspension wires of the deck will converge with the shore stabilization wires in a fan arrangement. Just as the creation of the Plessi al Brenner Museum at the high point of the state border was meant to represent the gateway to the north of the A22, so the Campogalliano junction will represent the gateway to the south.

Illustration

Autostrada del Brennero S.p.A. / AISCAT

Project title

BRENNERLEC'S TESTING HAS CONCLUDED: THE MODEL CAN NOW BE REPLICATED

Project description

For BrennerLec it is time to take stock, and given the excellent results achieved during testing, to imagine how and where to replicate the model that will allow travellers to arrive earlier while polluting less. This was discussed on November 25, 2021 at the Final Conference regarding the BrennerLec project "Driving through the Alps with respect", which, in addition to Autostrada del Brennero, which included the active involvement of project partners: the Environmental Protection Agencies of the Provinces of Trento and Bolzano, the University of Trento, NOI TechPark Südtirol/ Alto Adige and CISMA Srl.
Autostrada del Brennero has aimed its dynamic speed management measures at light vehicles, because they are responsible for 46% of polluting emissions and because, unlike heavy vehicles, they do not always travel at an optimal speed. The experiment was based on an ITS system, developed together with our partners, that is capable of cross-referencing traffic, weather and air quality data, indicating the best speed given the various conditions. We have conducted over 4,700 hours of testing dictated by environmental conditions and 750 hours by heavy traffic conditions. It is evident that mandatory limits produce better results than the simple recommended speed, but the results on the environmental front were still satisfactory, with a reduction of about 10% of the NO2 concentrations on the roadside in normal conditions and of 20% in case of heavy traffic. The results in this second case are really very important, with an average reduction in travel times of 10% (even with a 10% increase in traffic volume) and an accident rate close to zero.
Legambiente has awarded its "Green Flag" to BrennerLEC "for demonstrating how speed reduction on the motorway decreases air pollution, helping to make vehicular traffic on the Brenner thoroughfare more respectful of health and compatible with the characteristics of the territory it crosses". The model that has been developed can now be replicated.

Illustration

Concessioni Autostradali Venete S.p.A. (CAV) / AISCAT

Project title

SKYTRAFFIC PROJECT

Project's aim

Using drones to oversee video surveillance and infrastructure monitoring operations, automatically identifying anomalies

Project description

The project therefore demonstrates the feasibility and advantages deriving from the adoption of drones and an appropriate associated software platform for video surveillance and infrastructure monitoring operations, such as the identification of anomalies on guard rails, signage, etc.
The SkyTraffic platform, designed and built to the TRL 8 spec (Technology Readiness Level 8 - the current system was completed and "flight qualified" for this level through tests and demonstration), is based on the SAPR Capture-X system owned by CAV. This system consists of a drone multicopter equipped with different types of cameras (conventional and 360 degree), along with sensors for the acquisition of images and three-dimensional data relating to infrastructure and the surrounding land, and an associated active housing which functions as a charging station and shelter during stand-by phases.
SkyTraffic, a project aimed at monitoring traffic and infrastructure, is considered the solution that brings together all the components which make it possible to guarantee video surveillance and monitoring operations functional to Venetian Motorway Concessions from Drones or UAS. The project is made up of three fundamental parts:

- flight devices and their related firmware/software solutions;
- control devices supplied to road crews;
- the software platform that deals with data transmission and real-time analysis and visualization in the Control Room.

The video streaming and acquired data will be transmitted in real-time to the operations centre via the ultra high-speed network infrastructure that will be developed.

The SkyTraffic software platform allows:

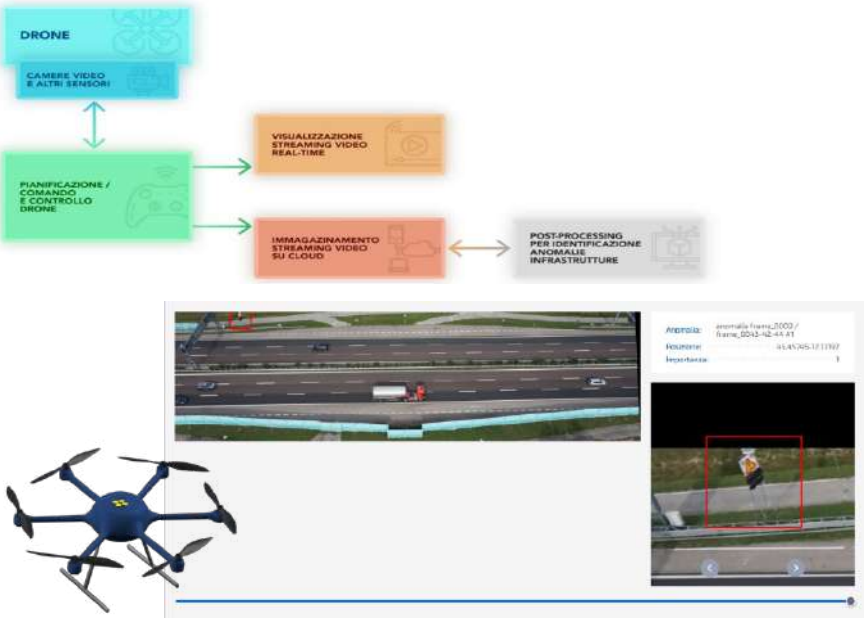
- Viewing the real-time video streams acquired by one or more drones, selectable via the user interface;
- Storage of the video streams within a dedicated infrastructure based on cloud technology;
- Post-processing of stored video streams through the use of specific cognitive algorithms.

These algorithms will allow identifying and "marking" (auto-tagging) the anomalies detected by automatically tracing them (auto-tracking) within the video. The anomalies considered in the context of the POC will be those relating to guard rails and signs.

Concessioni Autostradali Venete S.p.A. (CAV) / AISCAT

The Sky Traffic hangar consists of two geodesic domes. The system is designed and built for outdoor installation, for resistance to atmospheric elements such as snow, wind and rain and is insulated with isolation panels. The system is completed with a suitably sized support base which is equipped with a double mechanism for the automatic movement of the upper dome (opening times of 30-60 seconds).
The analysis of the flow of images obtained by the drone begins with a validation procedure carried out on the complete set of downloaded frames to remove images that are not compatible with the mission profile. Subsequently, the analysis and transformation procedures shown in the pipeline block diagram are performed for each of the remaining frames.

Illustrations



Milano Serravalle-Milano Tangenziali S.p.A. / AISCAT

Project title

THE SERVICE AREAS OF MILAN - SERRAVALLE PROTECTING THE ENVIRONMENT

Project's aim

A change in environmental awareness in the management of service areas under concession with the renewal of sub-concessions to oil and restaurant operators.

Benefits of the project

With the signing of the new Conventions for management of the "OIL" and "FOOD" services of the Service Areas on the routes it manages, Milano Serravalle has decided to change gears, adopting a posture of greater environmental protection which brings with it improvements in the services offered.

Project description

In 2021 Milan Serravalle began the signing phase of the new sub-concession contracts for managing the distribution service of fuel and lubricant products and ancillary activities, as well as the refreshment service and related activities in the Service Areas located along the routes in concession. About twenty Agreements out of a total of 32 have been signed to date, with the signing phase expected to be completed by the end of 2022.
The new Conventions, compared to those that were stipulated and concluded when there was still little attention paid to the management of environmental aspects, highlight the commitment, attention and sensitivity that Milano Seravalle has developed over the years towards environmental issues. They detail the principles of protection and safeguarding of the environment and natural resources, with the aim of progressively reducing the impact on environmental aspects created by the company and its sub-dealers.
The new contracts provide for the restructuring and modernization of the buildings and related structures at the Service Areas, above all with a view to improving the services offered as well as reducing environmental impact with the goal of containing the air conditioning energy consumption of the premises and operating structures. Another important improvement action concerns new vehicle refuelling methods for the development of sustainable mobility. The service areas - their roles renewed following the improvements - will be equipped with modern and efficient technologies, including photovoltaic panels and high speed charging columns for electric vehicles.
Last but not least, the Company 's choice to invite the sub-operators to offer organic, 0 km products from a fair and inclusive market should be highlighted, as well as the enhancing of the products by reducing packaging content. Some operators will engage in collaborations with significant agri-food companies in the area in this sense.

Milano Serravalle-Milano Tangenziali S.p.A. / AISCAT

Illustration

AKA Zrt.

Project title

Lighting at the Andornaktálya roundabout

Project's aim

The lighting at the roundabout increases traffic safety.
Grid-separated functional lighting at an existing roundabout using a solar lighting system, based on an appointment issued by NIF Zrt., constructed by Zöld Garden Kft., using a system developed by HOFEKA Kft.

Benefits of the project

- Energy saving: Compared to traditional sodium lights, the LED luminaries represent an energy saving of 50%. In addition, thanks to the HDMR motion sensor technology, the system is capable of saving up to an additional 40% on average.
- The solar lighting system that has been installed is capable of providing the energy required for the functional lighting all year round, including the lights at night on the most overcast of days high-capacity energy storage
- Automatic adjustment of light levels integrated into a HDMR Smart City system: when no vehicles are present, the level is decreased from 10 lux to a pre-configured level, which is currently at 3 lux. At the bicycle crossing, the level is decreased from 15 lux to a pre-configured level, which is currently at 3 lux. This means is that the light emanating from the luminaries is decreased when no traffic is detected in the roundabout. However, when a car or a bicycle arrives, this is detected at the entrance section by a motion sensor, and by the time the vehicle makes it to the roundabout, the luminaries receive a wireless signal which triggers an increase in light levels so that when the vehicle arrives to the roundabout, the light is up to the standard level. The light levels of the luminaries is gradually decreased when it is detected that the roundabout has been free of traffic for 2 minutes.
- Sensors capable of detecting high speed automobile traffic connected to a HDMR Dynamic Motion Detection System.
- Grid-separated operation. At the same time, the system implemented here is capable of automatically switching to power supply from the grid.
- Environmentally friendly development.

Project timeline

Start of works: 29 July 2021
End of works (including pilot): 31 March 2022

AKA Zrt.

Project description

The centre of the roundabout is home to six individual posts. Each has a height of 9.5 m and supports two solar panels as well as one Tweet Stelium LED luminaire at a height of 8 m. Each of the twelve solar panels installed on the posts has a power output of 385 Wp. These charge the battery pack installed in the centre of the roundabout which has a capacity of 825 Ah. The batteries are places in custom developed specially insulated boxes, which protects them against all weather conditions. The insulation protects the batteries from excessive cold during the winter and excessive heat during the summer, providing them with a longer life span.
Two six-metre-tall solar panel powered traffic sensor posts were installed on each of the branches of the roundabout. These are equipped with outdoor wireless motion sensors and signal transmission functions. Two Tweet Stelium LED luminaries installed on five-metre-tall posts at the bicycle route provide for safe crossing during night hours.

Illustrations

APCAP

Project title

Installations of photovoltaic systems in Maintenance Operation Centres and headquarter

Project's aim

Increase the green energy in our operations and decentralize the energy production.

Benefits of the project

- Environmental - reduce the GGE.
- Economical – reduce the energy costs.

Project timeline

2021-2022

Project description

Installation of 8 PV systems 250 KWp of capacity and 350 MWh/Year.

Illustration

Ascendi / APCAP

Project title

Ascendi's Biodiversity Action Plan and Biodiversity Policy

Project's aim

This project aims to overcome the impacts of Ascendi's activities, with an ensemble of procedures to achieve the "no net loss" of Biodiversity.
The overall reduction of the main the impacts of our linear infrastructures on biodiversity and the development of Green Infrastructures. Incorporate actions in favour of the conservation and promotion of biodiversity into the company's matrix.

Benefits of the project

Reduce Animal Vehicle collisions, Restorations of Ecological corridor, reversing the trend of roads as vectors for the spread of invasive exotic species. Incorporate

Project timeline

2022-2026

Project description

The strategy is anchored in the principles of monitoring and analysis, communication and reporting and finally, acting in the conservation of Biodiversity. We consider our first pillar the establishment of a sampling grid in the infrastructure. Only with a systematic collection of data will we be able to act in concert with our objectives. Communication and awareness is the second pillar, we intend to be an agent of behaviour change for citizens, and also a source of knowledge and scientific support for the community. Finally, the last pillar, act and conserve biodiversity and ecosystems, reverse the trend of decline and promote the preservation of the natural environment.
Our strategic approach aims to act on our main ecological impacts:

1- Road Mortality (Animal Vehicle collision), one of the main causes of wildlife deaths
2- Habitat Fragmentation, one of the main causes of biodiversity loss
3- Invasive species dispersion vector, one of the greatest threats to biodiversity worldwide.

Ascendi / APCAP

Illustration

Websites

- www.ascendi.pt/biodiversidade-na-estrada-2/
- Ascendi report on Policy, strategy and action plan on Biodiversity *(Portuguese version)*

Ascendi / APCAP

Project title

Biodiversity on the Road

Project's aim

- Raise awareness of the risks of biodiversity loss and how we are all affected on a daily basis.
- Highlight the biological richness that occurs throughout the entire length of the Ascendi operation.
- Educate and teach how we can all collaborate in the protection of Biodiversity.

Benefits of the project

Raise awareness of the risks we face from the loss of biodiversity. Civic mobilization in favor of preserving and valuing biodiversity, and how important, it is for ecosystem services. Provide tools so that everyone, even with small actions, can contribute to the conservation of the biodiversity that surrounds us.

Project timeline

2022-2026

Project description

Series of short videos where the importance of biodiversity is explained in a language accessible to all. The first season was published in May, the month of Biodiversity, de following seasons are already in pre-production phase. It was composed by 5 episodes, the first episode tried to explain to what refers the term biodiversity, the following ones were divided by themes, such as passerines in urban and peri-urban environment, decline of pollinators, invasive exotic flora and Wild Animal Recovery Centres.
Associated with each episode we produce additional content where we explore a little more on each topic and give advice on how we can help, for example with the construction of nest boxes for passerines, or bees hotels.

Ascendi / APCAP

Illustration

Website

- www.ascendi.pt/en/biodiversity-on-the-road/

Ascendi / APCAP

Project title

Pilot study – Headlight deflectors – Minimizing vehicle collisions with nocturnal birds of prey

Project's aim

Reduce the number of dead particularly of *Tyto alba*, *Strix aluco* and *Athene noctua*.

Benefits of the project

Increased road safety by reducing the number of Animal vehicles collisions, conservation of the OWLSs natural populations, particularly in the RAMASAR and NATURA site.

Project timeline

2022-2026 – Results analysis and evaluation.

Project description

Application of headlight deflectors, white and blue colour, to reduce the number of collisions evolving nocturnal birds of prey.

1- Mounting on pre-existing delineators.

2- Passive system, which deflects outward the light from the headlights and causes escape behaviour responses on specimens expectably in species such as nocturnal birds of prey, leading to exclusion or flight elevation.

3- Reduction in the number of night raptors run over in particular in the Costa de Prata Concession, the site selected for the Pilot study. The literature review in particular in the case of Cervideos is inconclusive, however in LIFELINE when applied to nocturnal birds, preliminary results seem to show a significant reduction.

Ascendi / APCAP

Illustration

AEA (Auto-Estradas do Atlântico, S.A.) / APCAP

Project title

Sustainability and Energetic Efficiency on AEA

Project's aim

Replacement of all lighting on the A8 and A15 motorway nodes, from HPS (High Pressure Sodium) to LED to achieve a more sustainable infrastructure.

Benefits of the project

Reduction on indirect carbon (CO2) emissions.

Project timeline

It was implemented in 2021.

Project description

The project included the refurbishment of all existing public lighting in our network, consisting of the replacement of all HSP (high pressure sodium) luminaires (2358 un.) and projectors (333 un.) with state-of-the-art LEDs.
It was also decided to implement an advanced remote management system, covering only the luminaires, based on controllers installed in each of them and which allow point-to-point communication through an online advanced management software system.
With this new technology, it was not only possible for us to abandon environmentally harmful and discontinued equipment, but also to substantially reduce energy consumption and its respective ecological footprint. In this way, we are able to make an important contribution to the decarbonization and reduction of emissions of environmentally harmful gases.
Practically, we have reduced in 43% the indirect carbon emissions, corresponding to minus 546 ton/year of CO2.
This project involved an investment of approximately 1000K euros and was carried out during 2021.

AEA (Auto-Estradas do Atlântico, SA.) / APCAP

Illustration

Brisa / APCAP

Project title

Climate change risk assessment

Project's aim

Identification and detailed characterisation of material risks and opportunities (R&O) related to climate change and respective impact on BCR's business under a set of different climate scenarios.

Benefits of the project

Incorporating the response to the risks and opportunities identified for different climate scenarios into the company's strategy.

Project timeline

2022-2023

Project description

- Identification of climate-related risks and opportunities and assessment of financial impacts.
- Identification of mitigation measures and their associated costs.
- Assess the resilience of the business strategy and definition of strategic responses.

Brisa / APCAP

Project title

Biodiversity: Nature positive

Project's aim

Following the strategic goal approved under the Sustainability Agenda - ensure the recovery and regeneration of biodiversity and ecosystems, Brisa's goal for 2022 is to define a strategy for biodiversity, natural capital and ecosystem service, for 2022-2030.

Benefits of the project

Positive impact on nature.

Project timeline

- 2022: develop a strategy for positive impact on nature.
- 2023-2030: implement an action plan.

Project description

- **To know the relationship of impacts and dependencies,** with biodiversity and ecosystem services.
- **Identify priorities action** to protect and/ or restore ecosystems until 2030.
- **Define monitoring indicators** for measuring progress and reporting, in line with the current national and international plans, strategies and initiatives.
- **Establish an effective strategy for a positive impact on nature** by 2030.

Lusoponte / APCAP

Project title

Replacement of road lighting on both bridges (Vasco da Gama and 25 de Abril).

Project's aim

Replacement of sodium vapor luminaires by LED luminaires with intensity control.

Benefits of the project

Reduction of electrical energy consumption, improvement of road safety and reduction of costs, energy and maintenance.

Project timeline

End date: 31 July 2023

Project description

Replacement of 1426 sodium vapor luminaires by LED luminaires with intensity control depending on the intensity of road traffic.

Illustration

Lusoponte / APCAP

Project title

Installation of photovoltaic panels at toll plaza of Vasco da Gama Bridge (2nd phase).

Project's aim

To improve the self-production of clean energy.

Benefits of the project

- Reduce electricity consumption.
- Create a shade area for vehicles parking and to reduce costs.
- Improve Lusoponte footprint.

Project timeline

End date: 31 December 2022

Project description

Installation of 156 photovoltaic panels (2nd phase) at the car parking with total power of 66 KW. Panels to be used for energy consumption of buildings, toll plaza and EV chargers.

Illustration

Norscut / APCAP

Project title

Implementing deterrents for small animals in interchanges

Project's aim

To increase user's safety.

Benefits of the project

By preventing the entrance of animals on the motorway domain, both Fauna protection and User's safety are potentiated.

Project timeline

40% of interchanges equipped in 2021.
60% of interchanges will be equipped at the end of 2022.

Project description

Installation of deterrents for small animals in all A24 interchanges.

Illustration

Norscut / APCAP

Project title

Replacement of existing lighting in Castro Daire Tunnel

Project's aim

Replacement of sodium vapor luminaires by LED luminaires with intensity control.

Benefits of the project

Reduction of electrical energy consumption, improvement of road safety and reduction of costs, energy and maintenance.

Project timeline

End of 2023

Project description

Replacement of sodium vapor luminaires by LED luminaires with intensity control.

Illustration

Vinci Autoroutes / ASFA

Project title

State-of-the-art animal crossings

Project's aim

The project aimed at an environmental upgrade of the A61 motorway which was being widened.

Benefits of the project

Maintaining wildlife corridors and monitoring the use of animal crossings on the motorway network.

Project timeline

It ended in 2021.

Project description

The project consisted in the construction of several animal crossing facilities including a large wildlife bridge, the installation of acoustic screens and the construction of fifty ponds to protect water resources.
By using ecological engineering techniques, Vinci Autoroutes recreated a favourable and safe natural environment to encourage animals to use the newly-built wildlife bridge, including small, medium and large fauna (amphibians, reptiles, deer, bats, foxes, etc.).

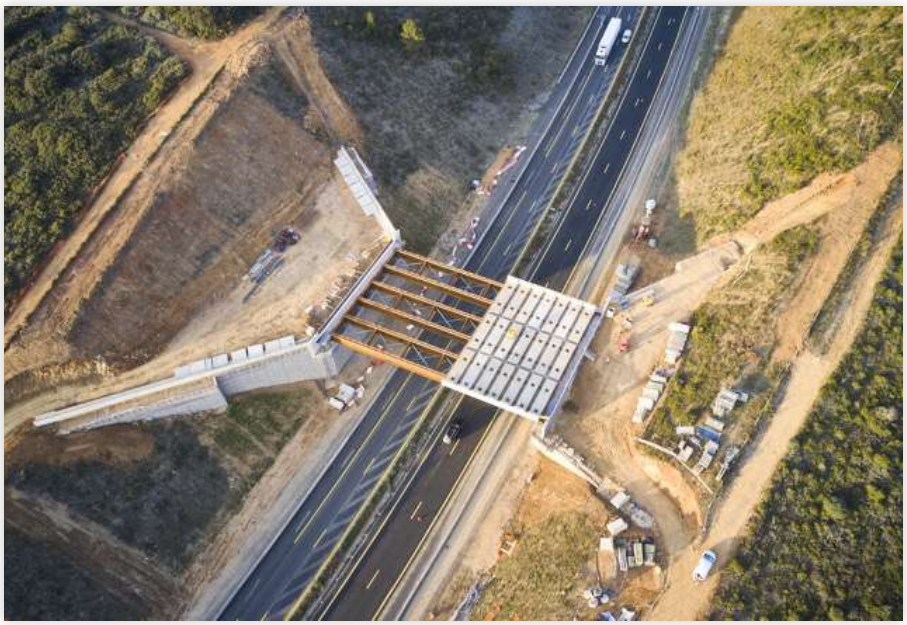
Specially designed equipments were set up: ponds located at both extremities to attract amphibians, and a row of stones, wood and stumps (windrow), along the entire length of the bridge, to facilitate the crossing of rodents and reptiles. Wooden screens are used to conceal the motorway from the animals.

Fences help channel the moves of the fauna while ensuring road safety. Monitoring is set up to ensure that the crossings are actually used by animals. It is carried out in partnership with naturalist associations and local hunting federations.

Vinci Autoroutes / ASFA

Illustration

The wildlife bridge under construction in 2021 (© Vinci):



Website

- www.vinci-autoroutes.com/fr/actualites/amenagement/ecopont-autoroute-narbonne-A61/

Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

Project title

New home for three million bees along the highways

Project's aim

We intend to make more areas usable for insects.

Benefits of the project

We preserve biodiversity and appropriately integrate our roads into the landscape by means of sustainable management of flowering areas and planting a large number of hedges with native wood-based plants.

Project timeline

We have been creating habitats for pollinators and other insects at junctions and roadside strips for years. On World Bee Day in 2021, we also launched the "Bee Highway – Bee Happy" project.

Project description

As part of the "Bee Highway – Bee Happy" project, employees take care of bees and honey production in their free time as beekeepers, creating a new home for bees at a total of 50 sites along our highways. Since a hive is home to up to 60,000 animals in the summer, that makes a home for up to three million bees.

Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

Illustration

Websites

- https://blog.asfinag.at/hinter-den-kulissen/gruenraumpflege-entlang-der-autobahn/
- https://blog.asfinag.at/hinter-den-kulissen/bienen-ein-zuhause-geben-artenschutz-bei-der-asfinag/#lg=1&slide=4

Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

Project title

Green power by using existing noise protection walls & photovoltaic systems

Project's aim

By using noise abatement walls as a support for PV systems, a reduction in emissions during operation is promoted. The goal of the one-year test operation is also to evaluate which system will be the optimum one for future use.

Benefits of the project

With solar energy, we are creating an infrastructure that is largely self-sufficient in energy. For instance, we generate 45,000 kilowatt hours of clean electricity with our photovoltaic test field on the noise protection wall of the S 1 Wiener Außenring expressway. In addition to the suitability of the systems in terms of energy and noise, the testing of the current seven systems is also concerned with influences such as snow removal, salt spreading, vibrations and glare effects caused by light reflections. We also check which system is best in terms of cleaning, green waste and regular maintenance.

Project timeline

We have been using renewable energy for our own needs for several years now. In 2021, we commissioned additional photovoltaic plants.

Project description

Across Austria, a further eight facilities convert the power of the sun into energy, with a total peak output of 1.8 megawatt hours. In addition to supplying the four tunnels at Amberg in Vorarlberg, Liefering and Oberweißburg in Salzburg, and Plabutsch in Styria, the highway maintenance depots at Bruck an der Leitha in Lower Austria, those at Ansfelden in Upper Austria, and our maintenance depots at Sankt Michael and Liefering in Salzburg are now also supplied with green electricity. Furthermore, 100 percent of the solar power generated via the test field on the noise protection wall is used by safety equipment along the approximately 16-kilometre-long southern S 1 (Vösendorf to Schwechat).

Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

Illustration

Website

- https://blog.asfinag.at/technik-innovation/erneuerbaren-energien-co2-neutralitaet/

Aegean Motorway S.A. / HELLASTRON

Project title

Air pollution monitoring program - Mobile station

Project's aim

Implementation of the decisions Ref: 47295/2721-19.05.2020, 45057/2612-14.05.2020 and 38656/2528-19.05.2020 of the Ministry for the Environment/ Environmental licensing directorate on the amendment of the approved environmental terms as regards the air quality monitoring program.

Benefits of the project

The advantage of the mobile station is that it can be transported across the length of the motorway and therefore, it can monitor with greater accuracy pollution levels in the Project.

Project timeline

The station was created in 2020 and has been in operation since 2021.

Project description

The company created a mobile air pollution and meteorological parameters measuring station. The mobile station replaces three out of the four existing permanent stations that were taking measurements until 2020. The mobile station can take readings on a 24/7 basis, monitoring indicatively the pollutants CO, NOx/NO2, O3, PM10 and PM2.5 as well as VOC.
It is not necessary for the mobile station to be continuously in use or over an extended period of time; it can be used during months of peak traffic for a few days to take readings of the pollutant levels. The station has the ability to identify the pollution "hot spots" across the length of the motorway.

Aegean Motorway S.A. / HELLASTRON

Illustrations

Website

- www.aegeanmotorway.gr/en/the-company/environment/

Aegean Motorway S.A. / HELLASTRON

Project title

Energy Management – Projects in progress

Project's aim

Improving energy performance.

Benefits of the project

1. *Promoting the Use of Electric Vehicles.*
2. Reduction of energy consumption.
3. Further qualitative and quantitative analysis of the energy consumption.
4. Use of renewable sources of energy.

Project timeline

In progress 2020

Project description

Within the framework of improving of the company's energy performance levels a number of projects are in progress (under design and / or implementation) such as:
1. Installation of electrical cars charging stations.
The relevant files for the installation of charging stations at the Motorway Service Stations (MSS) have already been submitted and approved by the Special Service of Public Works (EYDE) for the Construction of Transport Projects under Concession Agreement (KSESP).
2. Energy Upgrades of Administration/ Management Buildings.
3. Pilot program for the recording of consumption levels using telemetry in two building facilities of the project and two lighting installations of the motorway. The purpose of the pilot program is the further qualitative and quantitative analysis of the consumption of the Project and if deemed necessary, to extend the measurements to more facilities in order to better monitor energy consumption throughout the project.
4. Preparation of a feasibility study for the installation of photovoltaic systems in various building facilities of the Project.

Website

- www.aegeanmotorway.gr/en/the-company/environment/

Aegean Motorway S.A. / HELLASTRON

Project title

LED Project – Open Motorway

Project's aim

To improve energy performance.

Benefits of the project

Reduction of energy consumption.

Project timeline

Project commenced in 2017, to be completed in 2022.

Project description

Electricity as a source of energy is mainly used for the road lighting needs of the motorway, powering 8,794 NaHP luminaries. In 2017, Aegean Motorway proceeded with the replacement of all luminaries on the open motorway sections with LED ones. Progress as regards the LED road lighting project is shown below:
In 2017, the installation of the optic fiber network and the traffic counters along the length of the motorway was completed. In July 2018, Aegean Motorway procured 8,794 LED luminaries and Pillar controllers, whilst in 2019, it completed the replacement of the NaHP luminaries with LED ones along the length of 199,4 km of open motorway. This initiative resulted in savings of 50 – 55 % in energy consumption for the road lighting needs of the open motorway in relation to the conventional ones.
The installation of the Central Lighting Management Software is expected to be completed in 2022 along with its interconnection with traffic data. Upon completion of the design as per EN13201 and its interconnection with the traffic data, depending in its findings, a further reduction in the energy consumption for road lighting purposes is expected:

- With the implementation of adaptive lighting to 1.5cd/m2 in average on the Motorway, a reduction of 3.04GWh is expected.
- With the implementation of adaptive lighting to 1.0cd/m2 in average on the Motorway, a reduction of 5,30GWh is expected.

Aegean Motorway S.A. / HELLASTRON

Illustrations

Website

- www.aegeanmotorway.gr/en/the-company/environment/

Aegean Motorway S.A. / HELLASTRON

Project title

LED Projects – toll stations and tunnels

Project's aim

Improving energy performance.

Benefits of the project

Reduction of energy consumption.

Project timeline

Projects commenced in 2021, to be completed in 2023.

Project description

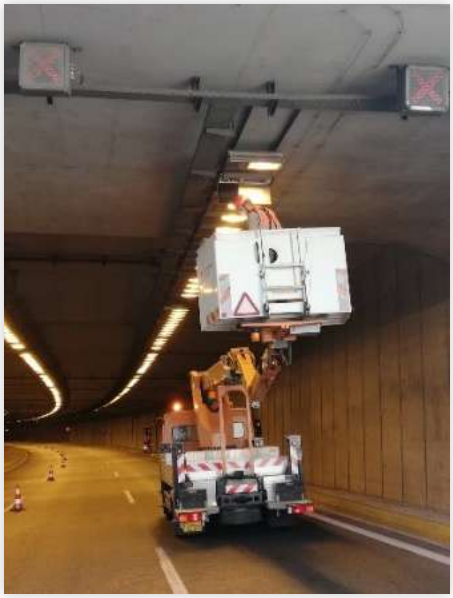
Other energy saving projects are also currently in progress. These include:

LED Program in the Toll Stations:
In 2021, the pilot design for the installation of LED technology luminaries at the concrete platforms and the canopies of the toll station was completed. Works for the replacement of the luminaries are expected to be completed in 2023 with an **estimated reduction in energy consumption by 0.67GWh.**

Intervention in the Tunnels T1-T2-T3-T4:
The designs for the Katerini C&C (Tunnel T4) have been completed and the installation of the LED luminaries is expected to be completed in 2022 for the carriageway to Thessaloniki and in 2023 for the carriageway to Athens.
Furthermore, the installation of the LED luminaries in Tunnels T1, T2 and T3 is scheduled, to be completed in 2023.
The energy savings following completion of the interventions in the tunnels are estimated at **4.24GWh.**

Aegean Motorway S.A. / HELLASTRON

Illustration



Website

- www.aegeanmotorway.gr/en/the-company/environment/

Aegean Motorway S.A. / HELLASTRON

Project title

Upgrade of the open motorway outflow system

Project's aim

To measure the quality of the motorway outflows.

Benefits of the project

Improved monitoring and management of the open motorway outflows.

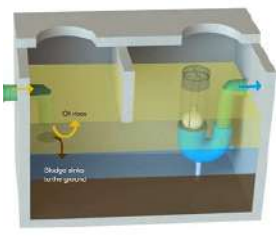
Project timeline

2021

Project description

Within the framework of compliance with the environmental terms on measuring the quality of outflows, in 2018, Aegean Motorway completed the construction of tanks for the collection of outflows from the open motorway. Nine locations in total were selected following assessment and approval by the Independent Engineer, where tanks were constructed to collect outflows. In 2021, the company proceeded to the updrade of four out of the total of nine locations. The tanks were upgraded to hydro-carbon separator units; also, sampling systems were installed for the monitoring of the quality of the motorway rainwater outflows.

Illustrations



Website

- www.aegeanmotorway.gr/en/the-company/environment/

Egnatia Odos S.A. / HELLASTRON

Project title

LIFE SAFE CROSSING Project with the title: "Preventing Animal-Vehicle Collisions – Demonstration of Best Practices targeting priority species in SE Europe"

Project's aim

Implementing actions to reduce the impact of roads on some priority species in four European countries:
- Marsican brown bear and wolf in **Italy**.
- Iberian lynx in **Spain**.
- Brown Bear in **Greece** and **Romania**.

Benefits of the project

Improvement of the environmental footprint of the motorway, reduction of car-animal collisions, improvement of technical characteristics of the motorway section «Siatista – Koromilia» for safe animal crossing.

Project timeline

September 2018 – September 2023

Project description

Towards implementing best practices as far as Egnatia Odos SA is concerned, 56 wildlife passages of A29 highway (Section Siatista – Koromilia) have to be restored in order to favour the movements of animals across roads. Three specific activities among others have been foreseen in the framework of the project:
- Analysis and mapping of existing crossing structures for potential wildlife use, roadside verges management and other interventions on the roads.
- Activities to enhance connectivity between core areas through functional readaptation of underpasses and interventions on road sides.
- Monitoring the impact of the above Actions.

Egnatia Odos S.A. / HELLASTRON

Illustration

Website

- https://life.safe-crossing.eu/

Gefyra S.A. Rion-Antirion Bridge / HELLASTRON

Project title

Road lighting replacement with LED technology

Project's aim

Reduction of energy consumption.

Benefits of the project

Upgrading to LED technology offers excellent performance and lifespan and by adapting use to local conditions, it can lead to estimated energy savings up to 75%.

Project timeline

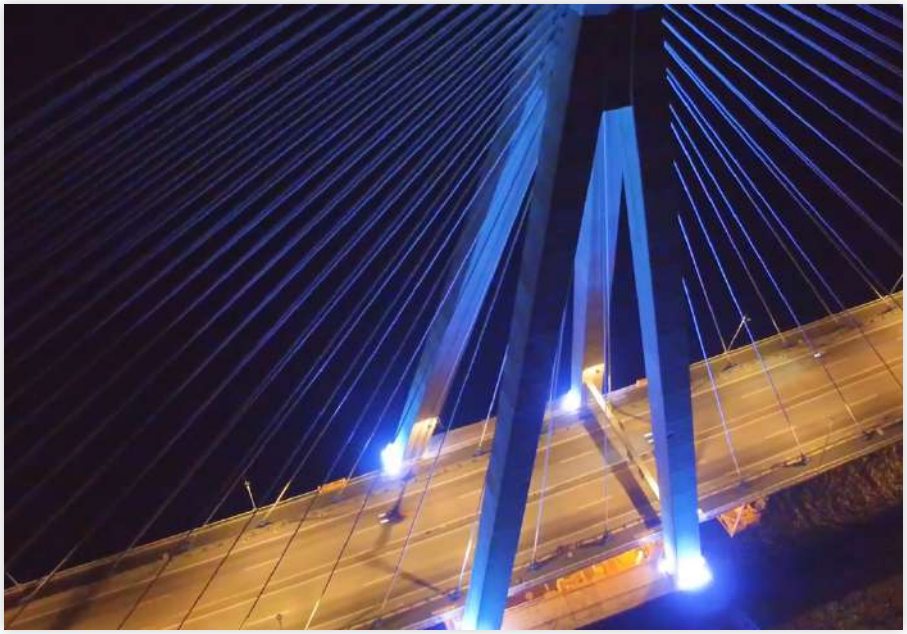
November 2019 – January 2020

Project description

The Road Lighting involved replacing 174 luminaires of conventional lights (250W) with LED (135W) resulting in a 46% reduction of nominal power. Furthermore, dimming settings allow for additional energy savings of up to 75%, since compliance with the required lighting class of the road lighting can be achieved even with a dimming level of 55%. For the first year, the initial comparison results show a considerable reduction of the consumed electricity for the operation of the Bridge due to this replacement. The investment repayment is estimated at 15 years.

Gefyra S.A. Rion-Antirion Bridge / HELLASTRON

Illustration



Website

- www.gefyra.gr/Deltia-Tupou/announcements/A-new-green-distinction--for-Rio-Antirrio-Charilaos-Trikoupis-Bridge--at-the-Best-City-Awards/

Nea Odos S.A. / HELLASTRON

Project title

Ecological Sound Barriers

Project's aim

Provide greater sound absorption by using new eco-friendly materials.

Benefits of the project

- Reduction of the environmental footprint
- Greater sound absorption for the surrounded neighbourhoods

Project timeline

2021

Project description

In 2020 the company replaced of part of already installed sound barriers (conventional type with concrete wall and transparent parts of pmma sound-absorbing material), with ecological material of wood-concrete.
The new material is ecologically sustainable (renewable source from forest material), 100% recyclable (in case of damage or replacement the material will be fully recycled). Provides greater sound absorption capacity (in which case it will provide greater sound protection to those sensitive to educational use) and It has high durability & zero maintenance, while it is also self-cleaning (so no further materials and resources will be wasted for its maintenance).

Nea Odos S.A. / HELLASTRON

Illustration

Website

- LinkedIn's dedicated post

Kentriki Odos S.A. / HELLASTRON

Project title

Replacement of light bulbs with new LED technology

Project's aim

Increase highway safety by achieving better lighting levels.

Benefits of the project

- Reduction of environmental footprint.
- Reduction of power.
- Reduction of maintenance needs and costs.

Project timeline

2021 - present

Project description

Replacement of light bulbs with new LED technology.
In the Stylida tunnels (total length 1.6 km), 1,950 light bulbs with a total power of 588.75 kW are already installed).
The project is ongoing with many replacements scheduled within 2022 for our motorways.

Illustration

Nea Odos S.A. / HELLASTRON

Project title

Photovoltaic park - Messolonghi

Project's aim

Meet part of the project's energy needs with clean green energy from the sun.

Benefits of the project

- Improve sustainability and energy consumption from green sources
- Reduce environmental footprint

Project timeline

2021

Project description

In 2021 the company developed the first pilot photovoltaic park on an unexploited highway slope, in order to meet part of the project's energy needs with clean green energy from the sun.
The photovoltaic park was developed at the Messolonghi junction and consists of four installations, with a total capacity of 102kWp. The estimated annual output is 153,000kWh and can meet the energy needs of 245 Led street lighting fixtures for an entire year.

Illustration

Website

- LinkedIn's dedicated post

Nea Odos S.A. / HELLASTRON

Project title

Recycling of Organic waste

Project's aim

Reduce the waste produced in the MSS and promote circular economy.

Benefits of the project

- Reduce environmental footprint.
- Reduce waste.
- Reuse waste

Project timeline

2021 - present

Project description

In 2021 the company proceeded with the pilot installation of the first mechanical composters for the recycling of organic waste produced by the operation of the Motor Service Stations (MSS) located in Atalanti.
The organic waste collected by the MSS (e.g. coffee waste, food residues) is subjected to the composting process and within a few weeks, is converted into compost.
The compost will be used for the planting work carried out on our highway, making the most of all the benefits arising from the above process.

Illustration

Website

- LinkedIn's dedicated post

Nea Odos S.A. & Kentriki Odos S.A. / HELLASTRON

Project title

Recycling in MSS & Parking Areas

Project's aim

Reduce the urban waste produced in the motorways and increase the recycled waste.

Benefits of the project

- Improve sustainability.
- Reduce environmental footprint.
- Increase recycling.

Project timeline

2020-2021

Project description

In 2020 and through to 2021 the companies (Nea Odos & Kentriki Odos) expanded the "Boost Recycle Initiative" programme by offering the possibility of recycling to motorway users. In all parking areas and Motorists service stations (MSS) there are now available bins for recycling, glass, plastic and paper packages (blue bins).

Illustrations

Olympia Odos S.A. / HELLASTRON

Project title

Bat conservation plan in the area of Panagopoula Tunnels

Project's aim

The project is particularly important since it aims at: raising public awareness on cave fauna, implementing new monitoring systems, promoting the integrated management of caves, informing and training of the social partners.

Benefits of the project

Protect and enhance the biodiversity and especially the large bat colonies that live in the drainage tunnels of the motorway, along a NATURA 2000 listed area.

Project timeline

2018-2022

Project description

Olympia Odos supported the rationale and the actions of a proposed EU LIFE- Nature project which, among others, included measures for the conservation of bat colonies also in the drainage tunnels within the boundaries of the project. The proposal was approved and the LIFE Nature project "Greek Caves and Bats: Management Actions and Change of Attitude" abbreviated as LIFE GRECABAT [LIFE17 NAT/GR/000522] was launched in September 2018.
In September 2018, the area of Panagopoula Tunnels crossed by the Motorway, became part of the NATURA 2000 sites network because it hosts six (6) rare species of bats, three out of which have established important populations there. The bat colonies are established in some drainage tunnels (galleries) constructed to prevent soil erosion that end up in bypassing dangerous goods along the old alignment of the road.

Olympia Odos S.A. / HELLASTRON

Illustration

Websites

- www.lifegrecabat.eu
- www.youtube.com/watch?v=NQ6ssbNzCug

Olympia Odos S.A. / HELLASTRON

Project title

Energy saving program in Olympia Odos Tunnels, lane covers and cut and covers

Project's aim

Olympia Odos contributes to a European objective for the protection of the environment by implementing an extensive energy saving and carbon footprint reduction program in the older tunnels of the motorway. In particular, in 17 out of the 29 tunnels of Olympia Odos, five in the area of Kakia Skala and 12 along Patras Bypass, the conventional lighting has been replaced by a more environmental-friendly LED one.

Benefits of the project

The overall **environmental footprint** and **energy cost of the operation of the tunnels has been reduced due to**:
- The cutting of power consumption, by 60%, while more than 8 million kWh are saved every year.
- The carbon footprint is reduced by 4,000 tons of carbon dioxide equivalent per year.
- The **drivers' visibility** is **improved** thanks to the uniform features of the driving environment.

Project timeline

2018-2022

Project description

Olympia Odos took the initiative to replace the conventional luminaires with LED ones that are more environmental-friendly in the tunnels of the existing sections of the Motorway, namely Elefsina - Korinthos section and Patras Bypass, beyond its contractual obligations in an effort to contribute to a more rational use of energy and to become part of the solution to prevent climate change.
Within the context of the program, the tunnel walls were cleaned and coated, thus upgrading the overall driving environment presenting uniform features and improving visibility. The project is currently implemented in lane covers and cut and cover sites.

Olympia Odos S.A. / HELLASTRON

Illustration

Website

- www.youtube.com/watch?v=NHaO5Nlx8h4&t=3s

ICA Içtaş Infrastructure Yavuz Sultan Selim Bridge and Northern Ring Motorway Investment and Operation Incorporated Company

Project title

Marine Pollution Detection Project

Project's aim

The project, which is a first in Turkey and in the World, aims to protect the marine environment, coastline, and human health by detecting pollution that is caused by ships using remote sensing technologies.

Benefits of the project

Systems that detect pollution in the Bosphorus are used, and after detection, the pollution will be cleaned using the most appropriate pollution response equipment / methods and as a result, the negative environmental effects will be minimized.

Project timeline

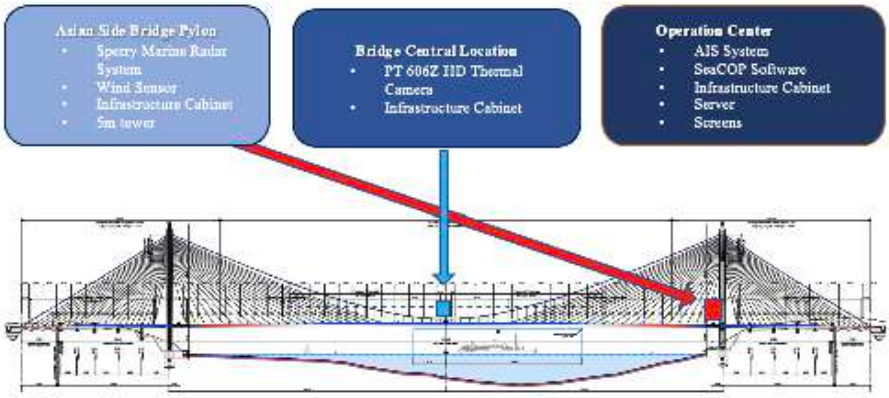
Project work started in 2020 and was implemented in 2021.

Project description

ICA continuously scans an area of 2.5 kilometers on the northern side of the Yavuz Sultan Selim Bridge with the use of radar, thermal camera systems and software and tracks ships entering and exiting the Black Sea and then government agencies such as the General Directorate of Coastal Safety, Coast Guard, İstanbul Municipality etc. will then be informed. The control center of this system has been established at the Main Control Center, where ICA monitors the entire highway and the YSS Bridge 24/7.

ICA Içtaş Infrastructure Yavuz Sultan Selim Bridge and Northern Ring Motorway Investment and Operation Incorporated Company

Illustrations



Website

- www.ysskoprusuveotoyolu.com.tr/TR/icerik/deniz-kirliligi-tespit-projesi-152

All Toll Roads Ireland, Government initiative / ITIA

Project title

Pollinator-friendly management of Transport Corridors

Project's aim

Promote biodiversity.

Benefits of the project

Pollination, which plays a vital role in the reproductive cycle of flowering crops and wild plants, brings substantial economic benefits to agriculture, tourism and exports, as well as human health and wellbeing. 'Bees are our most important insect pollinators'.

Project timeline

Commenced 2020 and ongoing.

Project description

Modifications to grass cutting frequency to promote biodiversity and working towards the creation of pollinator friendly environments.
To maintain a narrow strip of mown grass along the carriageway and at some junctions to facilitate safer breakdown resolution, to maintain sightlines and to ensure signs/lights/drains are not impacted or due to local issues. Most other areas of grassland on the network are managed with limited intervention and following a self-sustaining approach.
No grass cutting before 15 April unless cutting is to safeguard visibility. The cutting of grass on central reservations and roundabouts to promote a neat and presentable appearance shall be limited to a maximum of 5 cuts per year at intervals of approximately 6 weeks. All other grass shall be cut as necessary at intervals of no greater than once every 2 years.

Websites

- https://pollinators.ie/transportcorridors/
- www.tii.ie/technical-services/environment/faq/

Autostrada Wielkopolska II (AWSA II) / PAK

Project title

Monitoring of Natura 2000 sites and animal migration

Project's aim

Contribution to the achievement of the SDG goal no. 15 LIFE ON LAND i.e. protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Benefits of the project

Possibility to react directly and prevent possible negative effects on Natura 2000 sites.

Examples of monitoring and immediate reaction:
- Protection of amphibians and reptiles from entering the motorway (installing special fences for amphibians so that they do not come out into the highway. If necessary, this is the transfer of amphibians).
- Creation of a protection zone for the black stork's nest.

Project timeline

2018 - 2021

Project description

In order to check the effectiveness of the designed and built security measures, a detailed schedule of monitoring activities was developed during operation, on the site of the current motorway, on the section from Świecko to Nowy Tomyśl in the lane and beyond the highway lane, in the scope of:
- herpetological.
- ornithological related to bird watching from the Directive.
- habitat.
- chiropterological.
- migration of large and small game through dedicated passages.

Autostrada Wielkopolska II (AWSA II) / PAK

Project description

Autostrada Wielkopolska II SA runs:
1. Monitoring of 544.4 ha of Natura 2000 areas that are crossed and adjacent to them:
- PLH080049 Rynna Jezior Rzepińskich 27,0 ha.
- PLH080015 Ujście Ilanki 5,8 ha.
- PLH080009 Dolina Ilanki 74,5 ha.
- PLH080008 Buczyny Łagowsko-Sulęcińskie 81,2 ha.
- PLH080001 Dolina Leniwej Obry 174,0 ha.
- PLH080002, PLB080005 Jeziora Pszczewskie i Dolina Obry 182,0 ha.

2. Monitoring and active protection of amphibians and reptiles in the road lane of the motorway in the area of about 200 ha.

3. Monitoring of the migration of wild animals at animal crossings (33 large animal crossings).

Monitoring is carried out using the following methods:
- Tracking - identification of species (or in the case of impossibility to determine the tracks - classifying the tracks to higher than the species taxonomic units) and determining the number of passing animals on the basis of tracks left on snow cover, sandy belts or unfrozen ground surface.
- Inventory of traces of existence - identification of species (or higher taxa) of animals on the basis of faeces or signs of foraging or other traces of the presence of animals within the passages (eg swamp, fur).
- Direct observations of animals in the field.

Each object had a transverse sand strip, from which traces were read in the absence of snow cover. In addition, camera traps were also used to observe the animals.

The result of the monitoring both in RoW and outside RoW was the preparation of reports on the study of the impact of the A2 motorway on the section from Świecko to Nowy Tomyśl.

Illustration

Gdańsk Transport Company (GTC) / PAK

Project title

Meadow Project (1ha)

Project's aim

Increase biodiversity along the A1 Motorway, increase CO2 offset.

Benefits of the project

Based on Polish studies (by e.g. Szkoła Główna Gospodarstwa Wiejskiego) and foreign studies (e.g. the University of Sheffield / Plantlife) estimated were the following ecosystem benefits of setting up 10 000 m² of a flowering meadow:

1. Number of individual blooms (peak season):
   2021 – 800 000
   2022 – ultimately: more than 1 600 000
2. Number of individual plants :
   2021 – 120 000
   2022 – ultimately: 250 000 plants
3. Absorbed dust PM 2.5: 35 kg
4. Number of pollinators fed per day in the peak season: 69 000
5. CO_2 absorbed a year: 9000 kilograms

The project also succeeded in attaining the goal of improving the condition of the environment on the meadow site and around. Following the close of the first season the sewed plants were found to have shown a healthy growth as many as 90% species sowed developed leaf rosettes on site. They will come into full bloom in the summer of 2022. Numerous insect species were observed in the meadow, including pollinators of crucial importance for the ecosystem (noteworthy, the observations were made during sporadic visits and regular inspections would have revealed many more species).

Project timeline

2021 - 2022

Gdańsk Transport Company (GTC) / PAK

Project description

The assumptions
The 'Meadow Project' on the A1 Motorway consisted in setting up experimental flower meadow plots and testing how they work in the motorway environment. In the year 2021, 1 ha of flower meadow was set up on the grounds of the Stanisławie junction (54.09761574678011, 18.693939088323965) on the A1 motorway (AmberOne). The seed mix was composed of 38 plant species pre-selected for e.g. their physical features (excluded from the mix were e.g. tall plants which might put safety at risk in other conditions).
The purpose
The purpose of the project was to analyze the environmental gain achieved by minimizing the negative impact of the A1 Motorway on its surroundings, especially through mitigating air pollution in the vicinities of the motorway, sustained use of the carbon dioxide sequestration potential inherent in the motorway-neighbouring land, and enhancing the aesthetical aspect of the vegetation along the motorway. The test sowings on meadow plots will serve studying a form of managing vegetation in the motorway environment so that grass along the motorway can be replaced with full-size flowering meadows in the future.
The location
The first 10 000 m² was sown within the borders of the Stanisławie motorway junction. The test plot occupies but a part of the junction area, which enables expanding the meadow in subsequent years.

Illustration

Website

- www.a1.com.pl/en/kampanie/ambergreen-program/

Autopistas España-Abertis Group / SEOPAN

Project title

Achievement of ISO 50001 for Energy Management Systems

Project's aim

Improve our processes aimed at continuous improvement in terms of energy performance, betting on savings and efficiency and thus contributing to the protection of the environment and the reduction of greenhouse gases.

Benefits of the project

- Contribution to the fight against climate change.
- Sustainable positioning.
- Energy and economic savings.

Project description

Since 2012 we have had energy efficiency master plans that have helped us to be more efficient and sustainable. At the end of 2020 we set out to incorporate the ISO 50001 Energy Efficiency standard into our Integrated Management System and in record time we adapted our energy management model to be audited in accordance with the requirements of the ISO 50001 reference standard.
Among the actions carried out, the following stand out: the updating of procedures, instructions, the integrated management system manual and the publication of a new energy efficiency policy.

Roadis / SEOPAN

Project title

Tree plantation in Santa Catarina (Mexico)

Project's aim

The aim of this project is to promote environmental care and support the community surrounding the Saltillo-Monterrey highway (Mexico).

Benefits of the project

With this initiative, we contribute to the habitat and the improvement of the municipality of Santa Catarina.

Project timeline

2021

Project description

The initiative took place in several stages of reforestation of the area surrounding the Saltillo-Monterrey highway in collaboration with the companies FRISA and FRIBRAS MTY. In some of them, the children of employees participated in order to make them aware of how important it is to have a healthy environment for the future of humanity.

Società di Progetto Brebemi S.p.A. / AISCAT

Project title

DATA DETECTION AND PRESELECTION SYSTEM FOR VEHICLES EQUIPPED WITH INTELLIGENT TACHOGRAPH

Project's aim

Optimization of road controls in collaboration with traffic police and Continental -VDO

Project description

In December 2021, Brebemi launched an experiment in collaboration with the traffic police and the Continental-VDO company with the aim of optimizing the control of heavy vehicles on the road and in the presence of traffic.
The experiment aims to verify the correct detection of specific technical parameters relating to the circulation of heavy vehicles, such as, for example, driving times, vehicle registration plates, expired authorizations, speed etc.... In this context, the system guarantees the Traffic Police a pre-selection of vehicles to be assigned for control.

Any anomalous parameters detected are transmitted to special tablets supplied to the Police, who can then execute the subsequent stop of the pre-selected vehicle.
The system as a whole is based on DSRC - Dedicated Short-Range Communication technology, and consists of a series of elements that include an intelligent tachograph installed on the latest generation of heavy vehicles, antennas positioned on variable message panels and special data processing and management software.

Once it is optimized this system will ensure:

- increased safety for police officers along the roadway;
- improvement of the cost efficiency of road controls;
- better compliance with social legislation in the road transport sector;
- strengthening the EU objectives on sustainable and competitive mobility by supporting actions to improve road safety.

Illustrations

Società Italiana per il Traforo Autostradale del Frejus S.p.A. (SITAF) / AISCAT

Project title

Doubling of the Frejus T4 Tunnel.

Project description

Tunnels, in particular in the Alps, are important infrastructure that facilitate communication between large regions of the European Union, and the EU attributes a decisive role to them for the functioning and development of economies on a local, regional and transnational scale.
The project for doubling the Frejus Tunnel (T4) started in 2012; the objectives of the project can be summarized as follows:

- road accident and fire prevention aimed at avoiding the occurrence of accidents;
- fire protection to ensure that, should an event occur, the circumstances are such as to allow the rescue of the largest number of people involved in the incident and the fastest possible extinguishing of the fire itself.
- A system that will guarantee safety standards related to the efficiency of intervention and the prevention of accidents.
- The separation of traffic flows will drastically reduce the possibility of an accident occurring, and in particular will eliminate the possibility of head-on collisions.

During 2021, work continued on the tunnel systems, the new road system and all the buildings functional to the two tubes of the T4. Work will continue in 2022 with the approaching opening scheduled for the end of the same year.

Società Italiana Traforo del Gran San Bernardo S.p.A. (SITRASB) / AISCAT

Project title

SERVICE AND SAFETY TUNNEL

Project timeline

The work was completed in December 2021 and was expected to enter into operation during 2022 (entering into operation took place on 09/07/2022).

Project description

The Gran San Bernardo Tunnel, opened to traffic on 19 March 1964, was the first international road link allowing the Alps to be crossed all year round, creating a communication route not only between Switzerland and Italy, but also between the countries of northern Europe and the Mediterranean basin.
The Tunnel consists of a single tube tunnel with a slightly curved course, with an overall length of 5,798 meters and two lanes, one in each direction.
The entrance to the tunnel on the Italian side is at an altitude of 1,875 meters above sea level, the one on the Swiss side is at 1,918 meters above sea level. Finally, the work is characterized by the presence of a ventilation slab that separates the section reserved for vehicle transit from the upper part, reserved for the ventilation channel.
Service tunnel and safety
Following the Mont Blanc Tunnel tragedy, after an in-depth study on safety, the best solution was considered to be the construction of a parallel tube connected to the main tunnel by a by-pass. The service and safety tunnel project, work on which began in 2010, aimed to achieve the following main objectives

- Direct evacuation of users in the event of an emergency through the 11 connecting tunnels to the main tunnel spaced approximately 480 meters apart;
- Improvement of the ventilation system;
- Protection of the installations and power supply networks by moving the electrical cabins from the main tunnel to the service and safety tunnel;
- Increased safety and better working conditions for maintenance personnel;
- Improved accessibility to the accident site for emergency management personnel.

Illustration

Ascendi / APCAP

Project title

Ascendi's Road Safety Action Plan

Project's aim

To reduce the number of victims

Benefits of the project

Reduce at least by 5%/year the number of casualties in the Ascendi network.

Project description

Ascendi's RSAP is a strategic and operational document that defines a roadmap of measures to reduce the network's road accident rate. The RSAP acknowledges 3 fundamental stages:

a) Characterization of road accidents
b) Setting of casualties' reduction targets
c) Development of roadmap of measures to reduce accident rate

Website

- Presentation by Joao Neves at ASECAP Days 2021

Norscut / APCAP

Project title

Isolated Worker App

Project's aim

Implementing a Monitoring system for isolated workers.

Benefits of the project

Increase the worker's safety in case of fall, health or even safety issue.

Project timeline

2021 – Implemented for CCT workers.
2022 – to be implemented for road workers.

Project description

The App is able to monitor the workers' movements and triggers alerts: in case of a sudden movement (fall alert; in case of immobilization for longer than 15 minutes or in case the worker requests for assistance (voluntary alert).

Illustration

Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

Project title

ASFINAG Road Safety Programme 2030 &
ASFINAG's information campaign on motorcycle safety 2021

Project's aim

We want the safest roads in Europe for our customers and therefore make our motorways and expressways a "safe system" in the long term. The ASFINAG Traffic Safety Programme controls and ensures the achievement of the ambitious goals.

Benefits of the project

ASFINAG's road network is already one of the safest in Europe, and we want to maintain this top position and continue to consistently improve the safety of all.

Project timeline

The core strategy of the road safety programme comprises clear and transparent goals for the reduction of accidents, severe injuries and fatalities as well as a series of additional safety-related sub-goals that we aim to achieve by 2030.
ASFINAG launched its information campaign "Watch out for each other" on the topic of motorcycle safety in spring 2021.

Project description

It is up to people, infrastructure and state-of-the-art technology to improve safety on our roads. As the operator of Austria's motorways and expressways, ASFINAG consistently works on all three of these points. Be it by making structural improvements to a motorway, such as improving the safety of the S 31 Burgenland expressway, which will be have a centre divider along its entire length, or by refurbishing and equipping of our tunnels with the latest safety technology as well as innovative pilot projects such as a new type of tunnel coating. We actively support the development of new vehicle technologies and consider the human factor in all our actions and projects. In doing so, we rely both on the expertise of our employees on and on measures to raise awareness, such as with the "Motorcycle Campaign" in the spring. Motorcycling is all the rage at the moment. At the end of 2020, more than 570,000 motorcycles were registered in Austria, which is almost four percent more than in 2019. At the same time, the number of accidents involving two-wheelers is increasing on our motorways and expressways. Almost 40% of the accident were caused by a lack of attention or distraction.

Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

This is also the undisputed number one risk factor causing accidents on Austria's motorways and expressways, ahead of fatigue, speeding and driving too close to one another. This is especially true for motorcycle riders, because accidents on two wheels often end in serious injury. This is why ASFINAG launched its information campaign "Watch out for each other" on the topic of motorcycle safety. We drew attention to the issue with media relations, newsletters, blog articles and on our social media channels.

Illustration

Websites

- http://verkehrssicherheit.asfinag.at/
- https://www.asfinag.at/ueber-uns/verantwortung/nachhaltigkeit/

Aegean Motorway S.A. / HELLASTRON

Project title

Road Safety

Project's aim

Road Safety & Awareness.

Benefits of the project

Promotion of the proper road behaviour.

Project timeline

On an annual basis.

Project description

Aegean Motorway, fully aware of its role as a social stakeholder, interested in the communities in which it operates and conducts its business, is standing by the local communities through programs and actions. Within this framework, the company organizes and carries out on a annual basis, in cooperation with the Panos Mylonas Road Safety Institute (IOAS) activities on the subject of road safety with the objective of raising awareness and offer training to the local communities. These last three years, more than 2,000 pupils took part in this initiative.

Aegean Motorway S.A. / HELLASTRON

Illustrations

Website

- www.aegeanmotorway.gr/h-etairia/etairiki-koinwnikh-efthini/

Hrvatske autoceste d.o.o. / HUKA

Project title

„GREAT ONES DRIVE RESPONSIBLY - driving is the only activity behind the wheel!“

Project's aim

The aim of the campaign is to educate and make truck drivers aware of the importance of constant traffic monitoring and the need for timely rest, keeping a distance, and above all eliminating any distraction from driving, especially the use of mobile phones.

Benefits of the project

Raising awareness of truck drivers on the importance of save driving.

Project timeline

The project is implemented permanently.

Project description

Croatian Motorways, in cooperation with partners, the Ministry of the Interior, the Ministry of the Sea, Transport and Infrastructure and the Faculty of Transport and Traffic Sciences, is conducting an educational campaign to make truck drivers aware of the importance of constant traffic monitoring and the need for timely rest, keeping a distance, and above all eliminating any distraction from driving, especially the use of mobile phones. With this campaign we want to make drivers aware that the only activity behind the wheel is driving. For this reason, we have created a multi-language information leaflet, that we distributed on our POS and trough online channels (our website, trucking associations in Europe, Croatian autoclub, etc...).

Hrvatske autoceste d.o.o. / HUKA

Illustration

Website

- www.hac.hr/hr/ostalo/veliki-voze-odgovorno

Hrvatske autoceste d.o.o. / HUKA

Project title

CROCODILE 3 Croatia

Project's aim

Exchanging accurate and reliable data in the best quality available between road operators, private stakeholders, and administrations for generating road-safety and truck-parking information services between Central European (CE) countries on the CROCODILE 3 corridor (Baltic – Adriatic, Orient/East-Med and Mediterranean TEN-T corridors).
CROCODILE 3 CROATIA includes managers of state roads and motorways and represents an upgrade of the technical scope that will be adopted through the existing Crocodile 2 Croatia project. The main focus of the Crocodile 3 Croatia project is to continue implementation of the DATEX II standard for the exchange of traffic information important for traffic safety, upgrade plans and procedures for regional and interregional traffic management. The CROCODILE 3 project involves EU Member States from Central and Eastern Europe (Austria, the Czech Republic, Hungary, Italy, Slovenia and Croatia), with the aim of ensuring harmonized traffic control and management.

Benefits of the project

Cooperation between public authorities, road administrations and traffic information service providers who are working together to improve cross-border traffic and transport through implementing harmonised and synchronised ITS applications on the high-level road network in Central European area, ensuring coordinated traffic management and control resulting in high quality traveller information services.

Project timeline

01/012018 – 31/12/2023

Project description

CROCODILE 3 contributes to Commission Delegated Regulation (EU) No 886/2013 of 15 May 2013. In addition, CROCODILE will contribute to the Commission Delegated Regulation (EU) No 2015/962 related to provision of EU wide real-time traffic information services.
With implementation of new equipment on the road, like weather stations, broadcasting in tunnels, INFO portals, cameras, and with improving public information through the implementation of mobile application and traffic management plans, CROCODILE 3 CROATIA project will help the public to optimize their route, respond to traffic disruptions and avoid potentially dangerous situations.

Hrvatske autoceste d.o.o. / HUKA

Illustration

Websites

- www.its-platform.eu/its-corridors/crocodile/
- https://crocodile3.crocodile2croatia.eu/en

Autostrada Wielkopolska (AWSA) / PAK

Project title

Highway to school

Project's aim

The aim of the campaign was to educate children in the field of road safety, through learning, playing and innovative technology. The second goal was to invest in road infrastructure in the vicinity of schools, e.g. modern pedestrian crossings and speed bumps were created.

Benefits of the project

In 2017-2019, 11 000 students from grades 1-3 from nearly 200 primary schools in the Wielkopolskie and Lubuskie voivodships were trained.
In addition, 8 experimental pedestrian crossings with Zebra Zbyszek, the protagonist of the program, were built in the vicinity of schools in the Wielkopolskie and Lubuskie voivodeships, and two more were enriched with new road signs, cat's eyes (spots reflectors on the road) and red slow-motion fields. The programme won patronages from Board of Education in Poznań, KRBRD and Police Headquarter.

Project timeline

2017 - 2019

Project description

"Highway to school" was a social and educational programme addressed to children from primary school. Its purpose was to promote the compliance with traffic regulations and to invest in road infrastructure in the vicinity of schools.

During special lessons at primary schools, the following were organized:

- Virtual Reality Groups - children tested the application dedicated to the programme which used virtual reality. They solved puzzles related to road safety and their virtual guide was the voice of Jarosław Boberek, the ambassador of the programme HIGHWAY TO SCHOOL.
- Quiz groups - the task of the pupils was to answer in writing a few questions included in test sheets. Any doubts were instantly clarified by the person supervising a given group.
- Interactive table groups – in this group the element of competition appeared: children fought to achieve the best times, assembling the puzzles depicting road signs. During the game children could ask questions related to the meaning of the signs as not only time but also the correctness were taken into account as far as the task was considered.

Autostrada Wielkopolska (AWSA) / PAK

Project description

New infrastructure has been built near primary schools, which has improved the safety of children. T-27 signs were installed near the schools, informing about pedestrian crossings which are especially often used by children, cat's eyes and speed bumps made of chemically hardenable foam. It was possible thanks to the support of Strabag and cooperation with the Provincial Headquarters of the Wielkopolska and Lubuska Police, which helped to identify potentially dangerous places near schools.

Illustrations

Websites

- www.autostrada-a2.pl/corporate/csr/campaign/1
- www.facebook.com/ZebraZbyszek/

Autostrada Wielkopolska (AWSA) / PAK

Project title

Motorway Driving Course

Project's aim

The CSR action „Motorway driving course" has the following main goals: improving drivers' competences, increasing road safety and implementing Vision Zero at every kilometer.

Benefits of the project

According to the ARC Rynek i Opinia report, as many as 66% of drivers make mistakes while driving the motorway. Most of the respondents did not have the opportunity to learn to drive this type of road while preparing for the driving test. Half of the surveyed drivers believe that practical education during the driving course would not only increase their skills, but also positively affect the level of road safety. That is why there were launched the "Motorway Driving Course".

Pursuant to the regulations in force in Poland, the participant of the driving license course is not required to perform practical driving on the motorway. As a consequence, many new drivers enter the motorway without practicing their maneuvers and often develop bad habits. That is why Autostrada Wielkopolska has decided to launch a "Driving course on the motorway", which enables the trainees to drive on the motorway under the watchful eye of experienced instructors.

Driving on the motorway requires fluency, specific dynamics, confidence in maneuvers and knowledge of regulations and rules not found on other roads. The program covers all aspects of driving on motorways and express roads, from correct joining the traffic, changing lanes, signaling maneuvers properly, to the rules of using Toll Plazas and Rest and Service Areas. As a result, participants make safer decisions behind the wheel, perform all maneuvers more smoothly and reliably and are able to sense the differences between speeds in the city and outside. In addition, driving on motorways and express roads is the best way to learn how to keep a safe distance between cars. The main goals of the project are to raise qualifications, raise the level of road safety and, consequently, contribute to the implementation of Vision Zero.

The effects of the implementation "Driving course on the motorway" were visible, as a result of which thousands of kilometers were driven, hundreds of hours spent behind the wheel and over 200 participants trained in practical driving on the motorway. Therefore, Autostrada Wielkopolska SA decided to extend the project.

Project timeline

2021 - 2022

Autostrada Wielkopolska (AWSA) / PAK

Project description

The basic driving course, preparing for the state exam, covers 4 hours of driving outside built-up areas. Autostrada Wielkopolska was the first in the country to initiate the Motorway Driving Course, encouraging training centers to practice motorway driving.

For the purposes of the program, the online platform www.kursjazdynaautostradzie.pl was created, where participants, instructors and owners of Driver Training Centers, as well as road users who want to learn about the motorway environment and perfect their motorway driving skills, will find all the necessary knowledge. Program participants will find there, among others theoretical and practical information on how to behave on the motorway, instructional videos showing the rules of moving on the motorway and teaching materials necessary in the education process carried out by driver training centers.

The honorary patrons of the Motorway Driving Course program are the National Road Safety Council, the Marshal of the Wielkopolskie Province, the Marshal of the Lubuskie Province and the President of the City of Poznań. The course ambassador is Tomasz Czopik, a titled sports driver and expert in improving driving techniques.

Illustration

Website

- www.autostrada-a2.pl/corporate/csr/campaign/9

Gdańsk Transport Company (GTC) / PAK

Project title

Count to zero

Project's aim

Increase safety on the motorway, zero fatal accidents on the motorway. We contribute to implementation of SDG no.3.

Benefits of the project

Increased awareness of the drivers concerning the most common causes of road accidents. Personal engagement in the event increases the chances that the driver will avoid dangerous behaviour on the road.

Project timeline

May 2021-September 2021. The project is planned to be continued in 2022.

Project description

In 2021, Gdańsk Transport Company initiated the Count to Zero education campaign – i.e. zero fatal accidents on the motorway. This is a series of events conducted on motorway MOPs and in parking lots in Shopping Centers. As part of the event, a dedicated interactive animation and educational installation was prepared, which addresses four aspects of safety on the motorway, which are also the most common causes of road accidents: speed, fatigue, distraction, maintaining an appropriate distance between vehicles. In 2021, 6 events were held, in which over 1400 people took an active part. The events met with a very positive reception from drivers.

Gdańsk Transport Company (GTC) / PAK

Illustrations

Website

- www.a1.com.pl/en/kampanie/safety-my-second-name/

Autopistas España-Abertis Group / SEOPAN

Project title

European project C-Roads

Project's aim

A joint initiative of EU Member States and road operators to test ITS and cooperative services enabled by vehicle-vehicle (V2V) and vehicle-infrastructure (V2I) connectivity, with the aim of facilitating the adoption of autonomous vehicles and connected in a harmonized and interoperable way throughout Europe.

Benefits of the project

Cooperate in the European project on autonomous vehicles and infrastructure and define the mobility of the future.

The knowledge Abertis have acquired provides us with a solid knowledge base to continue working on the deployment of new C-ITS services. In addition, it also allows us to address the new challenges posed by mobility, positioning infrastructure operators as a key and essential actor.

Project description

In Spain, C-Roads has promoted the participation of all the key entities in the sector, in addition to influencing the decisions to be made in Europe in aspects such as legal issues, technical architecture, government and standardization.

From Autopistas Abertis we have led the pilot that has enabled the successful deployment of 8 C-ITS services in the test section, demonstrating clear benefits in safety, efficiency and reduction of emissions associated with traffic.

In mid-2018, the first phase of the deployment of services in the Mediterranean Corridor AP-7 began and, in mid-2019, a second phase was undertaken in which the pilot area was extended to other areas of the AP-7.

In May 2021 the final balance of the project has been presented.

Websites

- www.youtube.com/watch?v=SMNaajCnU88
- https://www.c-roads.es/

Autopistas España, A4 Brescia-Padova, Sanef–Abertis Group / SEOPAN

Project title

Pilot project on how to reduce the formation of ice on roads with the aim of increasing driver safety and reduce environmental impact

Project's aim

In joint venture with Vaisala, through the data technology provided by Vaisala and with Abertis data roads, the meteorological effects that affect driving are analyzed to improve road maintenance decisions and optimizing the use of anti-icing treatment materials.
The objective is to use the data that we obtain from Vaisala's solution to build better predictive models to enable us to improve weather operations in our road networks of Abertis in France, Spain and Italy.

Benefits of the project

Enhance safety on our highways as well as optimize the amount of road treatment material that we use to ensure that the action is as sustainable as possible.

Project timeline

2021-2022

Project description

A joint team of Abertis' traffic, road and safety experts and Vaisala's road weather experts are collecting and analyzing data during the 2021–2022 winter season to understand in more detail how, for example, salt used in the cold months for road maintenance behaves, how the long residual of it remains on the surface of the pavement and what factors affect this.

Website

- Abertis and Vaisala join forces to improve road safety through innovation - Latest news of Abertis Group

Roadis / SEOPAN

Project title

Data Management Platform

Project's aim

The aim of this tool is to improve the current data collection systems, facilitate data analysis, reporting, enable a better monitoring of initiatives, strengthen internal audit processes and, therefore, optimize decision making.

Benefits of the project

The digitalization of data collection, processing and analysis solves issues encountered in the non-automatized processes and allows for a better tracking and traceability of the reported ESG (Environmental, Social & Governance) data.

Project timeline

2021

Project description

As a result of the process to integrate sustainability into the business, ROADIS has developed a digital platform for the management and analysis of non-financial information.
The platform is structured in three modules (Health & Safety, Road Safety, and Environmental, Social & Governance). Each module includes two types of sections: a Reporting Section - to upload, download and edit data – and an Analysis Section.

Illustration

Autostrada Brescia Verona Vicenza Padova S.p.A. and the A4 Holding Group / AISCAT

Project title

INTERNAL COMPLIANCE AWARENESS PROJECT

Project's aim

Raise awareness among employees on the cornerstones of the corporate culture that are oriented towards transparency and accountability through three steps: prevention of corruption, conflicts of interest, and a whistleblowing channel

Project description

The Compliance training and communication campaign was developed in 2021 to raise awareness among employees on important issues and the cornerstones of the corporate culture that are oriented towards transparency, responsibility, integrity, correctness and respect. These principles are all contained in the Code of Ethics, the foundation of the Group's Organizational Model.
The campaign was divided into three different steps, with the aim of pursuing the commitment to ensure compliance with the Code of Ethics and the regulations, policies and procedures applied to different professional figures.

- The first step focused on the importance of **corruption prevention**, with the commitment pursued during the year 2021 to acquire the ISO 37001 certification. This certification is the first international standard developed in order to support companies in adopting a system management aimed at effectively preventing possible corruption and thus promoting a suitable and transparent business culture;
- The second step focused on creating the **Whistleblowing Channel**, a reporting tool available to employees and all those who might collaborate with the company that can be used to report illegal activities, with the aim of promoting corporate compliance with and respect for all the regulations contained in the company provisions;
- The third and final step focused on raising awareness around **conflicts of interest** to encourage everyone's commitment to respecting the Group's ethical culture, making decisions according to criteria of impartiality and objectivity and avoiding corruption.

Autostrada Brescia Verona Vicenza Padova S.p.A. and the A4 Holding Group / AISCAT

Illustration

Autostrade per l'Italia S.p.A. / AISCAT

Project title

ENVISION

Project description

In March 2022 the "Bologna Bypass" project (upgrading of the A14 Bologna-Bari-Taranto motorway in the Bologna Borgo Panigale-Bologna San Lazzaro section) qualified as the first infrastructure in Europe to receive the Envision certification with the highest level rating achievable, Platinum. The goal was achieved thanks to the commitment of the design group led by Tecne, Autostrade per l'Italia Group's engineering company. The group designed an infrastructure capable of fully meeting the requirements of the international protocol under which the project's economic, social and environmental sustainability was assessed throughout its entire life cycle, from design to construction, up to being placed in service.
Envision is the first rating system for designing and building sustainable infrastructure works and is a useful tool for the Autostrade per l'Italia Group to demonstrate its commitment to the search for design solutions that are more effective in terms of sustainability and which guarantee a holistic approach starting from the infrastructure design phases. The protocol offers an objective point of view and provides an analysis grid that offers a 360 degree view of the quality of an investment, starting from its economic effectiveness, up to issues more explicitly linked to sustainability such as respect for and valuing the ecosystem, quality of life improvements, energy efficiency, the efficient use of resources, and involvement of stakeholders in the decision-making and design process.
The Italian body (ICMQ) accredited for the issue of international certification (ISI) recognized the Passante project for its high levels of quality in the 5 evaluation macro-areas defined by the Envision protocol (Quality of Life, Leadership, Resource Allocation, Natural World, Climate and Resilience) and rewarded its transversal aspects of sustainability. **Quality of life** is enhanced by maximizing the safety aspects and positive impact on the communities and the territory in which the infrastructure is located. This process was also informed by the discussions that took place during the public debate, with great attention to local characteristics, maintaining views and safeguarding the specificities of the historical agricultural landscape, as well as creating and implementing connections with other sustainable mobility systems, cycle-pedestrian paths and urban and landscape paths, creating new green spaces for people to gather, and putting in place careful measures for the containment of acoustic and atmospheric emissions. **Leadership** was demonstrated by enhancing the productive collaboration and effective communications between the client, the project team and all other stakeholders in support of shared intentions for planning that promotes sustainability. In the **use of resources** we have encouraged the adoption of recycled, recyclable and/or high-recycled content materials, and in general policies that encourage sustainable use of resources for the construction of works, while minimizing waste and implementing the generation and use of renewable energy. We address the **natural world** by preserving and improving existing habitats and promoting useful choices to reduce the ecological footprint and environmental impacts through the de-waterproofing and redevelopment of developed areas, and the implementation of green works at ASPI properties. Climate and resilience are addressed by analyzing the risks and vulnerabilities related to climate change and implementing strategies to reduce emissions of pollutants and greenhouse gases.

Autostrade per l'Italia S.p.A. / AISCAT

Autostrade per l'Italia intends to extend the application of the protocol to other grid development projects envisaged in the investment plan, enhancing the sustainability of its design standards in line with national and international directives, with the ultimate goal of generating value for the local socio-economic systems crossed, maximizing the benefits and sustainability itself.

Illustration

Milano Serravalle-Milano Tangenziali S.p.A. / AISCAT

Project title

P.O.S.T TRAINING COURSE FOR TRAFFIC AUXILIARIES AND RADIO CENTRE OPERATORS

Project's aim

The training course aims to offer participants a new perspective from which to observe their work starting from personal/individual experience, while at the same time valuing the significant actions that everyone carries out in the execution of their work.

Project description

In 2017, Milano Serravalle launched an important internal training project aimed at raising the awareness of Traffic Auxiliaries and Radio Centre Operators in dealing with and managing events on the road through understanding that their way of "being" also provides a significant and decisive contribution to the resolution of the event itself. There are countless studies that underline how poor road safety is a real global crisis, aggravated by the fact that more often than not all of the actors involved do not have the slightest perception of the risks to which they are exposed.
Our colleagues operate in this context, and although they do not directly intervene in serious accidents, they are nevertheless present and operate in an often exceptional context with strong emotional impacts.
Doctor Cusano, a distinguished emergency psychologist, catalogues the various actors - victims - within such situations:

1) first level actors/victims or victims in the strict sense;
2) second level actors/victims, or rather the closest relatives of the first level victim;
3) third level actors/victims, that is the rescuers, professionals or volunteers who intervene on the scene.

From what has been said one can easily see that the training course proposed and executed by Milano Serravalle is directed at third level actors/victims. This element should not be underestimated.
This necessary premise, in addition to defining the scope of action, clearly determines the objective of the course: to review one's work from a different, more personal/individual perspective while valuing the significant actions that everyone takes. Our colleagues do not always work in emergency situations, however, it is true that constant exposure to traffic, accidents and/or potentially dangerous situations can alter their perception of the risk itself in the long run.
The course was designed so that staff could review their daily work, particularly from an emotional and experiential point of view. The topic brought to and addressed in the classroom was not so much "what to do" but "how to do it".

Società Autostrada Tirrenica S.p.A. (SAT) / AISCAT

Project title

SAFETY 1st PROJECT - MONITORING EMPLOYEE BEHAVIOURS

Project description

As shown by analysis of accident trends, about 80% of accidents are attributable to risky behaviours adopted by workers in the course of carrying out their activities.
The SAFETY 1st project consists of monitoring the behaviours adopted by workers with the aim of correcting those that are risky and promoting those that are safe.
This procedure involves "strategic" people of reference called "KEY PEOPLE", who must always give both positive and negative feedback regarding the behaviour implemented by workers in order to spread a safety mentality.
This project calls for the compilation of a check list which indicates the specific activities that are being "observed", with the analysis and description of safe or unsafe behaviours.

Autostrade per l'Italia S.p.A. / AISCAT

Project title

MERCURY. SMART SUSTAINABLE MOBILITY

Project timeline

The Mercury program and the projects that make it up are open and constantly evolving, as are the technological solutions that form its basis

Project description

The world of mobility is going through a phase of profound and rapid change, with a technological revolution driven by the energy transition, the development of assisted, autonomous and connected vehicle driving technologies and numerous applications of innovative mobility services (Multimodal Digital Mobility Services) for the customer.
To address these challenges, the Autostrade per l'Italia Group has launched the Mercury program, which consists of five clusters of highly innovative and technological initiatives that will involve Autostrade per l'Italia and the Group companies - Movyon, Elgea, Pavimental (Amplia), Tecne and FreeToX - in the coming months and years in implementing the projects they contain.

The five Clusters that make up the MERCURY Program are briefly summarized here:

1. Connected Infrastructures. This cluster consists of initiatives aimed at implementing the technologically advanced solutions that enable all the other initiatives, specifically: Internet of Things networks - for example, IoT sensors that enable monitoring of structures (Structural Health Monitoring - SHM); wired networks for data transport to enable communication systems; C-ITS data transmission for I2X communication - infrastructure to everything; applications for collecting, archiving and forecasting traffic data for better mobility management; information exchange services and systems for the coordinated management of road operations, and of the messages to be sent to drivers, through classic communication systems such as Variable Message Panels, radio channels, and Apps, up to the most innovative systems, with vehicles connected through the Road Side Units - RSU (physical or virtual).
2. Intelligent Roads. This is a very complex cluster, meant for the implementation of heterogeneous and innovative ITS initiatives, including: detection solutions for traffic and for monitoring structures, data transmission, processing and communication, monitoring and management of construction sites, dynamic lane management, up to initiatives on infomobility. These initiatives are aimed at improving traffic safety, the control and quality of traffic and mobility, monitoring work on the road infrastructure (bridges, viaducts, tunnels), informing and assisting users with trip planning, all with particular attention to the energy efficiency aspects of the network. The project covers and extends the requirements of the Smart Road as per decree DM70/2018.

Autostrade per l'Italia S.p.A. / AISCAT

3. Flexible Pricing. This cluster is aimed at extending toll payment mechanisms by making them more flexible and potentially modular, with the goal of simplifying payment transactions and transforming the toll collection system into a policy tool (via pricing) that can be useful for reducing congestion, encouraging sustainable practices and multi-modality.
4. Green Solutions. This cluster concerns the innovations to the motorway network necessary to accompany the energy transition of the road infrastructure and of the vehicles that travel through it, through the gradual installation of high-intensity electric charging stations. These are linked to the rising number and type of electric vehicles and the production and distribution of compressed hydrogen, and when possible, make use of sustainable materials and solutions with a low environmental impact (over their life cycle). Furthermore, this cluster foresees initiatives that include the production of electricity through the installation of photovoltaic panels in roadway appliances to meet the needs of the facilities and buildings along the highways, and in the case of excess, to contribute to the energy needed for hydrogen production.
5. Urban Mobility. This is the cluster that creates the systems that make it possible to integrate motorway mobility with that of metropolitan areas through the "personalization" of the journey. These operations will be enabled on the one hand by collecting data and information coming from the urban environment - the availability of a rest stop in a parking area adjacent to the motorway exits and the availability of alternative means for continuing the journey (MaaS - Mobility-as-a-Service), up to the optimization of local traffic light traffic through the integration of innovative devices, such as those that enable vehicle-infrastructure communication.

Illustration

Autostrada del Brennero S.p.A. / AISCAT

Project title

C-ROADS ITALY; THE A22 AS A LABORATORY FOR CONNECTED DRIVING

Project description

A highway that communicates with the vehicles, which are in turn interconnected with each other, so that travel is increasingly safer, faster and greener. This is the great result achieved by Autostrada del Brennero together with the entities that have implemented various projects developed along the A22 over the last four years as part of C-Roads Italy. C-Roads is part of the European program aimed at developing uniform Cooperative Intelligent Transport Systems (C-ITS) across the European Union.
The main achievement has been the development of a C-ITS message transmission protocol. Autostrada del Brennero built the C-ITS server, developed the Pycroads software that handles the conversion of the message into binary format according to the ETSI specifications, installed 63 Road Side Units (RSU) for short-range communication and developed the Virtual Road Side Unit, implemented in collaboration with TIM, which makes it possible to integrate short-range and long-range signals, thus defining the Italian standard of hybrid communication. A solution developed by Autobrennero is already active today, allowing the presence of construction sites, accidents, adverse weather conditions and the like to be transmitted to on-board vehicle computers. Tomorrow it will be the tool through which to manage each vehicle like the wagon of a train, ensuring high travel speeds in perfect safety while respecting the environment. A goal that is anything but science fiction when we consider that Iveco has already been able to test Truck Platooning on the A22, that is, a convoy of trucks driven only by the first vehicle that is able to interact safely with the rest of the motorway traffic. Likewise, CRF (Fiat Research Centre) was able to test the Highway Chauffeur, the vehicle automation feature that allows you to adjust speed, maintain trajectory and change lanes automatically.

Illustration

Consorzio per le Autostrade Siciliane /AISCAT

Project title

SICILY SMART ROAD

Project's aim

Construction of a fibre optic network along a stretch of the A20 motorway, which will connect the Messina headquarters, located on Contrada Scoppo, with the offices of the Villafranca, Rometta and Milazzo toll stations to complete what already exists

Benefits of the project

Implementation of the traffic control service and use of Multi-function cameras with new technology: this will allow static or dynamic vehicle classification. The project will focus mainly on the port of Milazzo, which ensures territorial continuity with the smaller islands, and the port of Messina, which ensures territorial continuity between the island and the continent, to improve waiting times and avoid queues at motorway junctions.

Project timeline

2022-2023

Project description

The SICILY SMART ROAD project is intended to launch a process of digital transformation aimed at introducing observation and monitoring platforms for the entire motorway, related facilities and structural equipment, and especially traffic flow using data and information processing models: this will enable accurate and immediate transmission of data, not only to the infrastructure manager (control room) and to the competent public administration (P.S.), but also and in particular to road users.
The purpose of the multifunctional workstations is to house the equipment necessary for the provision of video surveillance services with Multi-function cameras as indicated above, as well as environmental analysis and information via a dedicated information panel. Depending on the area of installation, they may provision connectivity for the user, with advanced functions through AP (access points).

Consorzio per le Autostrade Siciliane / AISCAT

It will be possible to provide the user:

- services to divert traffic flow in case of accidents;
- suggestions for alternate routes;
- speed interventions to avoid traffic situations;
- management of access, parking and refuelling;
- timely intervention in case of emergency.

Part of the project is intended to expand the communication system by creating a specific application on mobile devices that is capable of providing:
traffic information, including all conditions such as slowdowns, congestion, the presence of accidents, construction sites and in general all information related to causes of traffic events will be provided in real-time to users. This information will be provided by integrating conventional communication systems such as variable message panels and radio bulletins; meteorological information relating to the presence of heavy rain, wind, and fog obstructing visibility, and in general of critical meteorological conditions which could cause any temporary traffic stoppage and/or indicate alternative routes;
information on alternative routes: in the event of traffic incidents or adverse weather situations, information will be immediately provided about the deviation of vehicle flows to alternative routes, with a view to suggesting the optimal itinerary
Management of emergency situations through “SOS on board”: this will make it possible, in case of difficulty, to send an emergency request communication directly to the police, to the CCG of the CAS or to request assistance for vehicle breakdowns.
Information relating to the services provided by the rest areas along the route will also be provided: the refreshment points along the route, the services offered in the service areas (Wi-Fi, any shops, special assistance, etc.), fuel prices, and the presence of vehicle repair shops; also information relating to points of tourist interest along the route, such as tourist routes, indications of places of interest, etc.

Società di Progetto Brebemi S.p.A. / AISCAT

Project title

"ARENA OF THE FUTURE" PROJECT, TESTING OF THE ERS -- DWPT SYSTEM

Project's aim

Testing of a dynamic recharging system for electric vehicles

Project description

During 2021 Brebemi started and completed work for the construction of what has been called the "Arena of the Future", an area located near the A35-Brebemi motorway, dedicated to the study and testing of inductive energy transfer charging systems for electric vehicles.

With the aim of making its own contribution to the challenge of de-carbonisation of the transport sector, in 2020 Brebemi began a technical-scientific collaboration with industrial, scientific and institutional partners aimed at creating the conditions for the development of an innovative zero-emission mobility system for people and goods along motorway transport corridors. The synergistic cooperation of this consortium led to the creation of a track for experimentation with ERS-DWPT technology and to the subsequent test and study phase of this system.

The track consists of an asphalt ring of about 1,050 m in which a system of coils fed with 1MW of electrical power have been positioned in the top layers of the pavement. The coils are capable of transferring electrical energy with specific plates positioned under vehicles, without contact, allowing them to be charged not only statically, but also dynamically during their movement along the track. The tests that will start in 2022 will involve 1 light vehicle, a Fiat 500, and one heavy vehicle, an Iveco Bus. The tests will be indicative, not exhaustive, and will have the following objectives:

- the study of the power supply, distribution, protection and electromagnetic field system;
- the optimization of the road pavement in order to increase its durability and performance without altering the efficiency of the inductive load;
- the analysis of national and international regulations and reference standards;
- the assessment of the potentials of advanced connectivity through IoT technologies to ensure maximum road safety and productivity of commercial vehicles;
- definition of safety procedures in the event of accidents and of preventive and protective measures, both on the infrastructure side and the vehicle side;
- evaluation of the environmental benefits and LCA analysis of the System.

Società di Progetto Brebemi S.p.A. / AISCAT

Illustrations

Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

Project title

Expansion of Park&Ride systems

Project's aim

Expansion of the existing Park&Ride systems and demand-oriented planning of additional facilities

Benefits of the project

ASFINAG promotes sustainable mobility, in particular through the construction of Park&Ride systems and thus the linking up with public transport and the relocation of traffic from road to rail in order to avoid congestion.

Project timeline

By 2023, up to 10 additional facilities or extensions are planned.

Project description

In order to promote the formation of car sharing and to improve the occupancy of cars on our network, there are currently 39 Park&Ride systems with around 2,100 parking spaces. In 2021 were built (/added):

- junctions A 1 Ybbs/Wieselburg (36 spaces).
- S 4 Wr. Neustadt Ost (56 spaces).
- A 4 Bruck West (60 spaces).
- S 5 Tulln (74 spaces).
- S 3 Hollabrunn Mitte (13 spaces).
- S 3 Guntersdorf (10 spaces).

As an innovative renewal, all parking spaces are digitally recorded and free parking spaces can be displayed via the ASFINAG app link.

Website

- https://www.asfinag.at/ueber-uns/verantwortung/nachhaltigkeit/

Olympia Odos S.A. / HELLASTRON

Project title

Water from the air

Project's aim

The aim is to allow motorists to refresh themselves with drinking water produced from steam. The system, which is equipped with a tank and a compressor that transforms water steam in the air into drinking water using solar energy, can produce 10 to 12 litres of fresh water per day.

Benefits of the project

The project does not emit greenhouse gas emissions, encourages the use of reusable drinking containers and provides fresh water to the users with no charge.

Project timeline

2019-2023

Project description

Although the motorway has many rest parking areas with toilets, the provision of drinking fresh water was not possible. With the use of the SOURCETM Hydropanels technology, OLYMPIA ODOS is the first motorway in Greece to provide fresh water at the afore mentioned areas with a daily production of 10-12 lt per device, energy independent and with zero environmental footprint. A first unit has just been installed at the Panorama-Kineta area near Corinth. The project will be extended to all other areas along the motorway.

Olympia Odos S.A. / HELLASTRON

Illustrations

Website

- youtu.be/1dSFCzniBs0

Autopistas España-Abertis Group / SEOPAN

Project title

AWAI APP for toll payment with mobile phone

Project's aim

Innovate and offer solutions and technologies in infrastructure management, capable of offering maximum agility in payment and the best customer service on the highway.

Benefits of the project

- Technology testing in both barrier-based and free-flow environments.
- Promote automatic means of payment.
- Increase security in transactions.
- Minimize CO2 emissions into the atmosphere.

Project timeline

In execution.

Project description

2020:
- Development of app and track systems.
- Uploaded on Market for Android and IOS systems.
- Customer Service Plan.
- Billing Coordination.
- Informative and promotional campaign.

2021:
- System operational control.
- promotional campaigns.
- Link to new mobility discount of the C-32.
- Two new trunk gantries with 2 and 3 lanes in one stretch for a new discount phase.

Data after 1 year of operation:
• More than 23,000 downloads of the AWAI APP.
• 3,200 regular customers of the service and 7,300 registered.
• More than 30% of customers who have used AWAI have obtained some kind of discount.
• With new C-32 discounts in September 2021 (mandatory mobility), the use of the APP has grown by nearly 70%.
• 99% of successful transactions.

Autopistas España-Abertis Group / SEOPAN

Illustrations

Website

- www.autopistas.com/awai/

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