2024 Sustainability Report

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

ASECAP

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

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1. Introductory statement

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2024 ASECAP President

ASECAP first sustainability report, published in 2014, highlighted the social value of motorway infrastructures, underlined the commitment of ASECAP members to an integrated, efficient, and sustainable road transport network in Europe. Furthermore, it showed the fundamental role of the toll system. Based on the user pays principle, the cost is 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 evolution required.

The second report published in 2022 illustrated how toll motorway sector can bring its contribution to the economic development, road safety, environment, and define KPIs to assess the progress made to reach the commitments targeted.

In the 2024 issue of ASECAP sustainability report, we are in a position to highlight positive concrete results showing the commitments of the toll road infrastructure toward sustainability.

In 2021, ASECAP members produced 497,798 tons of CO2 emissions (scope 1 + scope 2). This figure dropped to 416,985 tons in 2022, representing a 19.1% reduction. The downward trend continued into 2023, with emissions further declining to 397,160 tons, which is a 4.75% decrease from the previous year. This reduction in CO2 emissions indicates that ASECAP members are making significant progress in minimizing their carbon footprint from their operations. Continued efforts in these areas will be crucial for maintaining this positive trend and aligning with broader sustainability and climate goals.

To achieve carbon-free mobility and improve air quality, motorway operators must continue to reduce greenhouse gas emissions. This includes the broad and balanced deployment of alternative fuel infrastructure, such as electric and hydrogen charging stations, across their networks, which will require significant investment from both public and private sectors. The data on e-charging points and service areas with e-charging stations within the network from 2021 to 2023 reflects a significant expansion in the infrastructure for electric vehicles (EVs). E-charging points have seen a dramatic increase over the three years. In 2021, there were 1,423 e-charging points. This number nearly doubled to 2,935 in 2022 and then nearly doubled again to 4,992 in 2023. This substantial growth demonstrates a strong commitment to expanding EV infrastructure, which is crucial for supporting the transition to electric mobility and meeting growing demand.

More than ever today, there is a need to invest in **the decarbonisation of transport, which will only be effective if road transport is decarbonised.**

ASECAP is convinced that there will be no climate change limitation and mitigation without fast road transport decarbonisation, and that the user-pays principle is the best currently available asset to combine the financing of new investments and the internalisation of the polluter-pays principle.

Toll roads should be seen as one of the solutions for financing the ecological transition of road transport and mobility. Indeed, tolls may finance the ecological transition by providing improved and safer infrastructure, adaptation to cleaner vehicles and internalisation of the negative externalities of road transport.

Financing better, safer and greener road transport and combating climate change will not happen without including tolls in this transition. Indeed, the toll and concession road sectors are willing to build a positive agenda and start implementing key measures to contribute to the decarbonisation of road transport.

2. ASECAP highlights

2.1. Mission

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 Association was first established in 1973 under the name of SECAP (Secrétariat Européen des Concessionnaires d'Autoroutes et d'ouvrages à Péage). SECAP was serving as a privileged forum to exchange knowledge and experiences on the various issues related to the road transport for those companies working in the same sector. At the beginning of the nineties, with the progressive implementation of the internal market and the fast development of the European integration, SECAP members understood that the Secretariat needed a new orientation and structure and decided to build a real Association capable of interacting with the European institutions and to express by a single voice the positions and requirements of the European motorways concessionaires.

ASECAP officially became an association on February 8th 1993.

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.

ASECAP established a Sustainability Taskforce, bringing together experts from its members in the field of sustainability. Within this taskforce, members shared experiences and best practices and developed commonly defined key performance indicators (KPIs) to demonstrate their commitment to safe and sustainable transport solutions, including the move towards low-carbon or carbon-free motorways.

The requirement for toll road operators to answer the climate change challenges 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, and stepping up their efforts to develop safe and sustainable transport solutions towards low-carbon/carbon-free motorway. These achievements are highlighted throughout the report.

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.

2.2. Values

As stated in our **Code of Conduct**, ASECAP is committed to the principles of **diversity**, **inclusion**, **integrity**, **civility**, and **respect** in all of our activities. We look to you to be a partner in this commitment by helping us to maintain a safe, professional, and cordial environment.

ASECAP members will observe and uphold integrity and professional behaviour. All members of the network will practice honesty and integrity in fulfilling their responsibilities within ASECAP network and will endeavour to avoid even the suspicion of dishonesty, fraud, deceit, misrepresentation, or other unprofessional demeanour.

All forms of discrimination, harassment, bullying, and inflammatory statements are prohibited in any ASECAP activity.

ASECAP members will not harass or discriminate on the basis of gender identity, sexual orientation, pregnancy, marital or parental status, race, religion, creed, colour, national origin, age, economic status, disability, political affiliation, medical history, physical appearance, body size, level of education or intellect, region of the country, or organizational affiliation.

Friendly space of exchange. ASECAP is committed to providing a safe, productive and welcoming environment that fosters open dialogue, exchange of ideas, and equal treatment of all participants. All those who take part in ASECAP activities, including but not limited to, attendees, speakers, volunteers, exhibitors will:

- Treat other participants with respect and consideration, and value a diversity of views and opinions.
- Be considerate, respectful, and collaborative.
- Communicate clearly, critiquing ideas rather than individuals and avoiding personal attacks directed towards others.
- Be mindful of their surroundings and the experience of fellow participants.
- Respect the rules, policies, and property of the meeting venue.

Discrimination is prejudicial treatment of individuals or groups of people based on their race, ethnicity, colour, national origin, sex, sexual orientation, gender identity, age, religion, disability, veteran status, or any other characteristic protected by applicable laws.

Sexual harassment is unwelcome sexual advances, requests for sexual favours, and other verbal or physical conduct of a sexual nature that creates an intimidating, hostile, or offensive environment.

Bullying is unwelcome, aggressive behaviour involving the use of influence, threat, intimidation, or coercion to dominate others in the professional environment.

Inflammatory statements are remarks directed to or about any individual that have the effect of demeaning, diminishing, marginalizing, ostracizing, or slandering that individual.

Members' projects:

- **Diversity & Inclusion** Autostrade per l'Italia S.p.A. / AISCAT, p.36
- **Liberal donation to the Libellula Foundation** Milano Serravalle-Milano Tangenziali S.p.A. / AISCAT, p. 37
- **Red benches against feminicide and violence against women in general** A35-Brebemi S.p.A. / AISCAT, p. 38
- **100th Anniversary Women of the Republic Run** ICA, p.39

2.3. Members

Currently, the ASECAP network comprises more than **81,000 km of toll motorways, bridges and tunnels across 18 member countries:**

- **ASFINAG**, Austria
- **HAC, Croatia** (HAC took over from HUKA as of 01.04.2024)
- **SUNDBAELT**, Denmark
- **ASFA**, France
- **HELLASTRON**, Greece
- **AKA**, Hungary
- **ITIA**, Ireland
- **AISCAT**, Italy
- **WESTERSCHELDETUNNEL**, Netherlands
- **PAK**, Poland
- **APCAP**, Portugal
- **PE "Roads of Serbia"**, Serbia
- **DARS**, Slovenia
- **SEOPAN**, Spain
- **ICA**, Turkey
- **TOLL COLLECT**, Germany
- **ADM**, Morocco
- **NDS**, Slovakia

Furthermore, ASECAP has 2 **Industry Group Partners,** *KAPSCH* and *KONTRON*.

Network operated by ASECAP Members

Full Members	31.12.2021 (Km)*	31.12.2022 (Km)*	31.12.2023 (Km)*
AUSTRIA	2,249.0	2,249.0	2,249.0
CROATIA	1,313.4	1,341,1	1,341.1
DENMARK	43.0	43.0	43.0
FRANCE	9,221.2	9,309.6	9,328.1
GREECE	2,159.3	2,159.3	2,159.3
HUNGARY	1,324.0	1,358.0	1,358.0
IRELAND	325.9	325.9	325.9
ITALY	4,874.2	4,613.1	4,597.1
NETHERLANDS	24.0	24.0	24.0
POLAND	468.0	468.0	468.0
PORTUGAL	3,625.2	3,321.9	2,904.8
SERBIA	932.4	937.3	999.5
SLOVENIA	624.9	624.9	624.9
SPAIN	1,334.9	1,334.9	1,334.9
TURKEY	156.1	156.1	156.1
UK	42.0	-**	-**
Associate Members			
GERMANY	50,935.5	50,841.8	50,805.0
MOROCCO	1,774.0	1,774.0	1,774.0
SLOVAK REPUBLIC	828.3	852.0	848.7
Total ASECAP Netowork	**82,255.3**	**81,733.9**	**81,341.4**

** ASECAP Statistics*
*** UK left ASECAP on 01.01.2022 as a consequence of Brexit.*

By the end of 2023, the total ASECAP network covered 81,341.4 km. Tunnels and bridges are among the most significant infrastructures within this network. End of 2023, ASECAP members operated over 600 tunnels longer than 500 meters, amounting to more than 1,300 Km of tunnel tubes, and more than 4,200 bridges longer than 100 meters, totalling over 1,500 Km.

In 2023, our customers travelled 362,913.64 million Km on the ASECAP network, marking an increase of 3.35% from 2022 (351,157.55 million km) and 9.71% from 2021 (330,785.86 million km).

2.4. Social and environmental commitment

Sustainable organizations create long-term value for all stakeholders by continuously improving and voluntarily integrating social, environmental, charitable, ethical, and economic considerations into their overall management in a systematic and coherent manner. In terms of sustainability, companies are now evaluated not just on economic performance but also on their social, environmental, ethical, and philanthropic impacts. Engaging with stakeholders is a key part of this process. Sustainability relies on various tools—such as norms, standards, and labels—that help measure the authenticity of these practices and their value, maximizing benefits for both the company and society.

Toll road operators understand the importance of promoting sustainable development and adhering to universally accepted standards concerning the environment, human rights, and transparency. In today's globalized world, sustainability is increasingly becoming a key consideration for customers and stakeholders.

Corporate responsibility includes compliance with relevant national and international laws and regulations, but it also extends to social and sustainable efforts in business ethics and strategy. For toll road operators, this means emphasizing safety, environmental protection, and sustainable long-term development.

Toll road operators aim to ensure transparent and effective communication between procurement and supply chain management. Contracts often reference codes of conduct to uphold high standards of corporate social responsibility, including commitments to zero tolerance for human rights abuses and any form of bribery or facilitation payments.

Ensuring transparency during the contracting process and the subsequent management of motorway infrastructure is essential for toll road operators. This demonstrates their goodwill and responsibility toward societal well-being.

Over the past decades, toll road operators have developed an increasing number of standards and key indicators to measure and assess the effectiveness and reliability of their corporate social responsibility policies. This ongoing effort to improve ethics and values has driven greater attention to the sustainable development of the toll road transport sector.

Members' projects:

- **ASFINAG Eco-Forests** ASFINAG, p. 41
- **ASFINAG's First Micro Wind Turbines** ASFINAG, p. 42
- **Sustainable construction sites @ ASFINAG** ASFINAG p. 43
- **Recycling of cigarette ends** Aegean Motorway S.A. / HELLASTRON, p. 44
- **"ΣΕΛΑΣ": Autonomous system for the non-intermittent generation and storage of electricity using photovoltaic on motorways** Egnatia Odos S.A. / HELLASTRON, p. 45
- **Cold Recycling of Pavements** Kentriki Odos S.A. & Nea Odos S.A. / HELLASTRON, p. 46
- **Sustainability of Biodiversity with Ecological Bridge** ICA, p. 47
- **Pollinator-friendly management of Transport Corridors** All Toll Roads Ireland, Government initiative / ITIA, p. 49
- **Pollinator-friendly Population Management Initiative** Celtic Roads Group (CRG) Dundalk Western Bypass PPP Scheme / ITIA, p. 50

- **Tunnel Lighting change from SON to LED** Directroute (Limerick) Ltd. / ITIA, p. 51
- **Maintain your concentration while driving. Take breaks during a long trip** Autostrada Wielkopolska S.A. (AWSA) & Autostrada Wielkopolska II S.A. (AWSA II) / PAK, p. 52
- **Neighbors. The Environment Matters** Autostrada Wielkopolska S.A. (AWSA) & Autostrada Wielkopolska II S.A. (AWSA II) / PAK, p. 54
- **Tire pressure and ecology** Autostrada Wielkopolska S.A. (AWSA) & Autostrada Wielkopolska II S.A. (AWSA II) / PAK, p. 56
- **Sacyr IOHNIC** Sacyr / SEOPAN, p. 58

3. The environment

3.1. Toward carbon-free transport to answer climate change challenges

No one can ignore the severe consequences of climate change that European countries and other regions around the world are facing: floods, tsunamis, storms, tornadoes, hurricanes, and forest fires, all causing loss of life and tremendous economic, financial, and societal damage. If we do not collectively change our behaviour in our daily lives, these climate-related events will only become more frequent. The countdown has begun, and while it's not yet too late to reverse the trend, immediate action is required to significantly reduce CO2 emissions.

The project examples presented later in this chapter demonstrate that toll road operators are strengthening their efforts to reduce their carbon footprint. Although the challenge ahead—achieving carbon-free mobility on their motorway networks by 2050—is substantial and will require massive investments, they are prepared to face it. In the coming years and decades, they will pursue their strong efforts to align all their activities with international and EU climate change targets.

On the international level, these targets are outlined in the **UN 2030 Agenda for Sustainable Development**, which includes **17 Sustainable Development** Goals (SDGs), and the 2015 United Nations Framework Convention on Climate Change, commonly known as the **2015 Paris Agreement**. Countries have committed, among other goals, to keep the global average temperature increase well below 2°C above pre-industrial levels and to make efforts to limit the increase to 1.5°C.

At the EU level, toll road operators continue to work hard to be aligned with the objectives and targets of the **European Green Deal**, a comprehensive political document introduced in 2019. This deal aims to make Europe the first climate-neutral continent by 2050 by setting three main objectives: achieving zero net carbon emissions by 2050, decoupling economic growth from resource use, and preserving biodiversity while reducing pollution. To meet these objectives, the EU has implemented several key policy initiatives, including the 2020 EC Communication on Sustainable and Smart Mobility Strategy, the 2021 European Climate Law, and the 'Fit for 55' EC Communication, which outlines steps to achieve the EU's 2030 Climate Target on the path to climate neutrality.

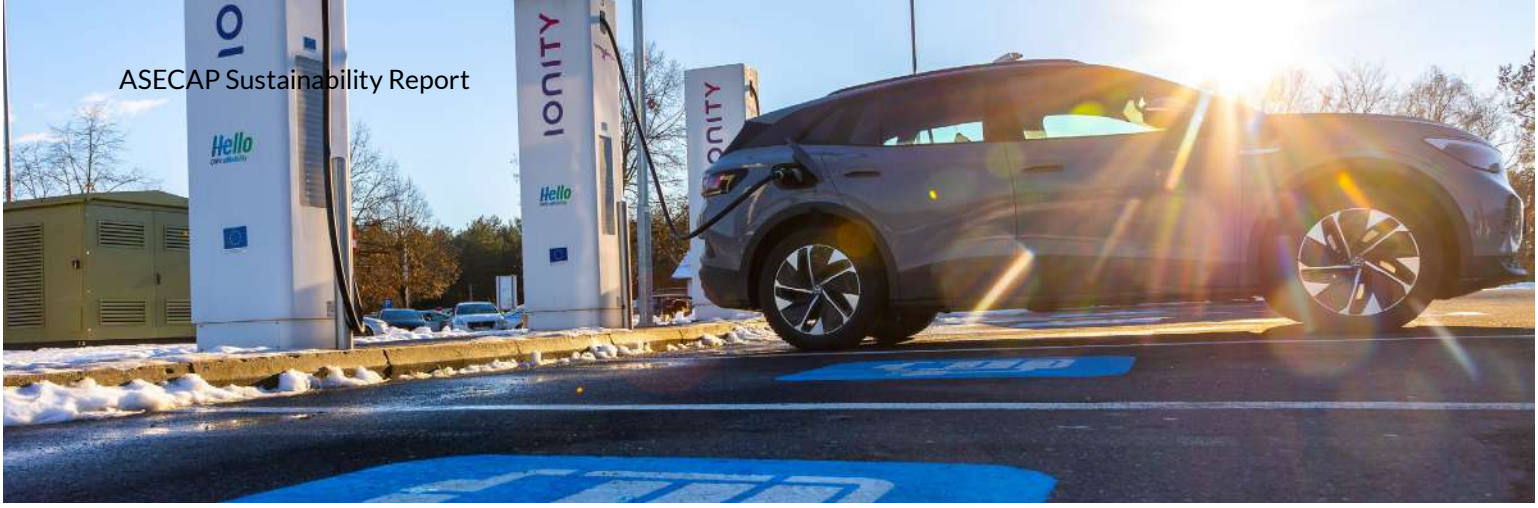
These policy documents establish milestones that have significant implications for toll road operators:

a) **By 2030:** A target to reduce greenhouse gas emissions (GHG) by at least 55% compared to 1990 levels; a 55% reduction in average emissions for new cars compared to 2021 levels; at least 30 million zero-emission vehicles in use on European roads; large-scale deployment of automated mobility and seamless multimodal passenger transport; and all scheduled collective travel under 300 km to be carbon neutral between EU cities with populations over one million.

b) **By 2035:** A 100% reduction in average emissions of new cars compared to 2021 levels, meaning that all new cars registered must be zero-emission by that date, effectively banning combustion engine vehicles across the EU from 2035.

c) **By 2050:** A 90% reduction in overall transport emissions; a fully operational, comprehensive TEN-T Network equipped with smart traffic management systems; full internalization of all external costs of EU transport; and nearly all cars, as well as all new vans and heavy-duty vehicles, being zero-emission.

d) **The new EU Regulation on the deployment of Alternative Fuels Infrastructure (AFIR)**, that came



into effect on 13 April 2024, introduces the following requirements: electric charging pools for cars with a minimum 400 kW output will have to be deployed at least every 60 km along core TEN-T network routes by 2026, with the network's power output increasing to 600 kW by 2028. For trucks and buses, charging stations have to be provided every 120 km. These stations should be installed on half of main EU roads by 2028 and with a 1400kW to 2800 kW power output depending on the road. EU countries have to ensure that hydrogen refuelling stations along core TEN-T network will be deployed at least every 200 km by 2031.

The "Fit For 55" Package does not only include AFIR but also other legislative texts that have been adopted and already published in the EU Official Journal: they deal with energy efficiency, nature restoration and biodiversity, energy performance of buildings, strengthening CO2 emission performance standards for new passenger cars and new light commercial vehicles, etc. These new EU pieces of legislation are also impacting the activities of toll motorway operators.

At the EU level, the **2021-2027 Multiannual Financial Framework** and **the Recovery and Resilience Facility** under *NextGenerationEU* continues to assist Member States in financing the green transition.

The **EU Taxonomy for sustainable activities** is another tool that will help scale up sustainable investment and contribute to the implementation of the European Green Deal.

Even if the challenge ahead - a carbon-free mobility on their motorway network by 2050 – is a huge one that will imply massive investments to:

- Optimize the entire transport system.
- Supporting multimodal approaches and answer issues of mobility by unfolding new services and a better use of the infrastructure (urban accesses, dedicated lanes for mass public transport, carpooling, multimodal hubs…) where needs are in demand and the least satisfied, especially in important metropolitan area with large cities.
- Equip the structuring road network so as to transform it into an infrastructure able to dialog with vehicles and influence CO2 emission.
- Adapt and develop pricing measures in urban area to reduce congestion.
- Enhance traffic regulation to avoid congestion and minimize pollution emissions. This measure has been widely deployed on some motorway and need to be extended.
- Welcome and privilege new motorizations (electric vehicles, etc.).
- Develop robust alternative fuel network (electrical fast charging stations, appH2-infrastructure for heavy vehicles).
- Welcome and develop strategies and concepts to use the road network itself for the generation of renewable energy.
- Take concrete measures on constructions, maintenance and daily operations to reduce the CO2 generated by our companies (for example use recycling concrete to renew pavement,)

The toll motorway industry is already undertaking strong actions to reach the target of making their infrastructure carbon-free. The projects, initiatives and KPI data outlined in this report 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 EU Green Deal target to make Europe the first climate-neutral continent by 2050, and with the 2015 UN Sustainable Development Goals (SDGs).

In November 2023, ASECAP published the position paper ***ASECAP PROPOSALS – REACHING NET ZERO CARBON MOBILITY Tools for sustainable mobility solutions***. In this proposal, ASECAP recognizes that

road transport is a major contributor to greenhouse gas emissions, making its decarbonization essential for achieving broader climate goals. ASECAP advocates for extensive investments in the decarbonization of road transport, including modernizing infrastructure, promoting zero-carbon energy systems, and developing an efficient alternative fuel network. ASECAP believes that toll roads should play a critical role in this ecological transition by financing greener and safer road infrastructure and adapting to cleaner vehicles. The organization supports the user-pays principle as the most sustainable method to finance these changes and align with the EU Green Deal objectives. ASECAP estimated significant investments for the upgrading of motorway infrastructure of over 70,350 M€ in addition to current maintenance obligation contract, to support these transformative efforts without burdening public budgets. It emphasizes that multiple solutions will be necessary to achieve green mobility.

ASECAP is convinced that the greening of mobility will not be achieved on the basis of a single solution and therefore suggests the following measures for the future development of road toll concession systems in Europe:

1. EU institutions and Member States should explicitly acknowledge and support toll and concession models as crucial tools for financing road transport decarbonization. Vehicle performance standards alone are insufficient; infrastructure adaptation is also essential to accommodate greener vehicles, as mandated by regulations like the Alternative Fuels Infrastructure Regulation (AFIR).
2. ASECAP emphasizes the need for a comprehensive sustainability strategy that integrates tolling legislation with intelligent transport systems (ITS) and other innovations. This approach ensures that motorways contribute to mobility as a decarbonized service, and ASECAP urges the European institutions to recognize the significant role that ITS can play in reducing transport emissions
3. ASECAP advocates for the inclusion of road tolls and ITS in the EU's Taxonomy Regulation, as they are crucial for achieving sustainability and decarbonization goals. Investments in toll road infrastructure should be recognized as eligible under the regulation, especially those that substantially contribute to climate change mitigation
4. ASECAP calls on policymakers to leverage tolls as a direct financing tool for greener road infrastructure and to expedite the green transition of road transport, aiming for carbon neutrality by 2050.

Environmental impacts

	2021	2022	2023	Scope (*)
CO2 emissions – Scope 1 and 2 (tons)	497,798	416,985	397,160	Partial 3
Energy consumption (MWh)	1,560,298	1,523,651	1,235,244	Partial 3
Km operated by ASECAP members considered	29,479.8	29,094.1	28,738.4	Partial 3

(*) see methodology section

The data on **Scope 1 and 2 CO2 emissions** generated by ASECAP members shows a consistent decrease over the three years from 2021 to 2023, despite the increase in the volume of operations. **Scope 1 emissions** are direct greenhouse gas emissions from sources owned or controlled by an organization, such as fuel combustion in company vehicles, while **Scope 2 emissions** are indirect emissions from the generation of purchased electricity, steam, heating, and cooling consumed by the organization. In 2021, ASECAP members produced 497,798 tons of CO2 emissions (scope 1 + scope 2). This figure dropped to 416,985 tons in 2022, representing a 19.1% reduction. The downward trend continued into 2023, with emissions further declining to 397,160 tons, which is a 4.75% decrease from the previous year. This reduction in CO2 emissions indicates that ASECAP members are making significant progress in minimizing their carbon footprint from their operations. The data suggests effective implementation of strategies and measures aimed at reducing emissions, such as improving energy efficiency, switching to renewable energy sources, or optimizing operational processes to be more environmentally friendly. Continued efforts in these areas will be crucial for maintaining this positive trend and aligning with broader sustainability and climate goals.

It is important to notice that transport is one of the main sources of CO2 emissions in Europe: about 21.4% (1,061 Mt CO2) of total EU CO2 emissions are due to transports[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.

Moreover, also energy consumption a consistent decline from 2021 to 2023. In 2021, total energy consumption was 1,560,298 MWh. This decreased to 1,523,651 MWh in 2022, a reduction of about 2.35%. The downward trend continued more sharply into 2023, with energy consumption dropping to 1,235,244 MWh, a further reduction of 19% from the previous year. Together, these data points reflect a positive shift towards more sustainable energy practices among motorway operators, highlighting their efforts to both produce more renewable energy and reduce their total energy consumption. Such trends are vital for meeting environmental targets and reducing the environmental impact of their operations.

[1] https://www.iea.org/regions/europe/emissions

[2] Transurban FY24 Sustainability Data Pack (https://www.transurban.com/investor-centre/reporting-suite).

Members' projects:

- **Renewable Energy** Autostrade per l'Italia S.p.A. / AISCAT, p. 59
- **A22, the choice of green hydrogen doubles: 8 new plants on the way** Autostrada del Brennero S.p.A. / AISCAT, p. 60
- **Reducing CO_2 emissions in the context of the European Union's Net Zero 2050 targets** Autostrada Brescia Verona Vicenza Padova - A4 Holding Group / AISCAT, p. 61
- **Energizing the Future** Auto-Estradas do Douro Litoral / APCAP, p. 62
- **Developing an extensive network of electric fast-charging stations** ASFA, p. 63
- **Lifecycle GHG determination tool** ASFINAG, p. 64
- **First fully electric truck for winter maintenance on motorways** ASFINAG, p. 65
- **The First and Largest Hybrid Electric Car Charging Station in Greece** Nea Odos S.A. / HELLASTRON, p. 66
- **Replacement of PATHE open air NaHP lighting luminaires with LED based on new phototechnical studies according to EN 13201** Nea Odos S.A. & Kentriki Odos S.A. / HELLASTRON, p. 67
- **Filellinon Tunnel LED Lighting upgrade** Moreas S.A. / HELLASTRON, p. 68
- **Spathovouni Toll Station LED Lighting upgrade** Moreas S.A. / HELLASTRON, p. 69
- **Sterna-Artemisio road section lighting upgrade** Moreas S.A. / HELLASTRON, p. 70
- **Fleet modernization and electrification** Olympia Odos Operation S.A. / HELLASTRON, p. 71
- **Reducing The Carbon Footprint On The Way To Fit 55** ICA, p. 72
- **Low Emission Vehicle Toll Incentive (LEVTI)** All Toll Roads Ireland, Irish Government initiative / ITIA, p. 74
- **M1 Dundalk Western Bypass Motorway & M7/M8 Motorway & N25 Wateford Dual Carriageway – Multi-Annual Pavement Preservation Treatment Project** Celtic Roads Group (CRG) Dundalk Western Bypass PPP Scheme / ITIA, p. 75
- **Solar Panel installation in 4no. locations on the Limerick Tunnel Scheme** Directroute (Limerick) Ltd. / ITIA, p. 76
- **Green Stations** PE "Roads of Serbia", p. 77
- **Towards Energy Efficiency - replacement lighting fixtures with LEDs** ROADIS Infrastructure Holding / SEOPAN, p. 78

3.2. Responsible management of the environment

Toll road operators have consistently prioritized environmental protection due to the proximity of their motorways to natural landscapes and the potential impact on the surrounding environment.

The actions taken by motorway operators are carefully planned and executed across the three main phases in a motorway's life cycle: design, construction, and, ultimately, operation, maintenance, and reinvestment.

Throughout each of these phases, environmental considerations are central to every decision and action.

Responsible management of the environment

	2021	2022	2023	Scope (*)
E-charging points in the network (number)	1,423	2,935	4,992	Partial 3
Service areas with e-charging stations (number)	438	758	923	Partial 3
Water protection systems/basins (number)	12,434	12,431	12,824	Partial 5
Noise barriers (Km)	3,289.28	3,325.64	3,393.65	Partial 3
Infrastructures for fauna crossing only (number)	2,979	3,023	3,030	Partial 5
Other infrastructures allowing animal crossings (number)	14,771	14,847	14,848	Partial 5
Total recycled or reused waste (tons)	2,762,988	3,618,336	3,731,012	Partial 5
Total waste (tons)	4,566,697	5,398,357	5,712,976	Partial 5
Waste recovery rate	60.50%	67.03%	65.31%	Partial 5

Initially, toll road operators focused primarily on protecting **water resources** and reducing **noise pollution**. Over time, substantial measures have been implemented, such as noise barriers and noise-reducing road surfaces. At the end of 2023, the network includes 12,824 water protection systems and basins, reflecting a 3% increase from 2022. Meanwhile, the total length of noise barriers reached 3,394 Km (+2% from 2022).

Furthermore, integrating motorways into the countryside, enhancing landscapes, and preserving **biodiversity** and **wildlife** have become essential objectives. Effective solutions, such as **infrastructure specifically for wildlife crossings** (e.g., underpasses, overpasses, culverts, tunnels, bridges, and viaducts), have been adopted to address these challenges. As of the end of 2023, the network features 3,030 infrastructures specifically designed for fauna crossings, such as underpasses, overpasses, and culverts. In addition, there are 14,848 other types of infrastructures facilitating animal crossings, including general-purpose culverts and bridges.

Additionally, motorway construction increasingly involves rehabilitating degraded natural or urban areas, sometimes creating new spaces that promote **biodiversity**. Comprehensive environmental upgrade programs aim to bring older networks up to modern environmental standards in terms of water, noise, and biodiversity protection, in compliance with current regulations. These initiatives are largely funded through tolls.
However, with the worsening effects of climate change already evident, toll road operators have a responsibility to intensify their efforts to protect landscapes, ecosystems, fauna, and biodiversity. They must innovate to develop low-carbon or carbon-free motorways, ensuring full compliance with EU environmental standards and programs.

To achieve carbon-free mobility and improve air quality, motorway operators must continue to reduce greenhouse gas emissions. This includes the broad and balanced deployment of alternative fuel infrastructure, such as electric and hydrogen charging stations, across their networks, which will require significant investment from both public and private sectors.

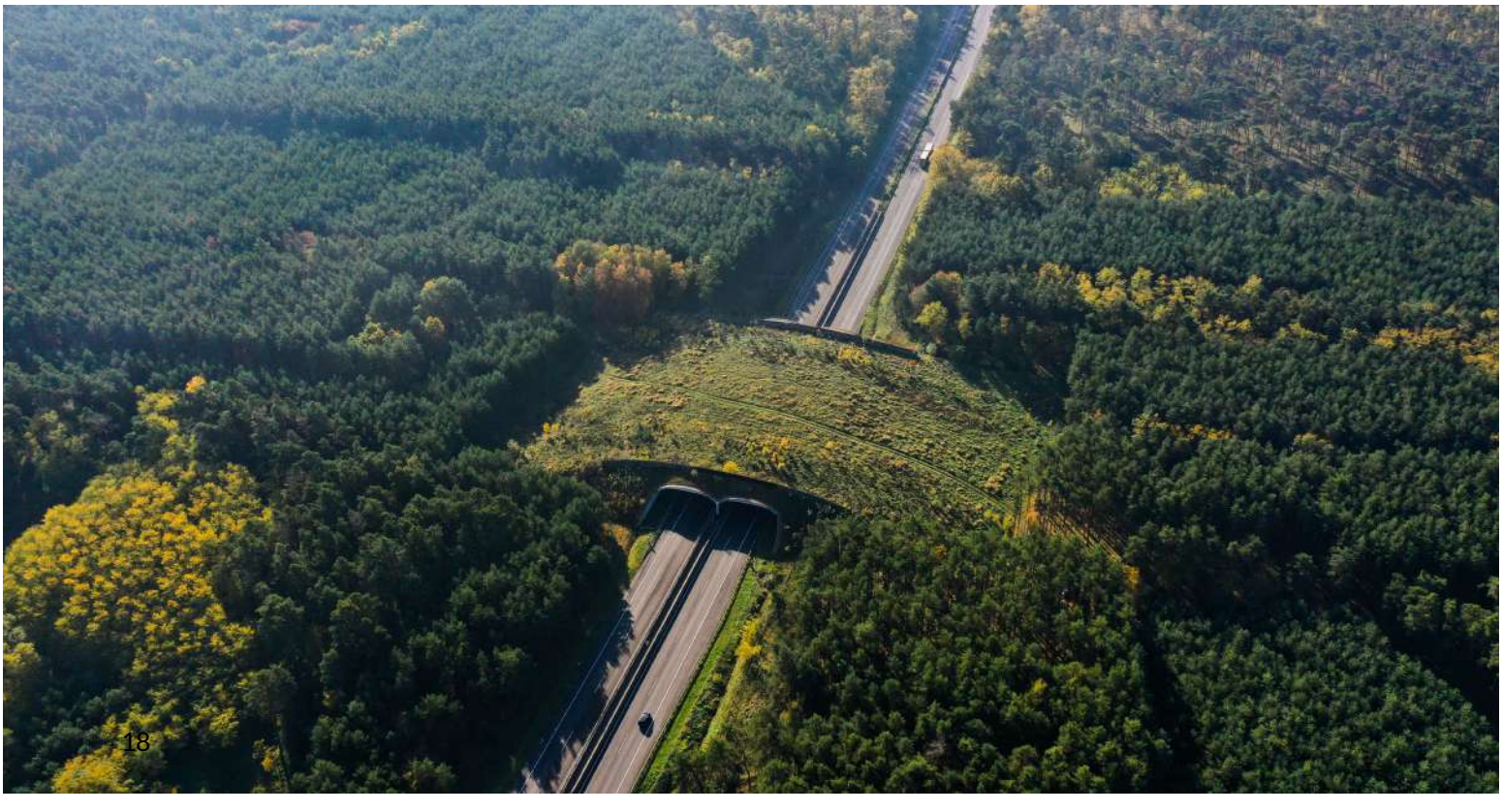
The data on **e-charging points** and **service areas with e-charging stations** within the network from 2021 to 2023 reflects a significant expansion in the infrastructure for electric vehicles (EVs). **E-charging points** have seen a dramatic increase over the three years. In 2021, there were 1,423 e-charging points. This number nearly doubled to 2,935 in 2022 and then nearly doubled again to 4,992 in 2023. This substantial growth demonstrates a strong commitment to expanding EV infrastructure, which is crucial for supporting the transition to electric mobility and meeting growing demand. **Service areas with e-charging stations** also experienced significant growth: the number increased from 438 in 2021 to 758 in 2022 and reached 923 in 2023. This expansion aligns with the increase in e-charging points, indicating that more service areas are being equipped to provide convenient charging options for travellers.

To further reduce their carbon footprint, operators are committed to investing in green mobility by replacing existing fleets with low- and zero-emission vehicles, improving the energy performance of their buildings, using renewable energy (such as solar and wind energy, green electricity, and green gas), and recycling waste from operations, routine maintenance, road construction, and heavy maintenance. In 2023, the members of the network have recycled or reused 65.31% of their total waste.

Beyond the legislative proposals under the 'Fit for 55' package, other key EU programs and pieces of legislation will continue to shape the work of toll road operators in the coming years and throughout the next decade. These include the EU Biodiversity Strategy for 2030, the 8th EU Environment Action Programme (EAP) to 2030, and EU regulations on recycling and the reuse of batteries, waste, and packaging. All these legislative tools will significantly contribute to transforming the motorway sector into a fully sustainable one.

Members' projects:

- **Underpasses for frogs and toads - A53 Bereguardo-Pavia Junction** Milano Serravalle-Milano Tangenziali S.p.A. / AISCAT, p. 79
- **A project to Regenerate and protect Biodiversity along the Motorway** Brebemi S.p.A. / AISCAT, p. 80
- **Brisa Nature Positive** Brisa Concessão Rodoviária / APCAP, p. 81
- **Climate change risk assessment** Norscut / APCAP, p. 83
- **Fire prevention and innovative agricultural practices** Norscut / APCAP, p. 84
- **Stability analysis through satellite data** Norscut / APCAP, p. 85
- **Vegetation Monitoring through satellite data** Norscut / APCAP, p. 86
- **ASFINAG Rest Areas of the Future: New e-charging services for trucks and cars** ASFINAG, p. 87
- **ASFINAG "Energieregion Ost"** ASFINAG, p. 89
- **LED Project** Aegean Motorway S.A. / HELLASTRON, p. 91
- **Restoration of burnt planting** Aegean Motorway S.A. / HELLASTRON, p. 93
- **Environment** Aegean Motorway S.A. / HELLASTRON, p. 94
- **Reforestation of Anthousa Park in Attica Region with the support of Attica Tollway** Attiki Odos & Attikes Diadromes S.A. / HELLASTRON, p. 96
- **Development of 17 Solar Plants to achieve Energy Self-Sufficiency** Olympia Odos S.A. / HELLASTRON, p. 97
- **Sound Barrier Project From Waste Tires** ICA, p. 98
- **Road Lighting change from sodium lamp SON to LED** Directroute (Fermoy) ltd. / ITIA, p. 100
- **Light Energy Controller system (LEC)** Directroute (Fermoy) ltd. / ITIA, p. 101
- **Road Lighting change from sodium lamp SON to LED** Directroute (Limerick) ltd. / ITIA, p. 102
- **Eco-driving** Autostrada Wielkopolska S.A. (AWSA) & Autostrada Wielkopolska II S.A. (AWSA II) / PAK, p. 103
- **Natural capital valuation platform** Sacyr / SEOPAN, p. 105
- **Sacyr Prediction Tool** Sacyr / SEOPAN, p. 106
- **Recharging points for electric vehicles** Autopistas / SEOPAN, p. 107
- **Solar panels** Autopistas / SEOPAN, p. 108



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.

The safety of the infrastructure requires significant investments and efforts.

In 2023, the network under construction covers 1,452 Km, marking a significant increase from 1,207 Km in construction in 2022 (+ 20.31%) and 1,026 Km in construction in 2021 (+ 41.52%). Of the total network under construction in 2023, 110 Km are focused on widening projects.

4.1. 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:

1. **<u>Appropriate accident prevention measures</u>:**

- Maintaining the road network with the highest possible standards of safety 365 days in all weather conditions.
- Ensuring an effective infrastructure safety management by carrying out regularly road safety audits and inspections.
- Providing real time traffic information: queues at toll stations, accidents, road works, weather and road conditions, travel time information and other relevant information for the driver.
- Deploying cooperative intelligent systems (C-ITS) to detect automatically incident and provide real-time traffic information.
- Ensuring the safe management and protection of traffic on work sites by early warning through proper road signing and the use of different communication means (internet, traffic radio, sms, variable message signs), including the protection of road workers.
- Setting up of high-performance protective fences designed both to resist the impact and to absorb the energy.
- Fast removal of stopped vehicles and other possible dangers.
- Providing high quality service areas where drivers/ users can rest.

2. **<u>Quick accident response:</u>** it is of utmost importance in order to save lives, reduce the impact of an accident and restore the traffic conditions on the infrastructure. The key operations/procedures undertaken by toll road operators are:

- Prompt road patrols reaction: secure the accident area, clear & clean the road section affected.
- Activate the emergency response and cooperate with the fire brigades, police and emergency services.
- Early assistance and warning in case of accident.
- Prepare appropriate traffic management plan.

3. **<u>Collection and analysis of data accident</u>:** to investigate the main causes of accidents and then implement successful strategies with proper actions on the infrastructure and / or drivers' behaviours.

4. **<u>Awareness-raising campaigns:</u>** 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).

Members' projects:

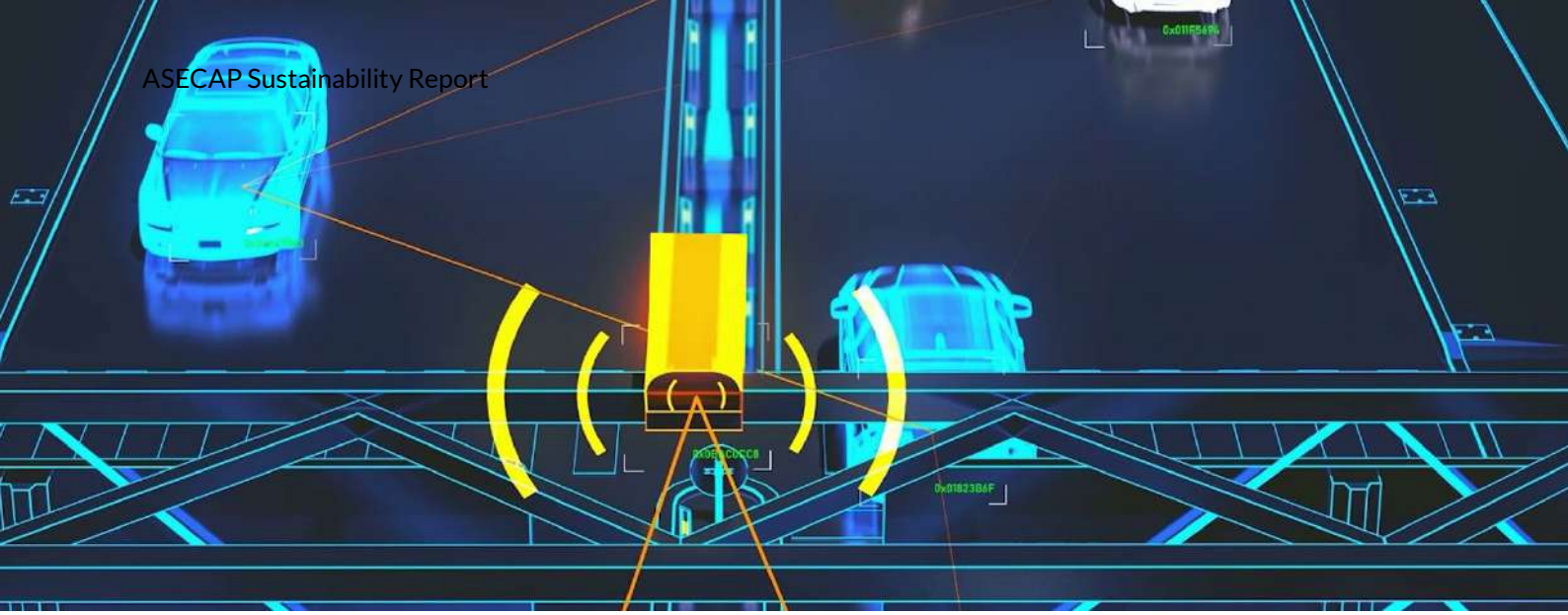
- **The Emilia Romagna flood and flood risk management** Autostrade per l'Italia S.p.A. / AISCAT, p. 110
- **The Digital Twin of the Colle Isarco, the new life of the viaduct** Autostrada del Brennero S.p.A. / AISCAT, p. 111
- **Motorway safety campaign "Guida bene, non fare l'eroe" ["Drive well, don't be a hero"]** Milano Serravalle-Milano Tangenziali S.p.A. / AISCAT, p. 112
- **CB Advisor the new warning system for hauliers on the approach of a construction site** Autostrada Brescia Verona Vicenza Padova - A4 Holding Group / AISCAT, p. 113
- **Road Safety** Aegean Motorway S.A. / HELLASTRON, p. 114
- **Management of the DANIEL storm** Aegean Motorway S.A. / HELLASTRON, p. 116
- **LIFE SAFE CROSSING** Egnatia Odos S.A. / HELLASTRON, p. 118
- **Target: The Road That Forgives Mistake / Road Safety,** ICA, p. 120
- **Motorway Driving Course** Autostrada Wielkopolska S.A. (AWSA) / PAK, p. 122
- **"Hold the Wheel and Not Your Phone"** Stalexport Autostrada Małopolska S.A. (SAM) / PAK, p. 124
- **Count to zero** Gdańsk Transport Company (GTC) / PAK, p. 125
- **ACM3S** Sacyr / SEOPAN, p. 126
- **InRoad Evolution** Sacyr / SEOPAN, p. 127
- **Road Safety Awareness-raising Campaign "Your safety, Our priority"** ROADIS Infrastructure Holding / SEOPAN, p. 128
- **ASECAP Europe-wide Road Safety Campaign #(S)heWorks #ICare,** p. 130

4.2. 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.

Members' projects:

- **The A22 is increasingly ready for connected driving: C-Roads Italy 3 and the new mobile use cases** Autostrada del Brennero S.p.A. / AISCAT, p. 132
- **C-ROADS ITALY 2** Autostrada Brescia Verona Vicenza Padova - A4 Holding Group / AISCAT, p. 133



4.3. Traffic injuries and fatalities

One of the key indicators for assessing infrastructure safety is the number of injuries and fatalities in the network.

Road injuries and fatalities

	2021	2022	2023
Injured persons	17,182	18,874	19,729
Fatal accidents	466	526	483
Fatalities	511	624	543
Personal injury rate*	66.6	67.6	68.4
Fatal accident rate**	1.8	1.9	1.7
Fatality rate ***	2.0	2.2	1.9
Km travelled	258,097	279,051	288,364

Scope: ASECAP EU members without Toll Collect and AKA

*Personal injury rate: number of injuries per billion kms travelled on motorways
** Fatal accident rate: number of fatal accidents per billion kms travelled on motorways
*** Fatality rate: number of fatalities per billion kms travelled on motorways

In 2023, the ASECAP EU members saw 19,729 injuries and 483 fatal accidents resulting in 543 fatalities.

To evaluate safety trends over time, it is useful to examine rates such as the personal injury rate, fatal accident rate, and fatality rate, which account for the number of kilometres travelled on motorways and allow for meaningful comparisons across years.

In 2023, the personal injury rate was 68.4 injuries per billion kilometres driven on motorways, which is relatively stable compared to 67.6 in 2022. The fatal accident rate improved to 1.7 fatal accidents per billion kilometres driven on motorways in 2023, down from 1.9 in 2022. The fatality rate also decreased from 2.2 fatalities per billion kilometres driven on motorways in 2022 to 1.9 in 2023. These reductions in rates suggest ongoing progress in enhancing road safety over time.

1.9 fatalities per billion kilometres driven on EU motorways in 2023

In 2023, there were 8% fewer fatal accidents and 13% fewer deaths compared to 2022.

Members' projects:

- **M1 Motorway Public Lighting Reduction Project** Celtic Roads Group (CRG) Dundalk Western Bypass PPP Scheme / ITIA, p. 134
- **M7/M8 Motorway Public Lighting Reduction Project** Celtic Roads Group (CRG) M7/M8 Portlaoise Bypass PPP Scheme / ITIA, p. 135
- **N25 Waterford Bypass Public Lighting Reduction Project** Celtic Roads Group (CRG) Waterford Bypass PPP Scheme / ITIA, p. 136
- **Rescue services exercises on Autostrada Wielkopolska** Autostrada Wielkopolska S.A. (AWSA) & Autostrada Wielkopolska II S.A. (AWSA II) / PAK, p. 137

5. People and stakeholders

5.1. Workforce

Motorway concession and toll companies operate throughout Europe, often serving as the primary employer in certain regions. This role brings with it both rights and responsibilities, particularly in achieving effective human resources management. Incorporating sustainability into their internal management structure is also a vital component for toll companies.

As a result, these companies have implemented initiatives to raise employee awareness about sustainable mobility, encouraging them to adopt a sustainable approach. This may include specialized training programs covering various aspects of sustainable development, with a strong emphasis on the safety of staff working on the network. A natural progression of the toll road operators' strategy is to identify motivated managers and assign them to roles focused on sustainable development.

Significant training efforts are essential to develop the new skills needed as the industry evolves to meet modern customer expectations. For toll motorway operators, having motivated and well-trained employees is crucial. The growing need for real-time communication with customers is driving the development of new customer service tools and roles. Additionally, the demand for safer and more efficient operations enhances health and safety conditions for workers, as accidents can be reduced through better education and training, improved risk management, the use of advanced technology and automation, and proper equipment usage.

ASECAP Members prioritize the safety of their employees and external workers in roadwork zones by ensuring that signage is adequate and of high quality and that appropriate equipment is available for marking road work areas on motorways. Often, additional specialized equipment, such as crash absorbers (dumpers), stroboscopic lamps on signalling vehicles at construction sites, and "smilies" panels, is used to effectively alert drivers and ensure safety.

Moreover, promoting gender equality in the workplace has been another priority for toll motorway operators.

People and stakeholders

	2021	2022	2023	Scope (*)
Permanent staff - Total	43,940	44,643	46,203	Full
Permanent staff- Men	29,256	30,384	31,214	Full
Permanent staff- Women	14,684	14,259	14,989	Full
Permanent staff - Women (%)	33.42%	31.94%	32.44%	Full
Executive and management staff	3,456	3,548	3,730	Partial 3 (Hungary excluded)
Women in executive and management positions (%)	30.90%	31.54%	32.12%	Partial 3 (Hungary excluded)

(*) see methodology section

The workforce data of ASECAP members for 2023 shows a positive trend in terms of overall employment and gender representation. In 2023, the total number of permanent staff increased to 46,203, up from 44,643 in 2022 (+ 3.5%), indicating growth in the workforce. This growth reflects an expansion in operations or services that require additional personnel. In 2023, the percentage of women employed as permanent staff increased to 32.44%, up from 31.94% in 2022, indicating a growing focus on gender diversity and equality in the workforce.

Notably, the percentage of women in executive and management positions has been improving steadily. In 2023, women held 32% of these roles, up from 31% in 2022 and 2021. This increase indicates a process to have more women being represented in leadership positions, contributing to a more inclusive and balanced organizational environment.

Member project:

- **Providing remedial education through skilling teachers, students and parents engagement** ROADIS Infrastructure Holding / SEOPAN, p. 139

5.2. More inclusive and equal transport mobility

The transport sector is a cornerstone of the European economy, contributing around 5% to the EU's GDP and employing over 10 million people. It is crucial for European businesses and global supply chains, underscoring its importance to the continent's economic stability and growth.

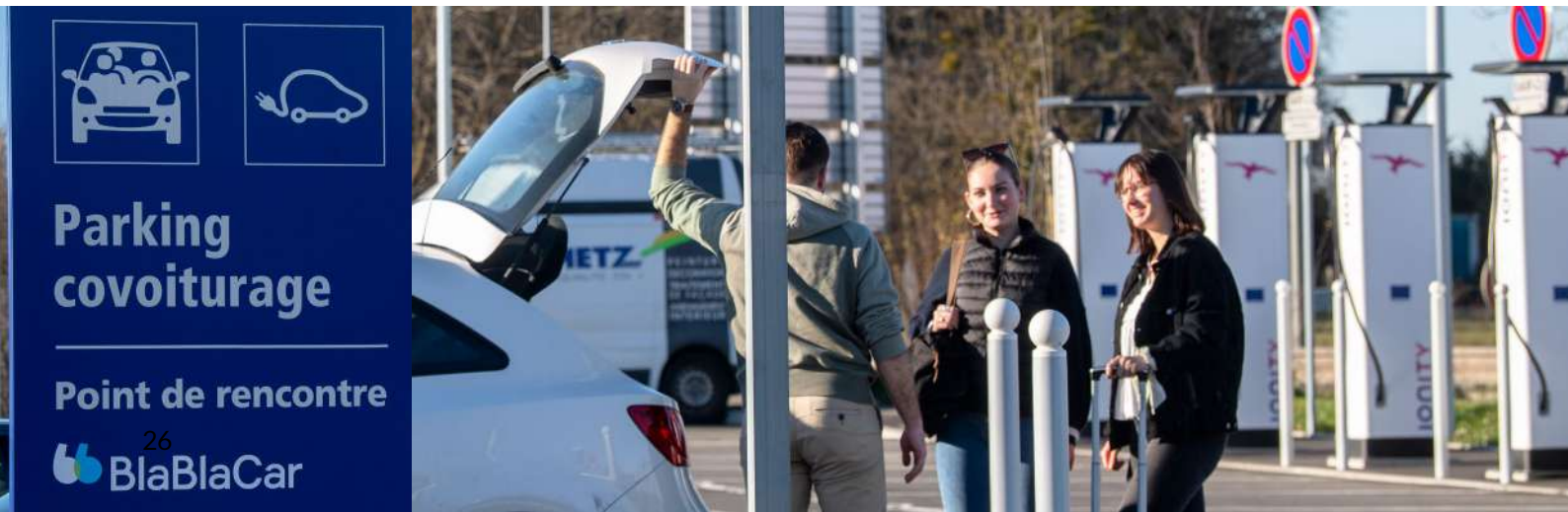
To modernize and future-proof the transport system, the European Commission's 2020 Sustainable and Smart Mobility Strategy has outlined a vision for a sustainable, smart and resilient mobility. This strategy includes an Action Plan with 82 initiatives that will significantly influence European societies and economies, impacting all modes of transport, including road transport.

Currently, planning multimodal journeys and purchasing tickets across different transport modes in the EU is still often a complex process due to the absence of an integrated, EU-wide framework for travel information, ticketing, and payment services. To tackle this issue, the European Commission has set the following objective: by 2030, automated mobility will be widely deployed, and seamless multimodal passenger transport will be enabled through integrated electronic ticketing and improved passenger rights. To achieve this, all transport modes must become more sustainable, with accessible green alternatives and proper incentives to promote the transition to more eco-friendly options. Overcoming barriers such as data accessibility, lack of cooperation between transport suppliers and vendors, and the overall lack of interoperability is essential. To facilitate this transition, the European Commission adopted in November 2023 an EU Delegated Regulation with regard to the provision of EU-wide multimodal travel information services: this legal act includes measures that support innovative and flexible ticketing solutions, allowing for the combination of various transport modes, providing passengers with comprehensive door-to-door travel options, etc. This Regulation is supplemented by the revised ITS Directive adopted in November 2023.

Digital solutions also have strong public support, with many citizens favouring real-time payment options for tolls, parking, and other charges through smartphones or other devices, as well as streamlined processes for accessing areas regulated by Urban Vehicle Access Regulations (UVARs) in various European cities.

For toll road operators, adapting to these new mobility trends is essential. They must develop new services, such as High Occupancy Vehicle (HOV) lanes that cater to buses, carpooling, and car-sharing, to optimize the use of their roads and accommodate evolving transportation models.

By embracing these new mobility solutions, toll road operators will contribute to a smarter, more sustainable, digitalized, and automated European transport system, aligning with the broader goals of the EU's mobility strategy.



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 travellers 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 travellers 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. Multi-Lane Free-Flow (MLFF) technologies represent a step further: toll motorway operators are investing massively in the deployment of the MLFF tolling system because it enables seamless toll collection without requiring vehicles to stop at toll booths. Vehicles are identified and tolls collected at highway speeds. This increases safety because queues are removed at toll plazas and improves environmental performance by smoothing traffic flows. This highly innovative technology therefore provides great road user convenience.

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: motorway operators are already very active in the field 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 pursued 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 helps switch from the old physical traditional toll system to a MLFF 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.

In 2023, the number of Electronic Toll Collection (ETC) subscribers surpassed 80.8 million, reflecting an 8% increase compared to 2022. This growth demonstrates a continued shift towards more convenient and efficient toll payment methods, indicating a high level of satisfaction of the users. The increase in ETC subscribers suggests an ongoing trend of digitalization in toll collection, enhancing both user experience and operational efficiency for toll road operators.

In 2023[3]:

1599
rest areas

1337
service areas

1283
restaurants

104
hotels

14138
toll lanes, of which 78.8% are ETC or mixed lanes

Members' projects:

- **Autonomous driving** Autostrade per l'Italia S.p.A. / AISCAT, p. 140
- **Milano Green Door, an innovative modal interchange hub** Milano Serravalle-Milano Tangenziali S.p.A. / AISCAT, p. 141
- **"Arena of the Future" Project, Testing of the ERS - DWPT SYSTEM** A35-Brebemi S.p.A. / AISCAT, p.142
- **Technology and Evolution of the Free Flow® System** Autostrada Pedemontana Lombarda S.p.A., p. 143
- **Smart street lighting system that adapts to real-time traffic data under safe driving conditions** Olympia Odos S.A. / HELLASTRON, p. 144

[3]The scope of these data is Partial 1 (see the methodology section).

6. Sustainable mobility: impact on communities

Economic observatories have demonstrated a strong correlation between well-developed road infrastructure networks and GDP growth. Regions with robust toll road infrastructures tend to experience faster economic development compared to those without such facilities. ASECAP members play a vital role in this process, acting as nationwide land developers and significantly contributing to the social and economic growth of the areas they connect and serve. The toll road network is integral to daily life, providing access to essential goods and services, linking people with their loved ones, and underpinning economic activities by connecting major economic hubs, ports, and airports. Additionally, the presence of toll roads encourages factories and businesses to locate nearby, enhancing connectivity and communication, which in turn creates jobs and stimulates economic development in local communities.

The construction of toll-financed motorways brings numerous economic benefits to society. By leveraging private funding, these projects can be completed more swiftly, without waiting for the availability of public funds. This approach ensures steady financing of new road infrastructure projects throughout different phases of the economic cycle, providing stability during economic downturns. The use of private funds in concession models helps mitigate the impact of austerity measures, which often result in cuts to public spending. The "user pays" principle is deemed the fairest method for funding infrastructure, as it relieves taxpayers from the financial burden of such projects. Consequently, public funds can be redirected to other critical areas, such as healthcare, education, and public transport.

Moreover, toll revenue facilitates the long-term optimization of road operation and maintenance. This sustainable funding model ensures continuous investment in the toll road infrastructure throughout the duration of the concession, promoting the efficient upkeep and enhancement of the network.

In toll concession schemes, the private sector assumes significant risks, particularly those related to construction costs and traffic demand, ultimately benefiting the public interest. Tolls also provide a mechanism to manage traffic demand, leading to a more balanced and efficient use of the road network. Additionally, tolls serve as an effective tool for internalizing the external costs associated with the transport sector.

Toll road operators also contribute substantially to national government revenues through the payment of various taxes, including VAT, land tax, company tax, and income tax.

Motorway companies advocate that the toll system is a crucial mechanism for promoting sustainable development and mobility. The system enables:

- The financing of an extensive road infrastructure network based on the "user pays" principle.
- The provision of innovative and sustainable financing schemes.
- The allocation of funds specifically for the construction, management, maintenance, and repair of the road network.
- A reliable alternative to limited public funds.
- The development of an environmentally friendly network.
- The delivery of efficient and reliable mobility services.
- The maintenance of a safe and secure network with high availability for users.
- The creation of jobs that uphold human rights and provide secure working conditions.

Economic impact

	2021	2022	2023	Scope (*)
Total Investment (M€)	7,272.19	8,480.85	8,061.31	Partial 4
Toll revenues (M€)	31,630.22	32,694.68	35,033.07	Full
Calculated VAT on toll (M€)	5,233.69	5,507.98	5,921.94	Full

(*) see methodology section

Toll revenues of the ASECAP members have consistently increased over the last three years, rising from €32,694.68 million in 2022 to €35,033.07 million in 2023 (+7%). This upward trend indicates growing usage of toll roads and possibly higher toll rates. Similarly, the VAT on tolls also shows a steady increase, from €5,507.98 million in 2022 to €5,921.94 million in 2023. This growth corresponds with the rise in toll revenues, indicating that the increased usage and revenue generation have also resulted in higher tax contributions from toll road operators to governments. This growth in VAT collection underscores the economic contribution of toll road operators beyond just infrastructure development, enhancing fiscal revenues for public use.

Members' projects:

- **Autostrada del Brennero, a motorway for the territories: EUR 400,000 worth of equipment donated to Lilt** Autostrada del Brennero S.p.A. / AISCAT, p. 146
- **Synergies with the territory** Autostrada Brescia Verona Vicenza Padova - A4 Holding Group / AISCAT, p. 147
- **Preparation of Türkiye's Highways' Intelligent Transportation Systems ready to use by Level 4 Autonomous Driving Feature Vehicles** ICA, p. 148

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.

Regulatory milestones & ASECAP references

Links to international and EU legal texts, as well as to ASECAP publications are outlined below.

ASECAP documents:

- Statistical Bulletin 2024
- Key Figures 2024
- ASECAP proposals: Reaching net zero carbon mobility - Tools for sustainable mobility solutions (November 2023)
- Statistical Bulletin 2023
- Key Figures 2023
- Road Safety Leaflet 2023
- Sustainability Report 2022
- Statistical Bulletin 2022
- Key Figures 2022
- Manifesto on C-ITS (2021)
- Manifesto on toll road concessions (2020)

United Nations documents:

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

European Union documents:
Environment/Climate/Biodiversity/Sustainable Development/Sustainable & Smart Mobility:

- Regulation (EU) 2024/1991 of the European Parliament and of the Council of 24 June 2024 on **nature restoration** and amending Regulation (EU) 2022/869
- Regulation (EU) 2024/1610 of the European Parliament and of the Council of 14 May 2024 amending Regulation (EU) 2019/1242 as regards **strengthening the CO2 emission performance standards for new heavy-duty vehicles and integrating reporting obligations,** amending Regulation (EU) 2018/858 and repealing Regulation (EU) 2018/956
- Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024 on the **energy performance of buildings** (recast)
- Directive (EU) 2024/1203 of the European Parliament and of the Council of 11 April 2024 on the **protection of the environment through criminal law** and replacing Directives 2008/99/EC and 2009/123/EC
- Council Regulation (EU) 2024/223 of 22 December 2023 amending Regulation (EU) 2022/2577 laying down a **framework to accelerate the deployment of renewable energy**
- Commission Delegated Regulation (EU) 2024/490 of 29 November 2023 amending Delegated Regulation (EU) 2017/1926 supplementing Directive 2010/40/EU of the European Parliament and of the Council with regard to the **provision of EU-wide multimodal travel information services**
- Directive (EU) 2023/2661 of the European Parliament and of the Council of 22 November 2023 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**
- Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation

(EU) 2018/1999 and Directive 98/70/EC as regards the **promotion of energy from renewable sources**, and repealing Council Directive (EU) 2015/652

- Regulation (EU) 2023/1804 of the European Parliament and of the Council of 13 September 2023 on the **deployment of alternative fuels infrastructure**, and repealing Directive 2014/94/EU
- Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on **energy efficiency** and amending Regulation (EU) 2023/955 (recast)
- Directive (EU) 2023/959 of the European Parliament and of the Council of 10 May 2023 amending Directive 2003/87/EC establishing a **system for greenhouse gas emission allowance trading** within the Union and Decision (EU) 2015/1814 concerning the **establishment and operation of a market stability reserve for the Union greenhouse gas emission trading system**
- Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a **carbon border adjustment mechanism**
- Regulation (EU) 2023/851 of the European Parliament and of the Council of 19 April 2023 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**
- Regulation (EU) 2023/857 of the European Parliament and of the Council of 19 April 2023 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,** and Regulation (EU) 2018/1999
- Council Regulation (EU) 2022/2577 of 22 December 2022 laying down a **framework to accelerate the deployment of renewable energy**
- Decision (EU) 2022/591 of the European Parliament and of the Council of 6 April 2022 on a **General Union Environment Action Programme to 2030**
- 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** (2021)
- **EC Communication on Sustainable and Smart Mobility Strategy - putting European transport on track for the future** (2020)
- **EC Communication on the EU Biodiversity Strategy for 2030 - Bringing nature back into our lives** (2020)
- **The European Green Deal** (2019)

EU financing / Taxonomy & Sustainable financing:

- **EU activities and legislation on taxonomy for sustainable activities**
- **Recovery Plan for Europe: EU 2021-2027 Multiannual Financial Framework / NextGenerationEU / Recovery and Resilience Facility**

Road Safety:

- **EU Road Safety Policy Framework 2021-2030 – next steps towards Vision Zero**
- **2017 Valletta Declaration on Road Safety**
- **EU Directive 2008/96/EC on road infrastructure safety management**

Acknowledgements

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Methodology

ASECAP gathered data from its members as of December 31, 2023. This report includes only those KPIs with substantial data coverage, meaning a high percentage of available data relative to missing data. For KPIs that were not available for all members, we used the average values of the available data to estimate the missing values.

Some indicators in this report pertain to the entire ASECAP network, while others apply to subsets of it. Specifically, the KPIs in this report are categorized by the following scopes:

- **"Full"**: Data cover the entire ASECAP network (82,255.3 km in 2021, 81,733.9 km in 2022, 81,341.4 km in 2023).
- **"Partial 1"**: Data cover the entire ASECAP network excluding Germany and the UK.
- **"Partial 2"**: Data cover the entire ASECAP network excluding Germany, the UK, the Netherlands, and Ireland.
- **"Partial 3"**: Data cover the entire ASECAP network excluding Germany, the UK, the Netherlands, and Morocco.
- **"Partial 4"**: Data cover the entire ASECAP network excluding Germany, the UK, the Netherlands, Ireland, Hungary and Turkey.

  "Partial 5": Data cover the entire ASECAP network excluding Germany, the UK, the Netherlands, Morocco, Italy and Hungary.

Each table specifies the scope of the KPIs it presents. As data collection improves over time, we anticipate being able to report on increasingly comprehensive 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 ASECAP Statistical Bulletin 2024.

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
MLFF: Multi-Lane Free-Flow
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

Diversity & Inclusion

Project description

As part of the D&I strategy of Autostrade per l'Italia and its subsidiaries, a major initiative continued in 2023 concerns the Employee Resource Groups (ERGs), groups of volunteers open to all people in the Group, with the aim of promoting an even more inclusive corporate culture, addressing all diversity issues across the board. ERGs help to promote an inclusive approach, to provide support to the organisation for its DE&I objectives by activating a two-way listening channel aimed at co-creating initiatives/projects that are more personalised and adherent to the real needs of its people in the implementation of its inclusiveness programme. The 4 groups (Gender, Intergenerationality, Disability, LGBTQ+; description in the graphic) during the year have been carrying out initiatives on inclusive language topics with an organisation characterised by a board, in close contact with the HCO Management and the group members and executive sponsors representing the Top Management. The ERGs were entrusted with the management of both Autostrade per l'Italia's first Inclusion Week during the week of 19-23 June, 2 years after the start of the FareDI+ programme (21 June 2021), and its second edition in 2024 (21-26 June). Next year (2025) the community will be enriched by the establishment of a Multicultural group.

Illustration

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

Project title

Liberal donation to the Libellula Foundation

Project description

Freedom and equity are two of the founding values of the Libellula Foundation, which it aims to implement with the conception of the "Libellula Space". It is a listening desk that is free, anonymous, with no reporting obligation, that aims to intercept situations of violence or vulnerability and combat them, as well as to spread a culture of respect and inclusion. The ultimate aim is therefore to develop integrated interventions aimed at preventing and combating violence against women, particularly those living in situations of fragility.
Thanks to the activities carried out within the Libellula Space, the women or families concerned will be able to recognise violence, even when it is hardly visible, and give all people the same opportunities, especially the opportunity to know and express their own selves through real paths of self-determination. The support provided is comprehensive, including play workshops on emotions for children, assistance for parents, and a small library accessible to the general public.

Illustration

A35-Brebemi S.p.A. / AISCAT

Project title

Red benches against feminicide and violence against women in general

Project description

25 November is the International Day for the Elimination of Violence against Women, an annual event established by the United Nations assembly in 1999.
In many countries, such as Italy, the colour displayed on this day is red, and red shoes and red benches have become the symbol against feminicide and violence against women in general. These symbols, found in public squares or places, represent the victims of violence and feminicide and are a way of remembering and raising awareness of the issue.
A35 Brebemi installed two red benches in the service areas along the motorway in cooperation with the two respective FOOD operators.
The red bench in particular is a symbol of the communication and awareness-raising activities aimed at giving voice to the actions taken against violence against women, in favour of a culture of equality.
With this action, both symbolic and tangible at the same time, our Group aims to foster the recognition of respect for every individual, combating silence and all forms of abuse and discrimination.
There is also a plaque on the bench with the toll-free number to call in case of need or risk of violence.

Illustrations

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

Project title

100th Anniversary Women of the Republic Run

Project's aim

The "100th Anniversary Women of the Republic Run" aimed to celebrate the 100th anniversary of the Republic of Turkey by highlighting and glorifying the contributions and power of women. The event sought to bring together women of all ages, promote their empowerment, and establish a new tradition in international sports organizations in Istanbul.

Benefits of the project

- **Empowerment of Women:** Showcased the strength and potential of women, reinforcing the opportunities provided by the Republic.
- **Community Building:** Brought together women from diverse backgrounds to celebrate and support each other.
- **International Recognition**: Enhanced Istanbul's reputation as a host for international sports events.
- **Charitable Contributions**: Supported various organizations through event proceeds.
- **Media Impact:** Achieved significant media coverage and influencer reach, promoting the event and its cause widely.

Project timeline

Event Date: October 29, 2023
Future Plans: Aim to make it an annual event to continue celebrating women and contributing to international sports events in Istanbul.

Project description

Hosted by ICA with the support of IC İbrahim Çeçen Foundation, the "100th Anniversary Women of the Republic Run" took place on October 29, 2023, to celebrate the Republic of Turkey's centennial and the empowerment of women. The inaugural event saw 3,186 registered runners, with top participants receiving a total of 225,000 TL in prizes. All participants received commemorative medals. The event, flagged off by Eda Erdem Dündar, captain of the A National Women's Volleyball Team, also raised significant donations for various charitable organizations (Darüşşafaka, TOG, TOÇEV, TED, YANINDAYIZ Association etc.). Media coverage reached nearly 30 million people, with influencer posts extending the reach further. This unique event, held on the Yavuz Sultan Selim Bridge, symbolized both a celebration and a powerful statement about the achievements of Turkish women.

Illustrations




Website

- www.cumhuriyetkadinlarikosusu.com

Social Media

- www.instagram.com/cumhuriyetkadinlarikosusu
- www.youtube.com/@CumhuriyetKadinlariKosusu

Autobahnen- und Schnellstraßen-Finanzierungs-Aktienge-sellschaft (ASFINAG)

Project title

ASFINAG Eco-Forests

Project's aim

Eco-forests are wooded areas which, due to their nature (stand structure, tree species, age, location, function, etc.), are ecologically valuable habitats and retreats for (rare) animal and plant species or can be developed into such.

Benefits of the project

Eco-forests promote biodiversity and ecology.

Project timeline

In 2021 and 2022, 3 wooded areas totalling 10 hectares were designated as "eco-forests" along the ASFINAG route network. A selection and prioritisation of areas was carried out for a further 10 hectares to convert them to eco-forests in the near future.

Project description

In eco-forests will be no more intensive or forestry management in the future and old and dead trees are deliberately left standing.

The following criteria are taken into account in the selection process:

- Older tree populations, with strong trees and deadwood
- High proportion of deciduous trees, little spruce (due to bark beetle)
- Tree population further away from public paths

Autobahnen- und Schnellstraßen-Finanzierungs-Aktienge-sellschaft (ASFINAG)

Project title

ASFINAG's first Micro Wind Turbines

Project's aim

The aim is to generate green electricity using wind power.

Benefits of the project

The green electricity can be produced and used locally. Due to the utilization of the unused space on bridge pillars there is no disturbance to residential areas.

Project timeline

The micro wind turbines were installed in 2023. We are now observing and analysing this first wind power project on bridge piers in order to gain the necessary conclusions and experience for a possible roll-out to other bridges. After all, with almost 5,000 bridges throughout Austria, there is certainly potential here.

Project description

Eight so-called micro wind turbines are turning directly under the Europabrücke bridge, generating green electricity using wind power. This supplies the adjacent Patsch secondary toll station, with an output of 5,000 kWh per year, which is equivalent to the consumption of a large, detached house.

The idea originated from ASFINAG's own innovation think tank and was further developed on site with the Berlin start-up MOWEA. However, large parts of the turbines were produced by local companies in Austria. The eight turbines were spectacularly installed at a height of 140 meters on the pillars of the Europabrücke bridge; professional industrial climbers had to be hired especially for this.

Illustration

Website

- www.asfinag.at/ueber-uns/presse/pressemeldungen/mikrowindturbinen-projekt-europabrucke

Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

Project title

Sustainable construction sites @ ASFINAG

Project's aim

Efficient use of resources and the promotion of a circular economy.

Benefits of the project

More sustainable construction sites should reduce the environmental impact by resource efficiency, energy efficiency as well as reducing waste.

Project timeline

The renovation of the Arlberg tunnel as a current construction site is currently going on until the end of November 2024.

Project description

Example renovation Arlberg Tunnel:

- Conserving resources is of the utmost importance to ASFINAG, even on a construction site of this size. ASFINAG is therefore relying on recycling for the 23,000 cubic meters of concrete roadway. Around 60 percent of the old roadway will be reused on site and paved after the material has been processed in a mixing plant. Because no landfill areas are required and most of the recycling takes place on site, waste and truck journeys are significantly reduced.
- Whenever possible, new buildings use renewable raw material wood, which is largely produced locally using local resources. Understandably, this is only done where this is possible for a transport structure, for example a pedestrian bridge for customers at the toll station. In future, the power supply will be provided by renewable energies using geothermal and solar energy. ASFINAG is also paying attention to energy-efficient construction methods.

Website

- www.asfinag.at/ueber-uns/presse/pressemeldungen/start-zweite-sanierungsphase-s16-arlbergtunnel

Aegean Motorway S.A. / HELLASTRON

Project title

Recycling of cigarette ends

Project's aim

Inform and raise awareness among its employees about the dangers of throwing away cigarette ends for the Environment and the people.

Benefits of the project

New beneficial and environmentally friendly materials are produced.

Project timeline

Project commenced in 2023.

Project description

In August 2022, Aegean Motorway proceeded with the installation of special cigarette waste collection bins at its Moschochori and Leptokarya sites.
The unique and innovative cigarette ends collection, management and recycling program has been created by the Cigaret Cycle AMKE. The company has become a supporter of the programme implemented by Cigaret Cycle, and has chosen to inform and raise awareness among its employees about the dangers of throwing away cigarette ends for the Environment and the people, since cigarette ends are not biodegradable, they remain in the environment for more than 15 years and return to the food chain, affecting biodiversity.
In addition, thanks to the recycling methods applied, new beneficial and environmentally friendly materials are produced (such as fertiliser for use in floriculture and forms of industrial plastic for everyday use).
In 2023, 15.2 kg of cigarette ends were collected in 2 special recycling bins between 1/6/2022 and 31/7/2023. Recycling this amount of waste will produce 3.5 kg of fertilizer and 11.5 kg of industrial plastic raw material. Recycling instead of disposing this amount as a common type of municipal waste saved 30,400 m3 of fresh or salt water from pollution.

Illustration

Website

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

Egnatia Odos S.A. / HELLASTRON

Project title

"ΣΕΛΑΣ": Autonomous system for the non-intermittent generation and storage of electricity using photovoltaic on motorways

Project's aim

i)) design and development of PV systems that can exploit night light sources.

ii) development of a software tool that will process, predict and optimize energy services needed for the road infrastructure.

iii) simulation of future use case scenarios that do not yet exist on the highway –involving electric cars charging stations and smart lighting-, but will contribute in making the tool as future-proof as possible.

iv) implementation of a storage system along with the photovoltaic application that will help in achieving self-consumption.

v) integration of the final system in real highway infrastructure (toll and parking stations).

Benefits of the project

i) improvement in the carbon footprint of highway roads' infrastructure.

ii) energy costs reduction and an increase in reliability of critical road infrastructure.

iii) integration of new state-of-the-art materials and energy optimization processes in PV systems.

iv) penetration of new technology in the energy and transport sectors.

v) increase in employability in the high-end technology sector.

Project timeline

10/2018 – 02/2023

Project description

The ΣΕΛΑΣ project suggests the study and exploitation of a new photovoltaic panel technology into specific infrastructure of highways (toll stations and parking lots), in order to cover their energy needs. The ΣΕΛΑΣ photovoltaic technology will be able to provide power throughout the whole day, as they will utilize diffused night light from sources such as cars and highway lighting infrastructure.

Website

- www.selas-project.eu/el

Social Media

- www.facebook.com/selasproject

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

Project title

Cold Recycling of Pavements

Project's aim

The aim of the project "Cold Recycling of Pavements" is to provide an environmentally friendly and cost-effective method for rehabilitating and maintaining asphalt pavements. Cold recycling of pavements offers a sustainable alternative by reusing existing materials on-site, minimizing the need for new aggregates and asphalt binders. This process involves milling the existing pavement surface to a predetermined depth, mixing the milled material with recycling agents (such as foamed asphalt, emulsions, or chemical additives), and compacting the mixture to create a new, durable pavement layer.

Benefits of the project

- Reduces the consumption of natural resources by reusing existing pavement materials.
- Minimizes the generation of waste materials, such as old asphalt and aggregates, thus reducing landfill usage.
- Decreases greenhouse gas emissions associated with the production and transportation of new materials.
- Cold recycling involves shorter construction periods compared to traditional methods, minimizing disruptions to traffic flow and reducing inconvenience to road users and nearby communities.
- Enhances pavement longevity, leading to reduced maintenance needs and lifecycle costs over time

Project timeline

03-2023 – 11-2023

Project description

The project aimed to enhance the structural integrity, durability, and performance of the existing pavement infrastructure.

1. **Overall Length**: The project spans approximately 8 kilometers of roadway, indicated by the continuous line in the illustration.
2. **Total Area**: The shaded region represents the total area targeted for rehabilitation, encompassing approximately 50,000 square meters of pavement surfaces and associated infrastructure.
3. **Construction Method:** in-situ cold recycling process, where existing pavement materials are milled, processed, and reutilized to create a new, durable roadway layer.
4. **Working Width**: The construction activities are carried out with a working width of 3.80 meters, ensuring precision and uniformity throughout the project area, as indicated by the highlighted section.

Area Location: The project site is situated within the Fthiotida area.

Website

- https://loudoninternational.co.za

Social Media

- https://www.linkedin.com/posts/activity-7160601876957151232-Xa9Q?utm_source=share&utm_medium=member_desktop

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

Project title

Sustainability of Biodiversity with Ecological Bridge

Project's aim

The Ecological Bridge aims to ensure that wild animal species can safely cross the Northern Ring Highway without being affected by traffic, thereby protecting natural life and sustaining biodiversity in the region. By providing a safer crossing for wildlife, the rehabilitation project aims to reduce animal mortality, support ecosystem sustainability and reduce the negative impacts of human infrastructure on nature. This initiative reflects ICA's commitment to environmental sustainability and aims to inspire similar projects that promote a harmonious coexistence between human activities and wildlife.

Benefits of the project

The Ecological Bridge project offers numerous benefits. It significantly reduces animal mortality by providing a safe crossing for wildlife, thereby supporting the continuity of local ecosystems and maintaining biodiversity. The project also includes the restoration of habitats, such as adding 8,196 endemic plants and restoring two wetlands, which enhances local flora and fauna. Additionally, the project promotes climate resilience by incorporating species adapted to changing climatic conditions. By demonstrating innovative wildlife management practices, such as creating paths for reptiles and installing photo traps, the project showcases sustainable infrastructure solutions that minimize environmental impacts.

Project timeline

The rehabilitation project of the ecological bridge was carried out between 2022 and 2023. During this period, extensive efforts have been made to restore habitats and implement innovative measures for wildlife protection and monitoring.

Project description

The Ecological Bridge, the first of its kind in Turkey, is constructed to ensure that wild animal species can continue their lives without being affected by the highway. This bridge is crucial for protecting natural life and sustaining biodiversity by allowing wild animals to cross the highway safely, thereby reducing animal mortality and supporting the continuity of ecosystems. As part of the United Nations Sustainable Development Goals, specifically SDG 13 Climate Action and SDG 15 Life on Land, the rehabilitation project includes the addition of 8,196 endemic plants, restoration of two wetlands, and creation of temporary marshes at the bridge entrances. Innovative measures, such as paths for reptiles and the installation of photo traps, have also been implemented.

Illustration

Website

- https://www.ysskoprusuveotoyolu.com.tr/

Social Media

- https://tr.linkedin.com/company/ica-yatirim-ve-isletme-as
- https://www.instagram.com/ysskoprusuveotoyolu/
- https://youtu.be/Kbf9K-g6aME?si=GYlBSADFETbU9myA

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 in 2020 and ongoing – recently renewed for 2024 grass cutting season.

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 the 15th of 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.

Illustrations

Websites

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

Celtic Roads Group (CRG) Dundalk Western Bypass PPP Scheme / ITIA

Project title

Pollinator-friendly Population Management Initiative

Project's aim

Promote biodiversity and conservation efforts.

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'. This collaboration will promote the conservation works ongoing to help the native Irish Bee species.

Project timeline

Commenced 2022 and ongoing – recently renewed for 2024.

Project description

CRG and our Operator on the M1 have facilitated an Access Agreement whereby, Louth Beekeepers, a local beekeeping organisation use an area of Project Lands on the M1 at Junction 16 as an Apiary – housing a queen mating site. This actively supplies club members with pure Apis Mellifrea bees - an important native Irish honey bee. This species is severely threatened due to hybridisation with imported non-native sub-species as well as the potential detrimental effects of diseases that may be imported with non-native bees.

Illustrations

Website

- https://www.louthbeekeeping.com

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 t C02 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

Q4-2022

Project description

All 569no. tunnel luminaires (400W/150W) in the Limerick Tunnel were replaced by Broll tunnel luminaires in 2022.

Illustrations

Autostrada Wielkopolska S.A. & Autostrada Wielkopolska II S.A. / PAK

Project title

Maintain your concentration while driving. Take breaks during a long trip

Project's aim

Every tenth accident on the Polish motorways is caused by the driver getting tired or falling asleep. What can be done to make our trip on a highway safe? We should make stops while traveling, listen to our body and plan our breaks. As part of the "Good Coffee for a Good Trip" campaign, drivers were invited to take an efficient break during which will be able to have a free coffee at Rest and Service Areas.

Benefits of the project

The campaign includes educational activities familiarizing drivers with the need of taking a rest during longer trips. The motorway is one of the safest roads to travel. It has no grade level intersections, no pedestrian crossings; drivers in Poland have two or three lanes to drive on, the fencing along the road prevents the intrusion of animals that could cause a collision. However, it happens that a straight-line, collision-free, long drive makes drivers weary. If you drive on the motorway for hours without any breaks, often tired and in a hurry, you increase the danger of falling asleep at the wheel, which is very dangerous. That's why it's a good idea to take breaks on a long trip.
Drivers traveling on the concession section of the A2 motorway were given coupons at one of the toll plazas entitling them to get a free coffee at Rest and Service Areas. This was a part of a campaign held by Autostrada Wielkopolska and the Żabka Group to promote safe driving and maintaining concentration while driving.

Project timeline

September 2023

Project description

Driving on the motorway requires not only additional skills but also the highest degree of concentration from the driver. Higher speeds, the number of kilometers traveled and the dynamics of driving require the driver's full strength and constant focus. When driver feels tired, should immediately pull over to the nearest Service Area and rest for a while. This is the only way to safely continue the trip. As part of a joint action with the Żabka Group, Autostrada Wielkopolska invited drivers to take a break and enjoy a good cup of coffee.
The statistics are ruthless: according to the Polish Police data, out of 362 accidents that happened on Polish motorways in 2022, more than 40 were caused by drivers getting tired or falling asleep behind the wheel. This means that every tenth accident, on the average, could have been avoided had the driver taken care of taking a rest. Fatigue or falling asleep is, in addition to failure to adjust the speed to driving conditions and incorrect lane changing, one of the most common causes of accidents on motorways and expressways in Poland.

Experts advise stopping to rest every 2 hours or sooner whenever you feel tired. It just takes some exercise or a brief walk in the rest area to help you stay alert and swiftly react to any events that may happen during your trip.

Keep in mind that it is a mistake to consider refueling time a break in the journey. In fact, we don't rest while refueling. Once we pull over to the gas station, after refueling, let's drive away from the gas pump, park the car and take even a 5-minute break, walk around the car, do some squats or bends, drink some water and only then resume driving. The project included education articles and campaign and invitations to a free cup of coffee at Rest and Service Areas.

Illustrations

Websites

- www.autostrada-a2.pl/en/news/maintain-your-concentration-while-driving-take-breaks-during-a-long-trip/
- https://kursjazdynaautostradzie.pl/blog/dlaczego-trzeba-robic-przerwy-w-podrozy

Social Media

- https://www.facebook.com/photo.php?fbid=626448706178100&set=pb.100064389291234.-2207520000&type=3
- https://www.facebook.com/photo.php?fbid=693443146145322&set=pb.100064389291234.-2207520000&type=3
- https://www.facebook.com/photo.php?fbid=703648321791471&set=pb.100064389291234.-2207520000&type=3

Autostrada Wielkopolska S.A. (AWSA) & Autostrada Wielkopolska II S.A. (AWSA II) / PAK

Project title

Neighbors. The Environment Matters

Project's aim

Humans have a huge impact on the environment. We transform natural ecosystems and adapt them to our ever-growing needs. It was our intention, in the conversation inaugurating the environmental podcasts, to ponder, together with the invited experts, what can be done to reconcile the needs of humans with those of our wildlife neighbors. We look at the issue of responsible neighborhoods from three points of view: a responsible investor, a biologist, and the founder of a wildlife rescue foundation. We also have an opportunity to communicate what we are actually doing in this area as the motorway manager, as such efforts are not always visible from the outside.

Benefits of the project

The campaign includes educational activities familiarizing recipients with the profiles of interesting animals living in the vicinity of the concession section of the A2 Motorway, information on environmental monitoring performed in the Świecko – Konin section and the company's cooperation in this regard with scientists, ecologists and nature lovers.
Many of the pro-environmental solutions that have been applied in the concession section of the A2 Motorway are the result of current regulations or contractual obligations. However, we have done much more than the required minimum in this regard. This is exactly because of our sense of responsibility to the environment. The motorway, which is, after all, more than a road strip, runs through natural wildlife habitats. Therefore, our role is to create such an infrastructure and such an environment that animals will quickly learn to read well, adapting to the changes and learning to use the new bridges built for them. As shown by the results of the ongoing monitoring, we have successfully achieved this goal. The aim of the project is not only addressing the environment that we operate in but also communicate what the motorway management is actually doing to care about the environment and protect it, as such efforts are not always visible from the outside.

Project timeline

July-September 2023

Project description

The size of the project Autostrada WielkopolskaII: A2 section ŚWIECKO – Nowy Tomyśl (106 km) and capital expenditures make it one of the largest road infrastructure-related environmental project in Europe. The construction of that vital section of the motorway has been deemed exemplary not only in Poland but also abroad. In the opinion of the major lender to the motorway to Świecko project, i.e. the European Investment Bank, the site has been built in a commendable way, in line with the most demanding environmental standards. Approximately 25% of the construction cost has been allocated for environmental protection in the section of Autostrada Wielkopolska II from Świecko to Nowy Tomyśl, including, without limitation:

- 37 big and medium game bridges,
- 111 culverts for small animals and amphibians,
- 53 thousand m2 of noise barriers,
- bat protecting gantries,
- 232 kilometers of fencing.

One animal bridge in the section Świecko – Nowy Tomyśl cost about PLN 20 million, which is tantamount to an annual budget of a medium-sized community in Poland.
80 % of the Autostrada Wielkopolska motorway stretch from Nowy Tomyśl to the German border runs through forest land, including the Natura 2000 protected areas.
The project reveals various aspects of the relationship between humans and natural environment.

Illustrations

Website

- https://www.autostrada-a2.pl/ochrona-srodowiska

Social Media

- https://www.facebook.com/photo.php?fbid=671987061624264&set=pb.100064389291234.-2207520000&type=3
- https://www.facebook.com/photo.php?fbid=666990465457257&set=pb.100064389291234.-2207520000&type=3
- https://www.facebook.com/photo.php?fbid=690160229806947&set=pb.100064389291234.-2207520000&type=3
- https://www.facebook.com/photo.php?fbid=692205019602468&set=pb.100064389291234.-2207520000&type=3
- https://www.facebook.com/photo.php?fbid=646346004188370&set=pb.100064389291234.-2207520000&type=3
- https://www.youtube.com/playlist?list=PLheWZ__d67dWTbsSATYVGqgeVJZQYAIT7

Autostrada Wielkopolska S.A. (AWSA) & Autostrada Wielkopolska II S.A. (AWSA II) / PAK

Project title

Tire pressure and ecology

Project's aim

The main goal is to promote eco-driving and improve the safety of motorway users. This campaign has been oriented towards drivers traveling on the concession section of the A2 motorway, Poland.

Benefits of the project

Although it is rarely mentioned, tire pressure has quite a significant impact on the quality of the trip. As a general rule tire pressure should be checked on average once a month and always before a long trip. It is not only a matter of safety and comfort, but also of vehicle operating costs and ecology. The main benefit of the project is raising awareness of the drivers on safe and ecological driving. The intention is to make drivers aware of this dependence, hence the campaign, during which mobile tire experts are available to drivers traveling on the concession section of the A2 at two of the Service Areas. They check, free of charge, and adjust tire pressure of vehicles, if necessary. Drivers are also able to get some advice from tire experts.

Project timeline

Holyday season 2023.

Project description

Although it is rarely mentioned, tire pressure has quite a significant impact on the quality of the trip. As a general rule tire pressure should be checked on average once a month and always before a long trip. It is not only a matter of safety and comfort, but also of vehicle operating costs and ecology.

Maintaining optimal tire pressure means more economical, and therefore more eco-friendly driving. Driving is smoother and fuel consumption is optimized. There is also less wear and tear on tires, chassis components and even the vehicle's electronics. Overall, this translates into a reduction in CO2 emissions and raw material consumption, as well as a reduction in the carbon and water footprints – associated with the production of wearables.

Inadequate tire pressure impairs the vehicle's handling characteristics. Checking the tire pressure level, which you can do on your own at a gas station at a Service Area or with your own pressure gauge, allows you to control this parameter and easily correct it to the level recommended by the vehicle manufacturer. Taking care of proper tire pressure is important, because it has a real impact on both driving safety and the environment. What is important, checking the pressure level should also include the spare wheels – they won't be fully functional if they are not properly inflated.

The project covered meetings and discussions with drivers, the providing of a mobile vulcanization service and an online media education campaign.

Illustration

Websites

- https://www.autostrada-a2.pl/en/news/tire-pressure-and-ecology-a-new-campaign-by-autostrada-wielkopolska/
- https://kursjazdynaautostradzie.pl/blog/odpowiednie-cisnienie-w-oponach-twojego-samochodu-jest-waznie-jsze-niz-myslisz

Social Media

- https://www.facebook.com/photo.php?fbid=697317645757872&set=pb.100064389291234.-2207520000&type=3
- https://www.facebook.com/photo.php?fbid=256566043372463&set=pb.100070572082027.-2207520000&type=3

Sacyr / SEOPAN

Project title

Sacyr IOHNIC

Project's aim

Improve lighting in road tunnels and ensure the safety and comfort of road users.

Benefits of the project

Maximum savings in electricity consumption and 100% uniformity of light.

Project timeline

2021- present

Project description

This project presents an innovative tunnel lighting system based on LED technologies that has its field of application on the user and tends to respond not only to environmental issues, but also has a positive effect on citizens, ensuring their safety and improving their quality of life.

The implementation of this pioneering solution has great advantages for the user in terms of safety and comfort. Thus, the system facilitates the adaptation to the pupil dilation rhythm, eliminates the flickering effect inside and allows to increase the light intensity.

Illustration

Website

- https://www.sacyr.com/en/-/proyecto-sacyr-iohnic/proyecto-innovacion

Social Media

- https://www.youtube.com/watch?v=4YFdS5Ty3Lo

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

Project title

Renewable Energy

Project description

On the A1 Milan-Naples motorway south of Rome, at the Valmontone junction, one of the world's first photovoltaic systems mounted on motorway sound-absorbing barriers is nearing completion, in a configuration that optimises acoustic performance with renewable energy production.
The energy generated by the new plant will be able to meet the needs of the Valmontone toll station thanks to the production of about 80MWh per year, equal to the corresponding consumption of more than 20 households, and a CO2 reduction of about 600 tonnes over the plant's lifetime.
The project involves the installation of 2,500m of barriers in the north direction and 1,500m in the south direction, covering more than 20,000m² of surface area and 432 140Wp monocrystalline silicon photovoltaic modules, divided into 72 strings, for the production of renewable energy. The components of the photovoltaic plant are integrated on sound-absorbing barriers that run for approximately 300m, specially designed for the purpose, at a height of between 3.0m and 9.5m above the roadway level. This configuration allows the maximum degree of irradiation, with a 33° inclination with southern exposure, while maintaining a maximum level of safety for users.
From an acoustic point of view, the plan is part of the broader programme to renovate the sound-absorbing barriers in ASPI's network. The aim is to extend this experiment also to other sections of the motorway network.
The plant was built by Autostrade per l'Italia in collaboration with Elgea, a Group company engaged in the development of innovative technological solutions for the production of energy from renewable sources, with the possibility of operating in Europe's largest "open-air" laboratory, i.e., the 3,000 km of the motorway network under concession, with a view to moving towards increasingly sustainable mobility and contributing significantly to the Group's Net Zero objective.
The project is part of the Mercury - Smart Sustainable Mobility programme, which constitutes the unified and coordinated hub for technological innovation, in order to:
- ensure safer infrastructure;
- take a leading role in the sustainable mobility revolution;
- actively contribute to national decarbonisation targets and innovation in mobility systems.

The Programme, which involves the Group's various subsidiaries, contains projects aimed at the production of electricity from renewable sources and the distribution of energy through electric charging stations and alternatives to fossil fuels.

Autostrada del Brennero S.p.A. / AISCAT

Project title

A22, the choice of green hydrogen doubles: 8 new plants on the way

Project description

In 2023, Autostrada del Brennero was awarded the maximum contribution out of 4 NRRP tenders for the construction of as many hydrogen distribution centres. The 4 projects are ready but this is not the end of the story: the centres are part of a broader strategy designed by the company since 2014, when it inaugurated the first green hydrogen distribution and production plant in Bolzano. The long-term goal is to achieve nine plants.

Through the electrolysis process of perhaps the most important molecule on our planet, H_2O, it is possible to produce hydrogen which, stored in high-pressure cylinders, can power cars and trucks. The first plant in Italy for the production and distribution of green hydrogen opened its doors in Bolzano in 2014, the result of a collaboration between the Institute for Technological Innovations in Bolzano and Autostrada del Brennero, which started research in the field back in 2006.
Autostrada del Brennero has foresightedly grasped the potential of hydrogen, which can make use of shorter charging times and significantly smaller batteries than electric. This is particularly important for the entire road haulage sector. In fact, in a little less than ten years, the Bolzano plant has powered dozens of buses and cars, delivering 176,146 kilogrammes (December 2023) of hydrogen, enough to travel 3.5 million kilometres while emitting only harmless clouds of water vapour into the air, thus saving the atmosphere 2,290 tonnes of CO_2.
Building on its experience in this field, Autostrada del Brennero has launched a plan that will lead to the construction in the medium to long term of a further 8 green hydrogen production and/or distribution plants, one every 50 kilometres or so. The first decisive building blocks have already been placed: Autostrada del Brennero participated in and won 4 calls for tenders for the construction, with NRRP funds, of 4 new green hydrogen distribution plants, obtaining a contribution of EUR 15 million out of a total expenditure of EUR 64 (for the Verona Nord plant, the company also obtained a further contribution of EUR 1.35 million, funds that the project was awarded on the European Life programme). The sites, to be built by 2026, will be located in Sadobre, at the Paganella East and West service areas and the CSA of Verona North. To date, the Company has drawn up the final design of the four sites and is in the process of obtaining the necessary administrative authorisations for their construction.

Illustrations

Autostrada Brescia Verona Vicenza Padova - A4 Holding Group / AISCAT

Project title

Reducing CO_2 emissions in the context of the European Union's Net Zero 2050 targets

Project description

Autostrada Brescia Verona Vicenza Padova has launched several projects and initiatives to support the ecological transition of the transport sector, in line with the European objectives of zero greenhouse gas emissions by 2050. The company is strongly committed to reducing CO2 emissions, adopting innovative solutions in both alternative fuels and energy efficiency. One of the main projects concerns the adoption of new infrastructure for electric mobility and the use of alternative fuels along the A4 Brescia-Padova motorway section. In parallel, a strong impetus was given to the development of charging stations for electric vehicles. Among the most important initiatives is the agreement with Fastned to build the first fast-charging station in Italy, initially equipped with eight charging points, extendable to sixteen, capable of providing up to 400 kW of power. These infrastructures allow vehicles to travel up to 400 km with just 15 minutes of charging, thus helping to accelerate the shift towards electric mobility. In a broader perspective, the Group has also developed an action plan aimed at reducing Scope 1 and 2 emissions by 80% by 2024, with reference to 2019 levels. In pursuit of this ambitious objective, the company has been utilising electricity from 100% renewable sources since 2021 and has transitioned some heating systems to heat pumps, significantly cutting down on diesel consumption. The company completed its fleet renewal in 2023, incorporating hybrid vehicles engineered to optimise energy efficiency. In this regard, training campaigns have been initiated for employees on the optimal use of cars, which can be used in hybrid, fully electric or energy-saving modes depending on travel needs. The reduction of CO2 emissions extends beyond the company's direct activities, also embracing the transport sector through initiatives to improve mobility along motorways. The installation of charging stations for electric vehicles and the introduction of electronic toll collection systems have helped to reduce Scope 3 emissions, those not directly controlled by the company.

Illustration

Auto-Estradas do Douro Litoral (AEDL) / APCAP

Project title

Energizing the Future

Project's aim

The installation of the EV chargers promotes the use of electric vehicles both within the Concessionaire and Operator fleets.
The utilization of renewable energy will also allow for the reduction of the carbon footprint and reliance on fossil fuels.

Benefits of the project

The EV chargers will promote the use of electric vehicles, contributing to the electric mobility and undergoing energy transition.
The PV plants will allow to reduce consumption by 11% (in Medas CO and both A41 and A43 tunnels) and prevent the emission of 17 tons of CO2 per year, the equivalent to planting 43 trees.

Project timeline

Concluded in July 2024.

Project description

AEDL has installed 2 Electric Vehicle (EV) chargers in its Operations Center in Medas. The total capacity is 22 kW in AC mode for each charger.
AEDL has also installed 5 Photovoltaic (PV) plants, one in its Operations Center and four near the motorway tunnels with an expected total installed capacity of 86.8 kWp.

Illustrations





Website

- https://www.aedl-ae.com/sustentabilidade

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 car fleet. To meet future growth in demand, 100% of service areas on the toll motorway network are equipped with charging points. This represents more than 3,100 charge points, 83% of which deliver more than 150 kW.

Illustration

State of deployment (end of June 2023)

Website

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

Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

Project title

Lifecycle GHG determination tool

Project's aim

The GHG determination tool can help with monitoring, decision-making as well as optimizing the sustainability over all phases of a civil engineering building's life cycle.

Benefits of the project

With this tool, decisive decisions can now be made at an early planning stage based on facts. The life cycle cost calculation linked in the tool helps to weigh up the requirements of climate protection and economic efficiency.

Project timeline

The tool was developed within the research project DECARBONISATION FIRST from 2021 to 2023. To continue working on a mandatory GHG calculation in selected areas of civil engineering, so that the consideration of climate protection is standardised and widely effective, the tool will be constantly further developed.

Project description

The research project DECARBONISATION FIRST pursued the idea that future decision-making for construction measures in civil engineering should be based on a much stronger weighting of the costs resulting from the carbon footprint and at the same time increase acceptance of the associated primary costs. There is currently no generally applicable tool for the industry to calculate the associated environmental impact costs.
To this end, a database with CO2 equivalents ("cradle to grave") representative for Austria was initially created for the relevant building materials of 6 defined asset categories:

1. Bridges
2. Road superstructure
3. Dams
4. Retaining walls
5. Tank structures
6. Noise barriers

Website

- https://www.asfinag.net/media/gcepvj2r/hintergrundinfo_lcco2.pdf

Autobahnen- und Schnellstraßen-Finanzierungs-Aktienge-sellschaft (ASFINAG)

Project title

First fully electric truck for winter maintenance on motorways

Project's aim

The decarbonization of transport is one of the most important goals for the mobility transition. With the first electrically powered truck in the fleet, ASFINAG is proving that electromobility is also sustainable in heavy goods transport.

Benefits of the project

Decarbonization of heavy maintenance vehicles.

Project timeline

The first electric truck is currently being tested.

Project description

The electric truck is currently equipped with a body for spreading in winter. In spring, the truck can be used in a variety of ways thanks to the hook attachment. It can be used for many road maintenance tasks, including the environmentally friendly transportation of green cuttings from the freeway in containers.
The 336 kWh battery should enable a range of up to 300 kilometers. This means that use on the gritting routes - between 35 kilometers and100 kilometers - can be managed without any problems.

Illustration

Website

- https://www.asfinag.at/ueber-uns/presse/pressemeldungen/erster-e-lkw-im-einsatz/

Nea Odos S.A. / HELLASTRON

Project title

The First and Largest Hybrid Electric Car Charging Station in Greece

Project's aim

To fulfil the energy demands of electric charging solely through renewable sources, whilst actively engaging in research to pioneer energy storage solutions.

Benefits of the project

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

Project timeline

2022

Project description

The creation of the first and largest hybrid electric car charging station in Greece was completed from Nea Odos in the Malakasa (Sirios) M.S.S. With the installation of photovoltaic panels on the canopies of the parking lots, the production of "green" energy and the charging of electric cars are combined. This ground-breaking move upgraded the Sirios, as the self-contained dual-use structure provides protection for parked vehicles while generating clean, renewable energy from the sun.

The project futures:
- Construction of canopies for the car parks
- Placement of photovoltaic panels on them, with a total power of about 500kWp
- 4 chargers of 120kW each
- Hybrid inverters. The electricity generated by the photovoltaics will be directed to the charger whenever a car is being charged. Any surplus energy, not utilised for vehicle charging, will be harnessed directly to meet the energy requirements of the building

Illustration

Website

- https://www.neaodos.gr/wp-content/uploads/2024/01/Nea_Odos_2023_ENG_web.pdf

NEA ODOS & KENTRIKI ODOS / HELLASTRON

Project title

Replacement of PATHE open air NaHP lighting luminaires with LED based on new phototechnical studies according to EN 13201

Project's aim

- Increase highway safety by achieving better lighting levels.
- Decrease power consumption.
- Decrease CO2 emissions.

Benefits of the project

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

Project timeline

2022-2023

Project description

Replacement of PATHE open air NaHP lighting luminaires with LED based on new phototechnical studies according to EN 13201.

Moreas S.A. / HELLASTRON

Project title

Filellinon Tunnel LED Lighting upgrade

Project's aim

50% reduction in the electrical energy used for lighting.

Benefits of the project

- Operating cost reduction.
- Carbon footprint reduction.

Project timeline

2022: Study preparation, Call for tender, Materials procurement.
2023: Project commissioning.

Project description

The Filellinon Tunnel is located in Peloponnese, Greece, on the Korinthos -Tripoli Road Section and is a two way 2-lane split tunnel. The total tunnel length (both directions) is 1.488 meters.
The aim of the project was to upgrade the tunnel lighting system from High Intensity Discharge to LED luminaires. It involved the replacement of 382 High Intensity Discharge luminaires with 311 LED ones, with adaptive lighting capability in accordance with the provisions of the EN CR 14380 Technical Report.
The design targeted a 50% reduction in the tunnel's electrical energy consumption for lighting, with the possibility of further savings through the implementation of adaptive lighting technology.
The project was commissioned in May 2023 and the targeted energy savings were realised.

Illustrations

Moreas S.A. / HELLASTRON

Project title

Spathovouni Toll Station LED Lighting upgrade

Project's aim

60% reduction in the electrical energy used for lighting.

Benefits of the project

- Operating cost reduction.
- Carbon footprint reduction.

Project timeline

2021: Call for tender, Materials procurement.
2022: Project commissioning.

Project description

Spathovouni Toll Station is located in Peloponnese, Greece, on the Korinthos -Tripoli Road Section.
The aim of the project was to upgrade the Toll Station lighting systems, in both the approach/departure zones and the Toll Plaza, from Sodium low pressure to LED luminaires.
It involved the replacement of 40 open road luminaires in the Toll Station approach and departure zones, as well as the replacement of 8 pylons along with their 40 luminaires in total, with LED ones.
The design targeted a 60% reduction in the Toll Station's electrical energy consumption for lighting, with the possibility of further savings through the implementation of adaptive lighting technology.
The project was commissioned in 2022 and the targeted energy savings were realised.

Illustration

Moreas S.A. / HELLASTRON

Project title

Sterna-Artemisio road section lighting upgrade

Project's aim

60% reduction in the electrical energy used for lighting.

Benefits of the project

- Operating cost reduction.
- Carbon footprint reduction.

Project timeline

2022: Call for tender, Materials procurement.
2023: Project commissioning.

Project description

Sterna – Artemisio is an approximately 13 km road section, part of MOREAS Motorway, and is located in Peloponnese, Greece.
The project aimed in upgrading the open road Motorway lighting system to LED technology. It involved the replacement of 370 Sodium low pressure vapor lamps and the corresponding control systems with LED ones, equipped with adaptive lighting capability depending on the Motorway's traffic.
The design targeted a 60% reduction in the Section's electrical energy consumption, with the possibility of further savings through the implementation of adaptive lighting technology.
The project was commissioned in 2023 and the targeted energy savings were realised.

Illustrations

Olympia Odos Operation S.A. / HELLASTRON

Project title

Fleet modernization and electrification

Project's aim

The aim is to reduce CO2 emissions up to 10%.

Benefits of the project

Optimization of Fuel Consumption and Vehicles Maintenance.

Project timeline

2023-2028

Project description

The technology and cost of electric vehicles and electric batteries (i.e. range and charging speed) and charger technology respectively have not progressed rapidly in recent years and have not provided the necessary impetus, particularly to expand the use of these in the professional sectors.
The needs of the highway operation/maintenance industry (i.e. daily continuous patrols, long-distance maintenance/repairs, escorting snow plows, etc.):

- require the continuous and 24-hour movement of vehicles,
- driving a particularly high number of kilometers on a daily basis (e.g. 250 km per shift, up to 750 km per day), as well as
- equipping them with electronic equipment (e.g. light arrow, beacons, electronic signs, etc.), which also consumes energy and further reduces the vehicle's range

a fact that to this day, with the currently available technology, makes it difficult to fully utilize electric vehicles in this sector.
At the same time, the cost of large electric vehicles (Vans and Vannettes) is still very high! (indicatively, a classic electric van, such as the Ford Transit, costs around 70k in Greece today).
In this context, the Operator continues with the pilot use of small vans:

- 2 fully electric vans in the Maintenance Department, since 2021 and
- 8 new fully electric vehicles in the Toll Department, since 2023, investing in electric and hybrid cars for staff and constantly monitoring developments in the field of electric vehicles in order to further expand their use in the future

Illustrations

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

Project title

Reducing The Carbon Footprint On The Way To Fit 55

Project's aim

The aim of this project is to reduce greenhouse gas emissions by reducing the electrical energy used in Yavuz Sultan Selim Bridge and Northern Marmara Highway operation at its source. In line with its purpose and scope, the project consists of 3 main actions:

- Highway Lighting Timer Optimization
- OHT Lighting Optimization
- Garipçe Additional Service Buildings Lighting LED Conversion.

Benefits of the project

The LED conversion, which was carried out in line with the United Nations Sustainable Development Goals Climate Action, amounted to 7 million 198 thousand kWh per year at the bridge and highway, 1 million 499 thousand kWh per year at 6 highway facilities and 45 Thousand 802 kWh per year at the operation campus.
The 8 million 744 thousand kWh/year savings achieved through the LED conversion of luminaires corresponds to the annual electricity need of 892 households. With the savings achieved, 1,819 tCO2 of annual carbon emissions were prevented. This figure was calculated to be equivalent to the annual carbon emitted by 82,304 trees. In addition, 8,248 luminaires and lighting equipment were recycled, contributing to the circular economy.

Project timeline

Time clock shifting application in highway service facilities, toll booths and transformer boxes was completed between 01.06.2022 and 02.06.2022.
Optimization project implementation for lighting in highway service facilities was completed between 17.05.2022 and 01.06.2022.
Garipçe additional service buildings LED transformation application was completed between 01.06.2022 and 09.08.2022.

Project description

This project is designed to achieve the SDG13 Climate Action-related goals, which is one of the sustainable development goals set by the organization. In line with this purpose, the first target set in the roadmap is to minimize the emissions arising from its operation and to reduce its carbon footprint.
We believe that every business and institution have a lot of work to transform our world into a livable environment with a sustainability approach. In this regard, we seek the answer to the following question ourselves: How can we, as highway operators, make our operation sustainable and carbon-neutral? In this project, were taken to create a sustainable environment by reducing energy at its source, by considering the lighting on the highways, since electricity is our starting point, which is our most energy-consuming source.

Illustrations

Website

- https://www.ysskoprusuveotoyolu.com.tr/

Social Media

- https://tr.linkedin.com/company/ica-yatirim-ve-isletme-as
- https://www.instagram.com/ysskoprusuveotoyolu/
- https://youtu.be/Kbf9K-g6aME?si=GYlBSADFETbU9myA

All Toll Roads Ireland, Irish Government initiative / ITIA

Project title

Low Emission Vehicle Toll Incentive (LEVTI)

Project's aim

The Scheme was funded through Department of Transport (DoT) under the Carbon Reduction Programme, where the Programme's objective is to reduce transport emissions and build a climate resilient low carbon transport sector by 2050 and the introduction of LEVTI scheme was to further support this objective. Low emissions vehicle owners registered with a Tag paid a reduced tolling fee of up to 75% on Irish toll roads.

Benefits of the project

Reduced CO^2 emissions and cost savings to road users.

Project timeline

July 2018 – Dec 2023. The scheme has now concluded.

Project description

The Low Emission Vehicle Toll Incentive (LEVTI) scheme was introduced in 2018 and operated until December 31st, 2023, with an objective to provide Government funding to reduce toll costs for registered Low Emission Vehicles (LEVs). The scheme commenced on the 1st of July 2018 and concluded on the 31st December 2023.

The scheme refunds are capped at €500 per calendar year for private vehicles and €1,000 per calendar year for goods vehicles.

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

Websites

- https://www.directroute.ie/EVTI.aspx
- FAQs | eToll.ie

Celtic Roads Group (CRG) Dundalk Western Bypass PPP Scheme / ITIA

Project title

M1 Dundalk Western Bypass Motorway & M7/M8 Motorway & N25 Wateford Dual Carriageway – Multi-Annual Pavement Preservation Treatment Project

Project's aim

To use an innovative pavement preservation product to extend the service life of existing project pavement in order to reduce emissions and carbon footprint versus traditional resurfacing lifecycle interventions.

Benefits of the project

Application of this product mitigates the need for milling out and constructing an inlay course with virgin materials ie reduced emissions and carbon footprint. The proccess also considerably reduces the amount of disruption on the network and improves worker safety through reducing time required working in live carriageways.
Analysis of a comparision between conventional milling and replacing of a standard surface course layer and the Pentack system concludes that the Pentack treatment reduces greenhouse gas emissions by almost 90%.

Project timeline

M1 Dundalk Western Bypass Motorway:
A multi-annual lifecycle renewal scheme has resulted in Pentack product being applied across the majority of Lane 2 of this 53km motorway with an AADT of 43,600. This amounts to 471,000m2 of area treated over a five-year programme (2019-2023). The M1 was the first motorway in Ireland on which this innovative material was used, mitigating the need for the traditional mill and replace approach to pavement renewals.
M7/M8 Motorway:
A trial area of 1km was completed in August 2021. Following a review of the trial performance, a 31km section of Lane 2 (110,000m2) was treated in 2023.
A 32km section of Lane 2, including depot, service roads and junctions (150,000m2) is being treated in 2024 as part of a multi-annual approach to preserving the existing pavement and mitigating the need to carry out in-lay resurfacing lifecycle interventions.
N25 Wateford Dual Carriageway:
Due to relatively low AADT (12,000 vehicles per day) the product was deemed suitable to apply across all lanes. The full project road section of Lane 1 and Lane 2 were treated in 2023 – totalling c72km of lanes (228,000m2). In 2024, a follow-on contract to apply the product to 38km of hard shoulder and widened median areas (140,000m2) is underway.

Project description

PenTack is a cold applied bitumen, using active eco-friendly emulsions, based system. It consists of a regenerating emulsion and a modified bitumen emulsion mixed with water to control the viscosity. The product has been proven to extend the service life of existing pavements by 6 years or more.

Illustrations



Directroute (Limerick) Ltd. / ITIA

Project title

Solar Panel installation in 4no. locations on the Limerick Tunnel Scheme

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 per year, resulting in a reduction of emissions by 45.8 $tC0^2$ per year.

Project timeline

2023/2024

Project description

Installation of Solar PV Systems on 2no. Toll Plaza buildings and both entrances/exits from the Limerick Tunnel.

Illustrations

PE « Roads of Serbia »

Project title

Green Stations

Project's aim

- Turning awareness towards ecological vehicles, which would significantly reduce the emission of harmful gases and contribute to the preservation of the environment.

- Use of renewable energy sources.

- Increasing safety on state roads of order IA by providing better conditions for rest and relaxation for road users.

- Increasing the number and availability of chargers for electric vehicles, which will give the Republic of Serbia the most modern network of electric chargers along the main road routes.

- Modernization of road infrastructure.

- Noise reductions.

Benefits of the project

More transit electric vehicles that will pass through Serbia.

Project description

PE "Roads of Serbia" will install a larger number of electric chargers for charging electric cars at rest areas and parking lots on state roads. Rest areas will also be adequately arranged in terms of travel conditions for going to the toilet, refreshments... Considering the charging cycle of electric cars, we believe that the construction of accompanying facilities, restaurants, shops, and other facilities for providing services would significantly complement the charging time.

Illustrations



ROADIS Infrastructure Holding / SEOPAN

Project title

Towards Energy Efficiency - replacement lighting fixtures with LEDs

Project's aim

The project applies the strategy of replacing lighting fixtures with LEDs in accordance with the ROADIS Decarbonization Plan, which was developed in 2021.It is anticipated to lessen ROADIS's carbon footprint and have a beneficial effect on the environment.

Benefits of the project

In 2023, the lighting system was installed in all assets of ROADIS.

- AEA installed LEDs in the Óbidos service area.
- COPEXA installed LEDs in the Xaltepec tunnel.
- Viabahia purchased LEDs which will be installed on highway light posts.
- NH2 installed LEDs at the toll plaza.
- NH6 already has 179 solar LEDs and there is a proposal to increase the number.
- On the NH8, LEDs were installed on the main road and service road.
- ROADIS HQ has replaced the fluorescent tube screens in the offices and meeting rooms with LED screens.
- AELO and CAMS already had full LED lighting prior to 2023.

Project timeline

Since 2022 - ongoing

Project description

ROADIS operates highways in five countries around the world. Given that electricity is produced in each country could come from burning fossil fuels (e.g., coal, oil, and natural gas). If it lowers the electricity consumed in daily operation and maintenance, it could dramatically reduce ROADIS´s carbon footprint.
This project therefore is to upgrade traditional fluorescent lighting to LEDs. It believes if the majority of ROADIS lighting system switched to LED, a significant difference in terms of carbon reduction will be made.

Illustrations

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

Project title

Underpasses for frogs and toads - A53 Bereguardo-Pavia Junction

Project description

Amphibians are a class strongly threatened by habitat loss and fragmentation, being dependent on the presence of water for reproductive activity. In contexts characterised by intensive agriculture, urbanisation and a substantial road network, the main habitat type is often anthropogenic, such as rice fields that are periodically flooded. The aim of the study, entrusted to the University of Pavia, was to verify the actual road mortality of amphibians in the Bereguardo - Pavia Junction, within the Ticino Park between the rice fields, by analysing the distribution of three target species, the dispersal routes used and the possible impact of traffic on the latter.
The study lasted two years, and field trips were carried out to identify individuals by singing (night surveys) and by sight (daytime surveys): 872 individuals were found, of which 515 green frogs (59.1%), 267 tree frogs (30.6%) and 90 emerald toads (10.3%).
For each survey, 4 environmental variables were also recorded: temperature, wind speed, cloud cover and moon phase, as well as the level of flooding of the rice paddy chambers.
The distribution models were created from the presences detected in the field, supplemented with information on the environmental types that may influence the presence/absence and mobility of the different amphibian species, obtained from satellite photos taken at different seasonal periods during the two years of monitoring. In the absence of optimal habitats, the three amphibians move around the territory looking for areas with sub-optimal characteristics, which change from time to time depending on agricultural practices (e.g., flooding of rice fields). Thus, the importance of the network of ditches and canals, which are the elements with the highest suitability that remain most stable over time, clearly emerges.
In summary, the data collected during the night-time inspections on the junction and the two adjacent state roads (Bereguardina and SP 130) showed that the traffic impact of the Pavia-Bereguardo junction on the three amphibian species is minimal compared to that estimated for the two state roads. Moreover, the 38 underpasses beneath the motorway junction, suitable for the three amphibian species, are present in significant numbers at the designated crossing risk areas. These appear to ensure adequate connectivity across both sides of the motorway. Consequently, there is no need to plan for the construction of new crossings, but rather to keep the existing ones operational and well-maintained.

Illustration

Brebemi S.p.A. / AISCAT

Project title

A Project to Regenerate and Protect Biodiversity along the Motorway

Project description

Protecting biodiversity and wild pollinators is crucial, but should not be limited to protected areas, but rather coexist with man-made infrastructure. Until recently, environmental protection operated under a strict man-nature dichotomy that created a fracture in the ecological network. Road construction is a necessary service for the community, but at the same time it embodies this problem, replacing natural landscapes with artificial terrain and inevitably increasing the fragmentation and degradation of ecosystems.

A35 Brebemi has initiated a plan to safeguard biodiversity while also addressing the problems of regeneration of unused areas. This project started with the creation of a Biodiversity Oasis at the exit of the Treviglio toll station (A35 Brebemi-Aleatica) within the area enclosed by the junction itself. The Oasis comprises, i) 50 nectar-rich trees, enough to feed a total of 75,000 pollinating insects per year, potentially absorbing 7,488 kg of carbon dioxide from the atmosphere, ii) 2 beehives, equipped with Hive-Tech, a set of biomimetic IoT sensors, powered by small solar panels installed on the roof, that record the vital parameters of the bee colony *(e.g., weight, honey production)*. This monitoring only assesses the well-being of 600,000 bees, but also indirectly assesses the quality of the surrounding environment. It also includes iii) the "Polly Houses", which can shelter around 450 solitary bees and other wild pollinators. The oasis is continuously monitored through satellite images and IoT bioacoustic sensors.

In addition, 10 of the 50 nectar-rich trees were planted by the Brebemi employee during the first planting event on the A35 Brebemi. This event took place at the beginning of November 2023 in order to involve the whole company in this initiative.

The Brebemi Oasis, which ranges from ecosystem regeneration and monitoring to community education, represents a paradigm shift towards harmonising infrastructural development with ecological conservation.

Illustration

Brisa Concessão Rodoviária (BCR) / APCAP

Project title

Brisa Nature Positive

Project's aim

The *Brisa Nature Positive 2030* project was developed with the aim of supporting the company in managing its natural capital, aligning itself with a nature positive vision and having a transformative effect on nature and the territory in which it operates. By assessing impacts and dependencies in relation to biodiversity and ecosystem services, the project establishes lines of action that prioritise the implementation of measures with a direct impact on nature.

Benefits of the project

i. Development and application of a natural capital assessment model using a Geographic Information System (GIS).
ii. Mitigating the loss of landscape connectivity and ecosystem fragmentation;
iii. Increasing and protecting biodiversity, improving habitats and reducing natural risks (such as the risk of fires) in areas of high natural value.

Project timeline

jan.23 – dec.28

Project description

The project is structured into 3 distinct phases: (i) **Phase 1** - Creating a GIS model and drawing up a strategic biodiversity management plan; (ii) **Phase 2** - Implementing pilot projects; and (iii) **Phase 3** - Validating the baseline, implementing specific measures and monitoring.
The calculation model, developed in a Geographical Information System (GIS), used indicators of biodiversity, landscape and ecosystem services to assess the natural capital of the BCR areas, considering their surrounding environment. It has made it possible to identify areas with high potential natural capital - areas of high nature value. These areas account for about 15% (605 hectares) of highway verges.
BCR highways encroaching on national areas classified as nature conservation and biodiversity total 477 hectares and include Protected Areas, Natura 2000 areas and areas classified under international commitments undertaken by the Portuguese State, Ramsar Sites and Biosphere Reserves.
A Biodiversity KPI has been defined that incorporates indicators of fauna, flora, habitats and natural risk, which allows a baseline to be established and the evolution of natural capital to be measured, resulting from the initiatives and management measures that BCR decides to implement in its areas.
The biodiversity management plan was drawn, which presents a set of management measures that will be operationally implemented in order to contribute to BCR's nature positive agenda, specifically relating to: vegetation, forest, connectivity, collision of vehicles with animals and water.
Since the defined Biodiversity KPI does not allow the effort made by BCR on the nature positive path to be annually monitored, it was necessary to develop an Action KPI, which annually reflects the progress made.
The KPI focuses on actions to support nature to avoid and reduce impacts, to restore and contribute to reversing the loss of biodiversity and the decline of ecosystems.
It is based on a biodiversity action ranking (between 0 (low) and 4 (high)) and establishes actions on biodiversity (flora and fauna), habitats (habitat restoration and the promotion of ecosystem services - e.g. carbon sequestration) and risk minimisation (occurrence of invasive species and fire danger).
KPI results depend on the execution of the actions proposed and implemented for the 2023-2028 period.
BCR has set the goal of reaching level 3 of the biodiversity action ranking in the high nature value areas of the highway verges by 2028.

Illustrations

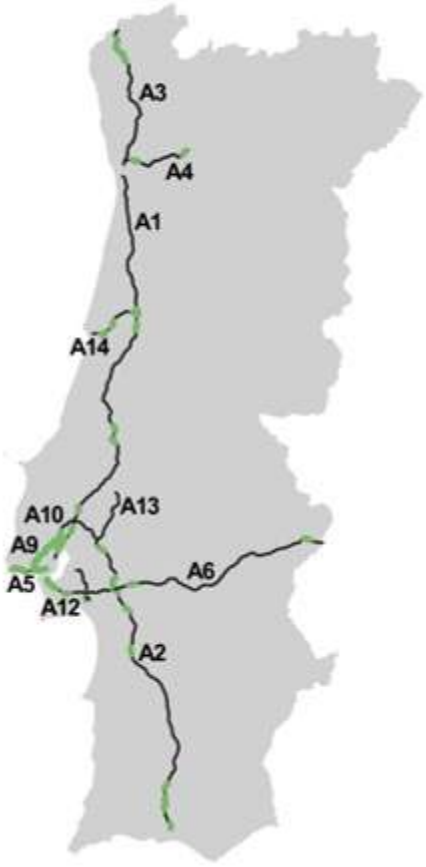


Fig.1 - Areas of high nature value

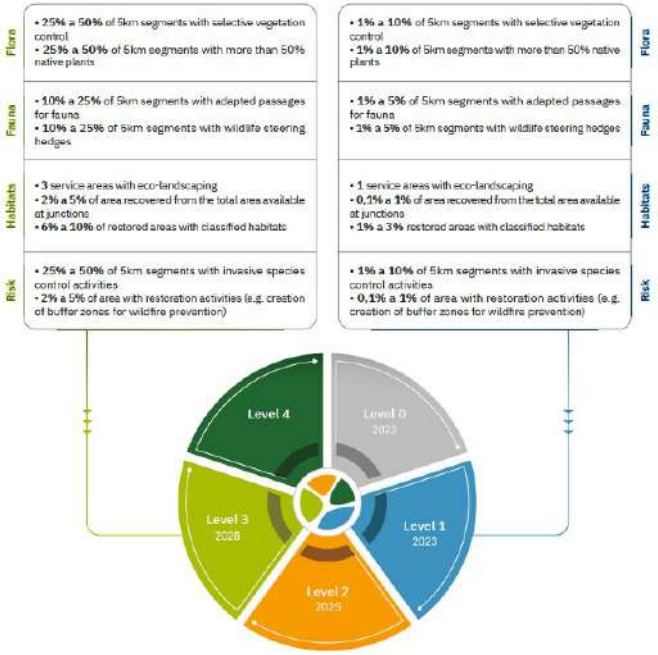


Fig.2 - Action KPI.

Website

- www.brisaconcessao.pt/en

Norscut / APCAP

Project title

Climate change risk assessment

Project's aim

- To execute a specific nature-related risks and dependencies analysis approach which is called the LEAP (for Locate, Evaluate, Assess and Prepare).
- To Identify and characterize risks and opportunities related to climate change and respective impact on A24 Concession

Benefits of the project

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

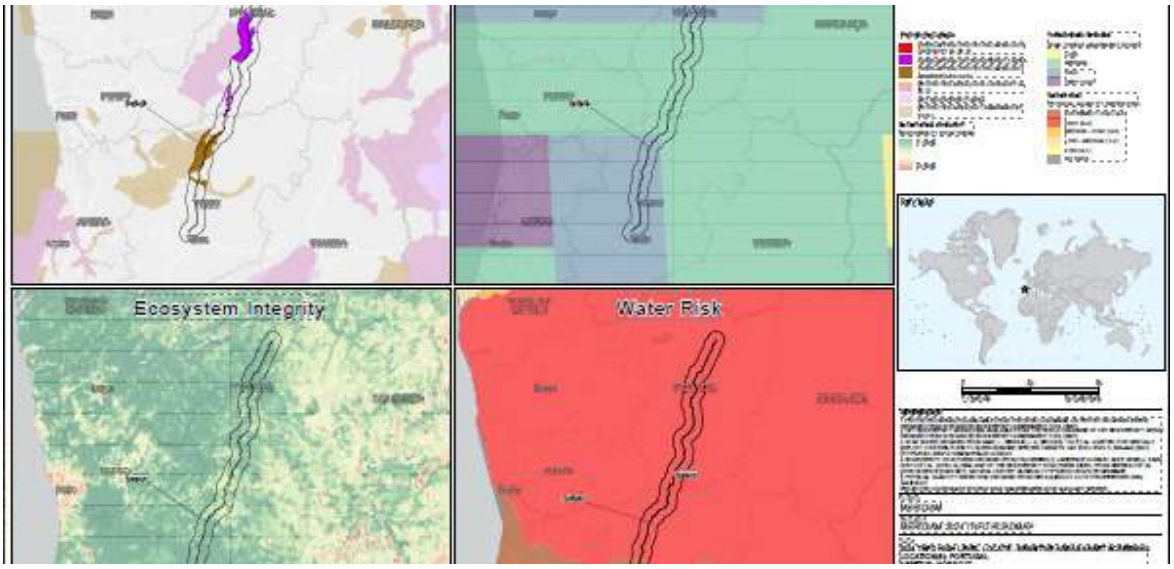
Project timeline

2024 - 2030

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 infrastructure.

Illustration



Norscut / APCAP

Project title

Fire prevention and innovative agricultural practices

Project's aim

Identifying fire resistant vegetation to apply in slopes and unoccupied interchange areas

Benefits of the project

- CO2 capture
- Slope protection against erosion
- Factor of delay of fire spreading

Project timeline

2023 - 2026

Project description

This initiative is being developed with UTAD UNIVERSITY, who has selected autoctone species to be planted, that require little maintenance and will act as fire delay agents.

Sowing was made on an area of 2.100 m2, divided in 2 slopes.

Illustrations

Norscut / APCAP

Project title

Stability analysis through satellite data

Project's aim

Slope stability analysis through satellite data

Benefits of the project

To monitor trends in slopes' evolution and identify, as early as possible, situations that can become a risk.

Project timeline

2024 - 2025

Project description

Spotlite solution uses freely available satellite images (InSAR and optical) from a period of over a year and technologies like machine learning to access structure movements and potential area of impact in the event destabilization.

Illustration

Norscut / APCAP

Project title

Vegetation Monitoring through satellite data

Project's aim

Vegetation stability analysis through satellite data

Benefits of the project

To monitor and identify vegetation near motorway's limits that can become a risk.

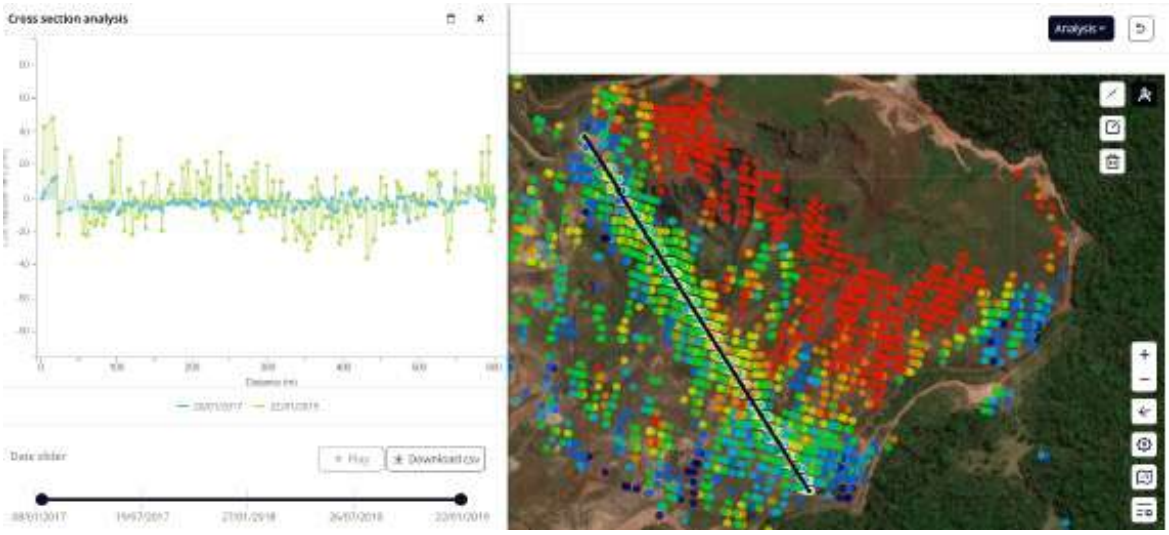
Project timeline

2024 - 2025

Project description

Spotlite solution uses freely available satellite images (InSAR and optical) from a period of over a year and technologies like machine learning (in the case of vegetation analysis) to access at ground structure movements, potential area of impact, vegetation growth and more.

Illustrations



Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft (ASFINAG)

Project title

ASFINAG Rest Areas of the Future: New e-charging services for trucks and cars

Project's aim

Construction of electric charging stations at two service stations for trucks and cars.

Benefits of the project

ASFINAG promotes sustainable mobility, in particular through the expansion of electric charging stations on its 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 opened two new service areas with electric charging stations in early 2024.

Project description

With the rest area of the future, ASFINAG moves in a new "rest era". For the first time, ASFINAG offers e-charging infrastructure at a rest area without a petrol station. The charging infrastructure comprises high-power charging facilities for cars, and fast chargers as well as overnight charging points for trucks. Also new: a camper truck stop with its own supply and disposal points for mobile homes. From an ecological point of view, the ASFINAG rest area of the future on the A 1 West Motorway near Roggendorf in Lower Austria is a lighthouse project. More than 260 PV panels on the 1,500 square meter fully green roof supply the building infrastructure with 100 percent green electricity. The building is heated and cooled using a heat pump. Specifically, this means that 75 percent of the ambient temperature and 25 percent of the electricity from the PV system are used for this purpose. The entire building infrastructure with sanitary areas, seating and the restaurant impresses with its slim design with many wooden elements.

At the truck stop ASFINAG offers truck drivers a comfortable rest area with electric charging infrastructure, cooling options and space-saving convoy parking. For the first time, there are lounge areas with facilities for washing, washing up and warming up food. A noise barrier ensures more peace and quiet from the noise of the main road. The A 8 Innkreis motorway in Upper Austria is one of the transit axes with the highest proportion of heavy traffic nationwide. That's why ASFINAG built its most modern rest area in Austria, which is reserved exclusively for heavy traffic. There are 112 new parking spaces available to truck drivers on the Linz-bound lane near the community of Weibern. So-called convoy parking means optimal utilization of the available space. Charging of electric trucks and low-noise cooling of loads is made possible and the system is supplied with green energy using, among other things, a photovoltaic system. After the extensive redesign, the former parking lot is now specifically tailored to the needs of truck drivers.

Illustrations

Website

- For further information watch the video on our website.
- Truck Stop: This is how parking works – video

Autobahnen- und Schnellstraßen-Finanzierungs-Aktienge-sellschaft (ASFINAG)

Project title

ASFINAG "Energieregion Ost"

Project's aim

Increase the proportion of renewable energy for self-sufficiency.

Benefits of the project

Increasing blackout resiliency as well as increasing the availability of the route.

Project timeline

The "Energieregion Ost" is currently being planned and is estimated to be built by 2026.

Project description

The "Energieregion Ost" is the world's first installation of a private energy transport network with renewable electricity production using photovoltaics and high-performance energy storage for an entire section of highway with its own electricity. The background and goal of the implementation is to increase the proportion of renewable energy for self-sufficiency many times over and to noticeably reduce the load on the public power grid. In addition, we increase blackout resilience and thus significantly increase the availability of the route.

The "Energy Ring" extends over a length of around 38 kilometers. It includes the A 4 eastern motorway from the Prater junction to the Schwechat junction, the S 1 from the Schwechat junction to the Vösendorf junction and the A 23 from the Vösendorf junction to the Prater junction. This energy region includes more than 28,000 meters of cables, 17,000 photovoltaic modules for 21 new PV systems and four high-performance battery storage systems with a storage capacity of more than six megawatt hours. This means solar power is available at any time of the day.

With a peak of almost 6,000 kilowatts, six tunnels along this energy region including controls and safety features, the entire route lighting, emergency call facilities, video cameras as well as all overhead facilities (toll gantries and electronic information boards) and many other electricity-powered systems are supplied with sustainable solar energy. In addition, the green electricity also flows to the national traffic management center in Vienna-Inzersdorf as well as to the motorway maintenance department there and the central ASFINAG location, at each of these locations also to power the e-charging infrastructure.

Illustration

Website

- https://www.youtube.com/watch?v=sFla8cL58vk
- https://www.ots.at/presseaussendung/OTS_20230515_OTS0045/asfinag-bilanzielle-stromautarkie-bis-2030-der-weg-in-eine-nachhaltige-zukunft-bild

Aegean Motorway S.A. / HELLASTRON

Project title

LED Project

Project's aim

To improve energy performance

Benefits of the project

Reduction of energy consumption

Project timeline

2018 - 2024

Project description

With the completion of the construction period and the delivery of the new sections to traffic in April 2017 (27.1 km, including 3 tunnels), an integrated energy management plan was implemented, to be executed in two stages:

1. Optimization/reduction of the energy loads required for all operations in order to reduce the investment cost of the planned energy transformation.

2. A financially efficient transition to the **next period of operation energy wise** - that of **Clean Energy** through Photovoltaics, Electric Vehicles, etc.

Also, during 2018 - 2023, the company took specific actions for the reduction of electricity consumption, including the following:

- In 2019, Aegean Motorway completed the replacement of NaHP luminaries with LED ones in 199.4 km of **Open Motorway**, achieving a 55% savings in the respective energy consumption levels.
- LED luminaires were installed in the **Katerini T4 Tunnel**, branch to Thessaloniki; for the Athens carriageway, installation is expected to be completed within 2024. In addition, in 2023, LED luminaires were installed in **T1, T2 and T3** tunnels, and in the two largest **underground crossings** R142 and B420 of the project, with an expected 60% energy saving.
- In 2023, LED luminaries were installed in 5 out of the total of 6 **toll station** concrete platforms, and in 13 of the 15 canopies. Completion of works is expected by the end of January 2024, with an estimated 50% savings in electricity.
- In 2023, the development and installation of the **Central Energy Management Software** was completed. The installation of the software will further improve the monitoring of the company's electricity and water consumption, thus preventing any malfunctions or system failures and contributing to additional energy savings.
- The installation of the Central Lighting Management Software was completed in 2023 along with its interconnection with traffic data. Upon completion of the design as per EN13201 and its interconnection with the traffic data, a further reduction in the energy consumption for road lighting purposes will be achieved:
  - With the implementation of adaptive lighting to 1.5cd/m2 in average, on the Motorway,
  - With the implementation of adaptive lighting to 1.0cd/m2 in average, on the Motorway

Upon completion of all the actions above, the Company will have achieved a reduction of 46% in energy consumption.

Within the framework of improving the company's energy performance, a number of projects are in progress (under design and / or implementation), such as:

- Installation of charging stations at the MSS.
- Design for the installation of photovoltaics at Nikaia I/C as well as adoption of alternatives (i.e. renewable sources)

Illustrations

Open road:

Tunnels:

Toll Stations:

Website

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

Aegean Motorway S.A. / HELLASTRON

Project title

Restoration of burnt planting

Project's aim

Planting new species based on the findings of a horticultural design.

Benefits of the project

Restoration of motorway flora.

Project timeline

Project commenced in 2023, to be completed in 2024.

Project description

Due to wildfires in adjacent areas of the motorway during the 2023 summer season, damage to motorway plants was recorded. Damage was recorded on both sides of the motorway from Ch 285 to 377, over a length of 12.5 km. Specifically, damage was recorded over a total area of 137,607 m2, within which 2,337 trees and shrubs were burnt. In order to maintain the existing plants on the motorway, Aegean Motorway commissioned in 2023 a horticultural design and subcontract the planting of new species based on its findings. The horticultural design is to be prepared taking into account three main factors:

- the aesthetic adaptation and integration of the road project into the natural environment and the topological characteristics of the area,
- the selection of non-flammable plant species, i.e. species that can provide natural fire protection,
- the choice of plant species with low irrigation needs, resistant to the conditions of the motorway (passing vehicles, air pollution).
- Completion of the fire-affected plant replacement project is expected to be completed within 2024.

Illustrations

Website

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

Aegean Motorway S.A. / HELLASTRON

Project title

Environment

Project's aim

Monitoring of Road Noise.

Benefits of the project

Protect sensitive receptors located in the vicinity of the road project & Future implementation of noise mitigation/reduction measures.

Project timeline

Every five years.

Project description

In accordance with the applicable European and Greek legislation, i.e. Directive 2002/49/EC, which was harmonized into the Greek institutional framework by means of JMD 13586/724/28.03.2006 (Government Gazette B' 384/2006) and Decision ΥΠΕΝ/ΔΝΕΠ/27136/1793/24.12.2018 (Government Gazette B' 6108/2018), which harmonized the new Directive 2015/996/EC into Greek law and required compliance with the new CNOSSOS-EU methodology, the second cycle of the preparation of strategic road traffic noise maps referred to 2017, whilst the next requirement referred to the year 2022. As the construction of the new sections was completed in the first half of 2017, Aegean Motorway was not deemed to be operating the entire new motorway in 2017 making it impossible for the noise maps to be prepared; therefore, the requirement for strategic maps referred to the year 2022.

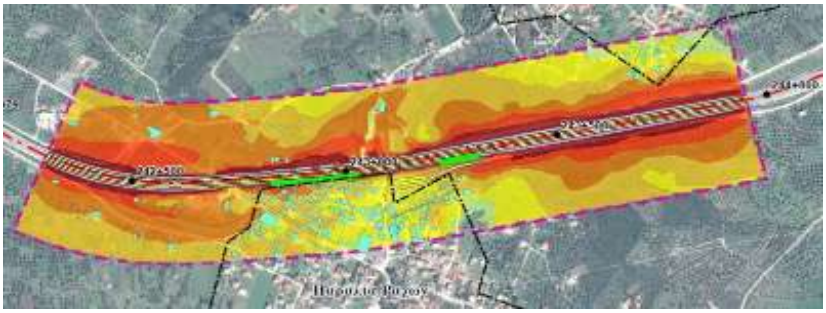
In December 2019, the "Study to assess the necessity of carrying out a strategic noise mapping of the motorway" was completed and submitted to the competent Services. After a thorough examination of the motorway sections for assessing Strategic Noise Map (SNM), the sections/ settlements for which mapping was deemed mandatory for the year 2022 were identified.

In the context of the preparation of the Strategic Noise Map (SNM) of Aegean Motorway for the year 2022 and based on the results of the 2021 Road Traffic Noise Monitoring Programme, it is concluded that the existing action plan for the implementation of sound barriers is sufficient since the implemented anti-noise barriers are effective in all locations along the motorway as proven by the noise levels recorded by the sensitive receptors that are not in excess of the thresholds.

This is also inferred from the results of the present Noise Mapping Strategy and the 2022 population noise exposure per settlement as well as for the motorway project as a whole.

The study was approved by the competent ministry by means of decision ΥΠΕΝ/ΔΚΑΠΑ/68148/1301/01-07-22 making Aegean Motorway the first motorway operator in Greece to fulfill the requirements of the 4ου round of Environmental Traffic Noise Mapping in Greece.

Illustrations



Website

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

Attiki Odos & Attikes Diadromes S.A. / HELLASTRON

Project title

Reforestation of Anthousa Park in Attica Region with the support of Attica Tollway

Project's aim

In 2023, in addition to its ongoing efforts to reduce its environmental footprint, Attica Tollway extended its reach beyond the limits of the motorway, while also contributing to the well-being of Local Communities.

Benefits of the project

This initiative was aimed at the rejuvenation of a vital green area of the Attica Region, which was burnt in 2022. The trees and bushes now gracing an area of approximately 20 acres in Anthousa Park were meticulously selected to complement the local ecosystem.

Project timeline

Initial planting was conducted by local citizens, students and educators, as part of a voluntary tree-planting initiative on the occasion of Earth Day 2023, while the rest of the planting was carried out by experienced gardeners and landscape architects, to ensure that the plants and trees planted develop properly.

Project description

Through its exclusive sponsorship and in collaboration with the Municipality of Pallini and a Non-Profit Environmental Organization, Attica Tollway successfully completed the reforestation of Anthousa Park in East Attica, which had been devastated by a fire in the summer of 2022.
The reforestation was initiated with the help of children and teachers from schools in the area on the occasion of World Earth Day 2023 (April 2023). The children planted the first trees and named them, while also taking a pledge to return to check their growth throughout the years.
In the context of this voluntary tree planting action, Attiki Odos remained faithful to the protection of the environment and adopted an area of about 20 acres in the Park of Anthousa. The project was supported and funded by Attiki Odos, from inception and preparation to the final planting, with the goal to reinstate the Park as a hospitable area of recreation for citizens of all ages.

Illustrations

Website

- www.aodos.gr/en/2023/arthro/anadasosi-sto-parko-anthousas-stin-pallini-me-ti-stirixi-tis-attikis-odou/

Social Media

- https://www.linkedin.com/posts/attiki-odos-s-a-_attikiodos-sustainability-environment-activity-7059799050597937152-SVKX?utm_source=share&utm_medium=member_desktop

Olympia Odos S.A. / HELLASTRON

Project title

Development of 17 Solar Plants to achieve Energy Self-Sufficiency

Project's aim

100% energy self-sufficiency by the end of 2025.

Benefits of the project

We are committed to deliver environmental performance and contribute to the national goal of decarbonizing mobility in Greece, by reducing apprx 5,000 tons equivalent CO2.

Project timeline

2023-2025

Project description

OLYMPIA ODOS has started the deployment of the largest highway solar energy program ever developed in Greece. In total, 17 solar plants are currently being installed on the rooftops and parking areas of the highway's maintenance centers, rooftops of toll administration buildings, toll station canopies, and on unused roadside land adjacent to the highway, in the perimeter of the concession. The solar energy program will reach an installed capacity of 9,5 MWp, equivalent to the consumption of more than approx. 1000 inhabitants[1] per year. It will reduce CO_2 emissions by more than 5.000 tons per year. *We are committed to deliver environmental performance and contribute to the national goal of decarbonizing mobility in Greece".*

Illustrations

Website

- https://www.olympiaodos.gr/en/Grafeio-Tupou/Nea/Press-Releases/Nea-megalh-perivallontikh-protovoulia-ston-autokinhtodromo-EleusinaKorinthosPatra--Purgos/

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

Project title

Sound Barrier Project From Waste Tires

Project's aim

It is aimed to contribute to the circular economy by reusing waste tires.

Benefits of the project

As a result of this project, approximately 400 tons of waste tires were recycled, saving 848 m3 of storage space, reducing noise levels by 10%, preventing the emission of 8.51 tons of carbon into the atmosphere, preventing the pollution of 213,000 m3 of water and reducing production costs.

Project timeline

The construction of the project started on 27.09.2022.
The installation phase was completed on 16.11.2022. The support phase of the barriers was completed on 17.12.2022 and the project was completed.

Project description

This project was created in order to contribute to the circular economy and to meet the needs and expectations of our stakeholders. Waste tires were collected regularly and became the raw material for the project. In this context, respectively;

- Smashed tires on the highway were collected by traffic and maintenance teams.
- The collected waste tires were stored in the interim storage areas of the Maintenance Operations.
- The stored waste tires were sent to the relevant company to be used in barrier construction.
- Tires recycled by the company were used as raw material in the production of sound barrier.
- In the sound barrier production plant, the process starts with aggregating granulated rubber, reinforcement, and chemicals. This process takes place with a mixing machine. The raw materials and a desirable quantity of water are placed into this mixing machine and mixed until it reaches the required consistency. After the mixture is poured into a press machine that consumes only electricity then the pressing process is applied. As a result of this pressing process, the mixture becomes solid, and the sound barrier is created. When it cools down, synthetic turf is stapled onto the sound barrier in a square shape. The reason for this process is that the sound barrier looks visually aesthetic. After the visual process is completed, the product is ultimately ready and packaged to be delivered to us.
- Sound barriers have been installed at the relevant points upon the request of the local people living around our site.

Illustrations

Website

- https://www.ysskoprusuveotoyolu.com.tr/

Social Media

- https://tr.linkedin.com/company/ica-yatirim-ve-isletme-as
- https://www.instagram.com/ysskoprusuveotoyolu/
- https://twitter.com/ysskopruotoyol
- https://youtu.be/LfdF8uV3uCI?si=4-B2zXxTGQpfN2kT

Directroute (Fermoy) ltd. / ITIA

Project title

Road Lighting change from sodium lamp 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 night time.
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 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 93,329kWh per year reducing carbon emissions by 23.9tC02 per year.

Illustrations

Camera images halfway during installation: 'white' LED vs 'yellow sodium' 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 sodium lamp SON road lighting.

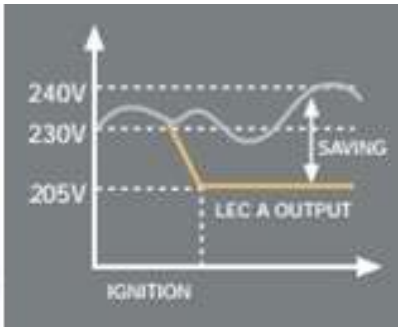
Project timeline

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 is that road, or any other lighting, will shine just as bright on 205 Volt as on the mains power of 235V. They dynamically controls and stabilises 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 tCO2 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 continu to contribute to energy savings on top of the introduction of LED's.

Illustrations



Directroute (Limerick) ltd. / ITIA

Project title

Road Lighting change from sodium lamp 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 night time 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 $tC0^2$ per year.
- Also removed the Irish Authorities requirements to replace road lighting, regardless condition and performance, every 3 years.

Project timeline

Installation November-December 2020.

Project description

All of the the road lighting on the Limerick Tunnel road network (763 no.luminaires) were upgraded from 400 and 250 Watt Phillips high pressure sodium light fitting to Philips luma LED Lighting in 2020.

Illustrations

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

Autostrada Wielkopolska S.A. (AWSA) & Autostrada Wielkopolska II S.A. (AWSA II) / PAK

Project title

Eco-driving

Project's aim

Ecology is not just a fashion. Awareness of respect for the environment is growing and ecological behavior on a daily basis is actually becoming a necessity. Good habits that reduce the negative impact on the environment are not limited only to segregation of waste or saving water. By taking daily trips by car, we can also put into practice principles that have an impact on reducing our carbon footprint.

Benefits of the project

The campaign includes educational activities familiarizing drivers with ecodriving. Ecodriving, or economical driving, is a driving technique that allows the lowest possible fuel consumption, benefiting both the planet and the wallet of every driver. Following a few simple rules can also positively affect driving comfort and extend the life of car parts and components. The project includes educating drivers in this area.

Project timeline

January - March 2023

Project description

The project covered additional meetings with young drivers and education about eco-driving during Motorway driving course, the CSR Programme of Autostrada Wielkopolska. The motorway allows to drive fast but still safely, provided you follow the safety rules and keep driving smoothly. On the motorway one must first of all remain attentive and focused. Concentration while driving translates not only into increased safety for all traffic users but also promotes an eco-friendly attitude. Sudden acceleration and braking increase fuel consumption. While approaching a Toll Plaza or exiting the motorway, one can use engine braking. Let's try to drive optimally, safely and economically.

By burning less fuel, we emit less harmful substances into the atmosphere and the carbon footprint left is smaller. Conscious and controlled driving brings fuel savings of up to 20%, reduces vehicle operating costs and reduces greenhouse gas emissions. Eco-driving really pays off!

Illustration

Website

- https://kursjazdynaautostradzie.pl/blog/ecodriving-czyli-jazda-ekonomiczna-korzysc-dla-srodowiska-i-dla-portfela
- https://kursjazdynaautostradzie.pl/blog/jak-ekonomicznie-i-wygodnie-podrozowac-samochodem-elektrycznym-po-autostradzie

Social Media

- https://www.facebook.com/photo.php?fbid=255931490102585&set=pb.100070572082027.-2207520000&type=3
- https://www.facebook.com/photo.php?fbid=252688127093588&set=pb.100070572082027.-2207520000&type=3
- https://www.facebook.com/photo.php?fbid=240711664957901&set=pb.100070572082027.-2207520000&type=3
- https://www.facebook.com/photo.php?fbid=236750108687390&set=pb.100070572082027.-2207520000&type=3
- https://www.facebook.com/photo.php?fbid=234061518956249&set=pb.100070572082027.-2207520000&type=3

Sacyr / SEOPAN

Project title

Natural capital valuation platform

Project's aim

Understand the impact caused by our projects on the different ecosystems where they are carried out, through a geopositioned file.

Benefits of the project

Optimize carbon offsetting measures based on the impacts caused by our activity, which was previously calculated manually. All this will allow us to achieve an estimate net debt with nature in an automated, scalable, and efficient way.

Project timeline

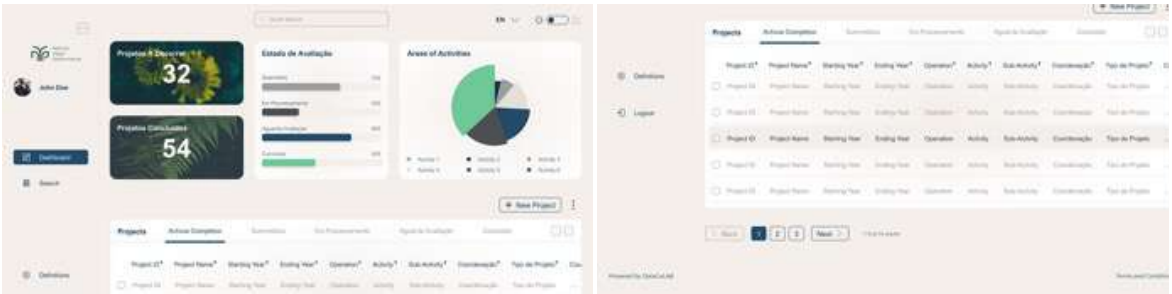
2021- present

Project description

The platform developed uses satellite imaging to analyze how we have affected the project environs and to understand whether the balance is positive or negative to adjust our measures accordingly.
To do this, we collect the necessary free-access satellite images to calculate the indicators of ecosystem services before and after construction. This calculation is currently applied to our P3 projects in all countries.

Different actions are reflected in each country's environmental management plans adapted to the regulations and specifics of each region. Through the tool, it is possible to identify those measures that have greater benefits on the environment, contributing to a positive or net balance. Thanks to these advances, we develop measures adapted to the specifics of the environments and the present ecosystem services.

Illustrations



Website

- https://www.sacyr.com/en/-/proyecto-innovacion_valoracion-capital-natural/innovation-project

Sacyr / SEOPAN

Project title

Sacyr Prediction Tool

Project's aim

Predict with high accuracy the long-term deterioration of road pavement.

Benefits of the project

More efficient, more sustainable, and safer roads, generating value for customers and users in the short and long term.

Project timeline

2018- present

Project description

This innovative tool uses machine learning and big data to predict with high accuracy the long-term deterioration of road pavement. We developed this project in collaboration with Tyris AI, the winning startup of the 2018 Sacyr Innovation Awards. The system is based on a machine learning module. Through a massive intake of data and sources on asphalt imperfections, this module modifies equations and calculations of pavement deterioration on roads.

Sacyr Prediction Tool has the capacity to run dozens of calculations simultaneously, issuing very accurate predictions of the long-term behavior of pavements and their possible deterioration, based on data on the use of the road itself, its construction, and environmental conditions such as weather.

This project aims to provide greater safety throughout the life cycle of the road. Similarly, the tool aims to ensure that the operations and maintenance developed and applied are much more limited and have a high level of detail and effectiveness to correct each of the deteriorations.

Illustration

Website

- https://www.sacyr.com/en/-/webcontent_proyecto_1-13/proyecto-innovacion

Autopistas / SEOPAN

Project title

Recharging points for electric vehicles

Project's aim

Project for the initial installation of 94 recharging points for electric vehicles in the service areas.

Benefits of the project

Commitment to the sustainability in an electric mobility.

Project timeline

2023 - 2025

Project description

On the road to reaffirming its commitment to sustainability and electric mobility, installing electric charging points for vehicles on the nearly 600 kilometres of motorways managed by the company. Aware that electric mobility requires a transformation of the infrastructures managed by the company, Autopistas, a subsidiary of Abertis in Spain, is promoting the installation of XX recharging points throughout the network. To carry out this deployment, Autopistas has selected four charging point operators, experts in the sector: Repsol, Cepsa, BP and IONITY.

These are electric charging stations with a capacity of over 150 kW, capable of charging the battery in just 20 minutes.

In addition, an agreement has been reached with Fastnet for the installation of the new ultra-fast charging points (16 points) with a power of up to 400 kW, capable of charging up to 300 km in 15 minutes depending on the vehicle. The electric charging stations will feature the company's iconic yellow canopies equipped with solar panels that will allow drivers to enjoy one of the best charging experiences with 100%
renewable energy.

Illustrations

Autopistas / SEOPAN

Project title

Solar panels

Project's aim

Commitment to sustainability through the production of more than 1,500 MWh per year from its own network of motorways and tunnels.

The company continues to take steps to meet the goals of the 2030 Agenda and with this latest project, it has proposed that 100% of the energy it uses comes from sustainable sources thanks to the renewable energy generated in its own facilities and through the 100% green energy that Autopistas is acquiring from accredited energy suppliers.

Benefits of the project

That 100% of the energy it uses comes from sustainable sources thanks to the renewable energy generated in its own facilities and through the 100% green energy that Autopistas is acquiring from accredited energy suppliers.

Project timeline

2023-2025

Project description

Autopistas' global project includes the installation of 18 solar plants in the Spanish provinces of Barcelona, Girona, Tarragona, Ávila, Segovia and León, located mainly in maintenance, toll and office areas, which are expected to produce 1,554 MWh per year. With the implementation of this plan, the company has a threefold objective: to use renewable energy for self-consumption, reduce energy consumption at the facilities and avoid the emission of around 422.68 tonnes of CO2 per year.

Autopistas has already completed the first solar plant in the maintenance area of Vallcarca (Sitges) and it is planned that the rest of the installations, located along roads such as the C-32, C-16 AP-6, AP-51, AP-61 and AP-71. The points where the plants are located have been chosen taking into account their extension, orientation and inclination, in order to make the most efficient and continuous use
of solar radiation to generate electricity.

Illustration

Website

- https://www.autopistas.com/
- Autopistas reducirá su huella de carbono con la instalación de 18 plantas solares en su red de autopistas y túneles | Autopistas

Social Media

- Web Autopistas.com Autopistas reducirá su huella de carbono con la instalación de 18 plantas solares en su red de autopistas y túneles | Autopistas

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

Project title

The Emilia Romagna flood and flood risk management

Project description

Between the evening of 1 May 2023 until 3 May 2023, the Emilia-Romagna Region experienced hydro-meteorological events of exceptional intensity, resulting in a severe crisis, especially in the provinces of Forlì-Cesena, Ravenna, Bologna, Modena, and Reggio Emilia. On 16-17 May, an additional extremely intense meteorological event took place, affecting not only the previously mentioned territories of the Romagna provinces and Bologna but also severely affecting the province of Rimini. The outcome was dramatic in human and environmental terms: 16 dead, over 23,000 displaced, 23 rivers flooded, almost 66 thousand landslides and just under 2 thousand road infrastructures affected by the disruption. These included the A14 motorway, which was closed on the morning of 17 May in the sections: Bologna San Lazzaro and Cesena Nord towards Ancona and between Rimini Nord and Faenza towards Bologna and the Ravenna D14 branch in both directions. As early as 19 May, however, one lane in each direction of the Faenza-Forlì section was reopened. On 23 May, all 200 km of the network managed by Autostrade per l'Italia in Emilia Romagna were fully accessible in all lanes, thanks to the impressive activity plan carried out without interruption by Autostrade per l'Italia teams. In addition to the people from the Bologna Directorate, more than 600 men and women from Autostrade per l'Italia, from the Trunk Directorates of Milan, Florence and Pescara, of Amplia, as well as the contractors, took part. Approximately 160 vehicles were used for the restoration work, including 120 trucks, 5 excavators, 3 bituminous conglomerate plants available 24 hours a day, 2 tanker trucks and 2 crane trucks. Following the resolution of the motorway network emergency, efforts persisted through focused actions across the region in collaboration with local authorities.
Given the recent surge in intense weather events, especially concerning rainfall and subsequent floods, ASPI has decided to establish a structured operational management process, which encompasses three distinct phases:
FORECAST: analysis of the criticality of the Civil Protection bulletin and, in the event of an Orange or Red alert being issued on Alert Zones of interest to ASPI, the Assessment Phase is carried out.
ASSESSMENT: Civil Protection alerts are combined with:

- levels of Hydraulic Hazard (ISPRA - Italian Institute for Environmental Protection and Research);
- the Warning Classes of Overflow Phenomenon of the works.

The aim is to produce the Flood Risk Bulletin containing details of the sectors most at risk.
ESCALATION phase which in turn, depending on the severity of the situation, is divided into three levels:

- Alert state: definition of preparatory activities for the management of a possible and eventual traffic emergency;
- Status of intervention: Raising of watercourse levels such that the road surface is potentially and imminently affected: Summoning of resources and activation of first traffic measures;
- State of emergency: Carriageway invaded by water, even partially: safe traffic passage is not guaranteed. Summoning of additional resources and implementation of measures with a greater impact on traffic.

Autostrada del Brennero S.p.A./ AISCAT

Project title

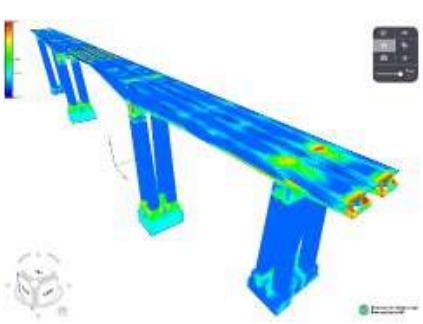
The Digital Twin of the Colle Isarco, the new life of the viaduct

Project description

When it was built, at the dawn of the 1970s, the Colle Isarco Viaduct was unique in Italy and beyond. For its altitude and length, for its strategic and symbolic position straddling Italy and Austria, between Mitteleuropa and the Mediterranean, but above all for the daring and innovative engineering solutions adopted. Autostrada del Brennero, the entity responsible for its design and construction, has also overseen its evolution through ongoing maintenance efforts. These interventions have updated its safety coefficients to meet modern standards, ensuring it remains a work of the present. And it is ready to project it into the future: in fact, the Company has promoted the modelling of the viaduct's digital twin, with more than one objective: to know in real time the conditions and structural behaviour of the work, to predict its evolution and potential defects, and to plan in a precise, detailed and anticipated manner the necessary maintenance work.

Situated more than 1,100 metres above sea level, the viaduct crosses a wide valley close to the State border. At 1,028 metres long, it consists of 13 spans ranging from 45.7 to 163 metres in length and constitutes an international technical excellence. But we must not forget the particularly intense stress to which this work is subjected: with the growing economic importance of the Brenner Pass over the decades, traffic volumes have increased dramatically and consequently so have the loads; to this must be added the harsh winter temperatures of the area in which it is located, which impose the use of saline fluxes, which are harmful to the structures. Also for this reason, the viaduct has undergone numerous maintenance works over the years and has been equipped with instrumental monitoring systems capable of detecting the deformations of the decks through multiple instruments, such as total stations for topographic surveys, fibre optic sensors and thermocouples. In the second part of 2022, Autostrada del Brennero decided to develop the digital twin of the viaduct in cooperation with an external company specialising in this field. In summary, an automated system processes the data collected on-site by sensors and the data calculated through a finite element model (FEM) of the artefact. The output is a digital copy, a twin, of the actual viaduct that allows an assessment of the state of the structure, which can be remotely inspected three-dimensionally, at any point and at any time simply by standing in front of a PC screen, through a dedicated platform. The digital twin is in fact faithfully developed based on existing documentation, taking into account the precise geometry, thermomechanical properties, and the various construction and tensioning phases that occurred during the building process, as well as the subsequent lightening and structural reinforcement measures. The excellent results of the experimentation have prompted the company, at the end of 2023, to continue its experimentation to implement the model and make it more than just a simple BIM, enriching it with a predictive analysis system.

Illustrations



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

Project title

Motorway safety campaign “Guida bene, non fare l’eroe” [“Drive well, don’t be a hero”]

Project description

Milano Serravalle developed the new motorway safety campaign “Guida bene, non fare l’eroe”. It is a project to raise awareness of responsible driving behaviour, launched in the summer 2023, through online and offline content. The campaign associates 12 famous characters - chosen from mythological heroes and historical profiles - with specific messages on road safety, with the aim of promoting, through a persuasive, emotional and user-friendly language, a more careful and safer mobility.
The 12 protagonists of the campaign, conducted in Italian and in English, address the public through animated ads on the Company’s social channels, posters and postcards distributed at strategic points of the managed motorway network (A7 Milan-Serravalle motorway and Milan’s A50, A51, A52 ring roads).
The project is characterised by clear, simple and incisive messages: make a stop when feeling tired, do not use a mobile phone while driving, respect the safety distance, do not exceed the speed limit, pay attention to road signs, check tyre wear and the efficiency condition of the vehicle.

Illustration

Autostrada Brescia Verona Vicenza Padova - A4 Holding Group / AISCAT

Project title

CB Advisor, the new warning system for hauliers on the approach of a construction site

Project description

Road safety is an unwavering and constant commitment for Autostrada Brescia Verona Vicenza Padova, which has always been looking for new solutions to keep motorists and hauliers constantly informed about problems related to traffic and work on the motorway sections under its responsibility. And it is precisely for the road transport sector that the CB construction site warning system was developed to be installed in the vicinity of construction sites.

"CB Advisor", this is the name of the new warning system, is a system configured to automatically broadcast a pre-recorded, static, cyclically repeated warning radio message on the city band frequencies also known as Citizen's Band or more commonly CB.

The CB Advisor system aims to alert hauliers through a previously configured message when they are nearing a construction site. The purpose is to prevent sudden braking or sudden lane changes, which are sometimes the cause of rear-end collisions and accidents. The message, transmitted by the system that is placed close to the construction site, has a propagation radius of 3 to 5 kilometres and is repeated at regular intervals in two languages, Italian and English.

The adoption of CB Advisor is a further step towards the goal of better safety for travellers, vehicles and goods. The purpose is to keep drivers alert and ready to react correctly to the presence of critical situations and construction sites, warning them in advance and allowing them to prepare themselves, thus reducing sudden and dangerous driving reactions.

Illustration

Aegean Motorway S.A. / HELLASTRON

Project title

Road Safety

Project's aim

Road Safety & Awareness.

Benefits of the project

Promotion of the proper road behavior.

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 organises 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.

During the years **2019, 2020, 2021** more than 2,000 pupils took part in this initiative.

In 2022, in Larissa, in cooperation with IOAS and the Municipality of Larissa, Aegean Motorway organized the Road Safety Festival to celebrate the five years since the new motorway was given to traffic. The festival attracted more than 1,760 visitors who participated in the road safety programmes designed in cooperation with the Panos Mylonas Road Safety Institute.

The programmes were suitable for children aged 4 to 12 and combined digital applications with "traditional" motor games promoting a holistic approach to road safety. This programme, to which many European countries participate, and which is coordinated by IOAS, was presented for the first time in Europe at the Road Safety Festival in Larissa. Volunteers from Aegean Motorway and the 3rd Larissa Air Scouts Group who participated in the Festival contributed to its success.

In 2023, in Katerini, in cooperation with IOAS and the Municipality of Katerini, Aegean Motorway organized the Road Safety Festival to celebrate the five years since the new motorway was given to traffic. The festival attracted more than 1,500 visitors who participated in the road safety programmes designed in cooperation with the Panos Mylonas Road Safety Institute.
Volunteers from Aegean Motorway and the 3rd Larissa Air Scouts Group who participated in the Festival contributed to its success.

Illustrations

ILLUSTRATIONS 2019, 2020, 2021






ILLUSTRATIONS 2022




ILLUSTRATIONS 2023


Website

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

Aegean Motorway S.A. / HELLASTRON

Project title

Management of the DANIEL storm

Project's aim

Climate change/ Business Continuity.

Benefits of the project

Safe traffic conditions for all vehicles.

Project timeline

Project commenced in September 2023, to be completed in November 2023

Project description

DANIEL STORM:
The severe adverse weather phenomena of the "Daniel" storm which took place from 4 to 8 September 2023, and more particularly, the three-day long heavy rainfall, created huge flooding phenomena throughout the region of Thessaly, with victims and serious damage to productive activities and the region's infrastructure.
Part of the motorway - which was located within the affected area - was also impacted by the bad weather. Specifically, the affected parts of the motorway were located from Ch 271+000 to 391+408, with the main impact of the Daniel storm located in Almyros Magnesia (streams of the region) and the area between Sykourio I/C - Gyrtoni I/C where extensive flooding phenomena occurred for a long period of time - from 4 to 15 September of time.
IMPACT:

- Interruption of traffic between the two major cities of Thessaloniki and Athens both on Aegean Motorway (at the sections specified above) as well as the side roads, with traffic diverted via EOSA.
- Interruption of telecommunication network (optical fibre) by all providers (COSMOTE, VODAFON + NOVA) resulting in the interruption of services at the Moschochori MMC, including communications and EM systems of open road and tunnels.

COMPANY READINESS:
Automatic activation of the company's proprietary fiber optic network (Backbone) operating out of the Leptokarya OMC. Because of this systems and network architecture, all telephony services and some basic Internet services were immediately recovered, without loss of communications and without affecting the operation of the MMC, a fact of great importance for the continuation of the effective crisis management.

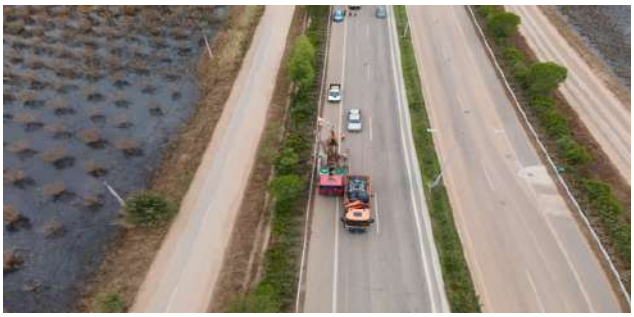
The company proceeded with the preparation of a Scientific and Technical Expertise in order to define the necessary actions to check the functionality, integrity and structural adequacy of the Motorway, including its infrastructure and equipment, with the aim of restoring it to safe traffic conditions for all vehicles.
The audit of the functionality, integrity and structural adequacy of the Motorway was divided into three phases:

- PHASE A. Conducting surveys, evaluating the road and formulating a proposal to allow vehicles weighing <3.5t to travel exclusively in the left lane in each direction.
- PHASE B. Carry out studies, road evaluations and formulate a proposal to allow all vehicles to drive exclusively in the left-hand lane in each direction.
- PHASE C. Carry out Road Studies, Road Evaluations and formulate a proposal to allow all vehicles to travel in all lanes in each direction.
- Based on the results of the roadway surveys and evaluations, the highway was opened for full operation on November 7, 2023.

FURTHER PREPAREDNESS ACTIONS:
Upgrading and adapting the architecture of the company's proprietary fiber optic Internet equipment (Backbone), increasing the transfer speed and data volume (Bandwidth) to deal more effectively with similar crises and to increase infrastructure resilience.

Illustrations

Area between Sykourio I/C – Gyrtoni I/C: Flooded pavements



Website

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

Egnatia Odos S.A. / HELLASTRON

Project title

LIFE SAFE CROSSING

Project's aim

The LIFE SAFE-CROSSING project aims at implementing actions to reduce the impact of roads on some priority species in four European countries: Marsican brown bear (*Ursus arctos marsicanus*) and wolf (*Canis lupus*) in Italy, Iberian lynx (*Lynx pardinus*) in Spain, and Brown bear (*Ursus arctos*) in Greece and Romania. These species are severely threatened by road infrastructures, both by direct mortality as well as by the barrier effect. One of the main causes of the road kills is the low level of awareness and attention of drivers regarding the risk of collisions with wildlife.

The project objectives are:

- Demonstration of the use of the innovative Animal-Vehicle Collision (AVC PS) Prevention tools.
- Reduction of the risk of traffic collisions with the target species.
- Improve connectivity and favor movements for the target populations.
- Increase the attention of drivers in the project areas about the risk of collisions with the target species.

The project involves 13 partners: NGO, private companies and public bodies.

The project area includes 29 Natura 2000 sites (SCIs). By reducing the direct mortality and the fragmentation represented by roads the project will contribute to the biodiversity value within the singe sites, as well as to the connectivity between the SCIs. The connectivity is increased both by reducing the habitat fragmentation as well as by improving the cooperation between the management authorities and stakeholders in the sites. The standardization of the methods and best practices can be exported to other areas. Finally, the intense effort of awareness raising during the project will also increase the knowledge of the local communities and tourists about the Natura 2000 network.

Benefits of the project

Increase of motorway safety, reduction of animal/vehicle collisions, minimization of area fragmentation due to motorway (Vertical Axis of Egnatia motorway, section "Siatista – Koromilia".

Project timeline

October 2018 – October 2023

Project description

The main actions are:

Monitoring
Monitoring activities are divided in ex ante monitoring in order to estimate the impact of road mortality on the target species before the start of the project, and ex post monitoring in order to evaluate the efficacy of concrete conservation actions.

Prevention of Animal-Vehicle Collisions

- Installation of 27 AVC Prevention Systems.
- Installation of active warning reflectors on 34 km of roads in the project area.
- Readaptation of round 100 underpasses to favor animal movements
- Management of the vegetation on the road sides in order to reduce Animal vehicle collisions.
- Elaboration and installation of specific road panels, designed through the application of the neuromarketing technique, to raise awareness of drivers about the risk of collision with the target species.

Dissemination and public awareness activities

Illustrations

Website

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

Social Media

- https://www.facebook.com/lifesafecrossing/
- https://www.instagram.com/lifesafecrossing_/
- https://www.youtube.com/channel/UC2X_eM5uRV0OcY2_9Jn0Rtg

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

Project title

Target: The Road That Forgives Mistake / Road Safety

Project's aim

The primary aim of the project is to enhance the safety of the highway by implementing various improvements. This includes reducing traffic accidents and their effects and ensuring safe and comfortable transportation for all users. The project seeks to leverage current and future technological opportunities to detect and rectify errors that contribute to accidents, with a specific focus on road conditions.

Benefits of the project

- **Reduction in Traffic Accidents:** By addressing both human and non-human error factors, the project aims to significantly reduce the occurrence and severity of traffic accidents.
- **Enhanced Road Safety:** The implementation of new safety measures, such as additional cameras, revised traffic signs, rumble strips, and advanced vehicle restraint systems, directly contributes to safer driving conditions.
- **Improved Traffic Flow:** With safer and more efficient road conditions, the project facilitates smoother and more comfortable transportation, leading to time savings for commuters.
- **Technological Integration:** Utilizing advanced technologies to monitor and improve road conditions helps in proactively managing safety concerns and maintaining high standards of highway operation.

Project timeline

2023- continues

Project description

The project focuses on making the highway a safer road through a series of improvements based on thorough analysis and technological integration. Key aspects of the project include:

- **Accident Analysis:** Conducting detailed analyses to identify errors causing accidents, categorized into non-human errors (road conditions, weather conditions, vehicle defects) and human errors (driver fatigue, mobile phone use, overspeeding).
- **Blind Spot Reduction:** Installation of new cameras at 64 strategic points along the highway to reduce blind spots and enhance monitoring capabilities.
- **Traffic Sign Revision:** Re-evaluation and modification of speed traffic signs at 62 points based on analytical results to ensure appropriate speed limits and better traffic management.
- **Rumble Strips Application:** Implementation of rumble strips at highway exits, resulting in a 10% decrease in accident rates in these areas.
- **Vehicle Restraint Systems (VRS):** Deployment of the Absorbing System, a type of advanced guardrail, at 10 critical black spot areas, along with the addition of 17 kilometers of new guardrails at 241 points for improved vehicle restraint.

The project is designed to provide continuous improvements to highway safety, thereby fulfilling the mission of offering safe, comfortable, and time-efficient transportation services to all users.

Illustrations

Application of Crash Barriers

Improvement of Guardrail

Website

- https://www.ysskoprusuveotoyolu.com.tr/

Social Media

- https://tr.linkedin.com/company/ica-yatirim-ve-isletme-as
- https://www.instagram.com/ysskoprusuveotoyolu/

Autostrada Wielkopolska S.A. (AWSA) / PAK

Project title

Motorway Driving Course

Project's aim

The CSR action „Motorway driving course" which main goals are: improving drivers' competences, increasing road safety and implementing Vision Zero at every kilometer. The course is aimed at those taking driving courses and preparing for their driving test, as well as drivers with a driving licence.

Benefits of the project

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. That is why Autostrada Wielkopolska SA decided to extend the project to the whole of Poland in cooperation with the other concessionaires: Gdańsk Transport Company S.A. and Stalexport Autostrada Małopolska S.A.

Motorway driving course in figures in 2023:

- Theoretical and practical education of young 350 trainees during driving courses at Driving Training Centres.
- Education of 430 drivers in Driving Technique Improvement Centres.
- Meetings and lectures in secondary schools (3rd, 4th and 5th grades) - 462 students.
- Meetings with local communities, opportunity to use the driving simulator - 10,000 visitors.

Project timeline

This is the first CSR programme of its kind in Poland. It aims to improve drivers' driving skills on motorways and expressways. Launched in July 2021, with nationwide coverage from 2023.

Project description

The implementation of the programme in cooperation with the best Driving Training Centres enables trainees to undertake practical motorway driving already at the stage of the driving test preparation course. Such a course provides four hours of training driving outside built-up areas. Driving schools cooperating with motorways use part of this time for practical driving lessons on the motorway. Importantly, the completion of such drives as part of the driving test preparation course is free of charge for the trainee - the concessionaires exempt the vehicles of the cooperating centres from tolls. As a result, the trainee gains additional training and improves his or her skills, while the Driver Training Centre expands its training offer.

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, 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 motorway driving course is conducted in close cooperation with the Provincial Road Traffic Centres in Poznań, Gorzów Wielkopolski, Zielona Góra and Toruń. The programme is held under the honorary patronage of the National Road Safety Council, the Marshal of the Wielkopolskie Voivodship, the Marshal of the Lubuskie Voivodship, the Marshal of the Małopolskie Voivodship, the President of the City Poznań, the President of the City Katowice and the Voivodship Police Headquarters in Poznań, Gorzów Wielkopolski, Gdańsk and Bydgoszcz.

Illustration

Websites

- https://www.autostrada-a2.pl/en/news/enhancing-safety-on-polish-roads-the-motorway-driving-course-program-goes-nationwide/
- https://www.autostrada-a2.pl/en/campaigns/motorway-driving-lessons-autostrada-wielkopolska-launches-a-new-educational-project/
- https://www.autostrada-a2.pl/informacje-prasowe/kurs-jazdy-na-autostradzie-w-poznanskich-i-lubuskich-szkolach/ (only in polish)
- Dedicated website: https://kursjazdynaautostradzie.pl/ (only in polish)

Social Media

- https://www.facebook.com/share/p/DyxnqsndbdP3KphF/
- https://www.facebook.com/share/p/kBYvNGf7tuJVsnj5/

Stalexport Autostrada Małopolska S.A. (SAM) / PAK

Project title

"Hold the Wheel and Not Your Phone"

Project's aim

To raise awareness of the dangers of using smartphones while driving.

Benefits of the project

The campaign addressed the issue of responsibility on the road in an engaging way, making it the subject of a discussion that increased awareness of threats, prompted reflection and changed habits.
The campaign resonated widely in regional and national media. In December 2023 it was awarded the Silver Paperclip, an award given by the Association of Public Relations Companies.

Project timeline

The campaign was carried out in Q1 2023.

Project description

Even **every fourth** accident in Poland may be caused by a driver who is focused on their phone instead of the road. *Driver inattention on a motorway carries a much greater risk of consequences for human health and life*. Cartoon satire - a quickly digestible form of expression - made it possible to deliver a strong message precisely to the place where the problem arises: on phone screens.
The involvement of well-known cartoonists and illustrators, known from the media to cooperate, who draw attention to socially important issues, and communicate efficiently on social media, and a TV and radio voiceover artist, who provided her voice for the radio spots, made it possible to avoid moralizing and to widen the space for bluntness. It was assumed that the drawings would have a chance to attract a wide audience for the campaign, including media interest, due to the authors' popularity and sympathy for them. The persuasive power of the message determined the effectiveness of the campaign.
Inaugurating the campaign, a landing page with a gallery of drawings was launched, and a press package was sent to over 500 journalists from national, local, industry, lifestyle and cultural media. The posting of the creators' works on SoMe was preceded by engaging teasers with fragments of drawings, which were then revealed to Internet users. At the same time, the creators involved in the collaboration did so on their channels.
The campaign was carried out on social media, website, outdoor and on the radio, but it spread to the regional and national media.

Illustrations

Presented on the website.

Websites

- https://www.autostrada-a4.com.pl/pl/bezpieczenstwo/jazda-bez-czytanki
- www.jazdabezczytanki.pl (in Polish only)

Social Media

- https://www.facebook.com/a4katowicekrakow/ (in Polish only)

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

Project realized since 2021 will be continued.

Project description

In 2023, Gdańsk Transport Company continued the Count to Zero education campaign – i.e. zero fatal accidents on the motorway. This is a series of events conducted on motorway's Service Areas. 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 2023, 15 events were held, in which over 3500 people took an active part. The events met with a very positive reception from drivers.

Illustrations

Website

- https://a1.com.pl/en/kampanie/count-to-zero/

Social Media

- https://www.youtube.com/watch?v=WPPUHR0i09Q

Sacyr / SEOPAN

Project title

ACM3S

Project's aim

Increase the level of safety on our roads.

Benefits of the project

Safer operations for our workers.

Project timeline

2023-present

Project description

The ultimate goal of the project is to develop an equipment able to properly detect signalling, position and object movement throughout the entire operation, as well as safely placing and removing these traffic elements.
This equipment is fully autonomous and does not physically expose people to danger.
This solution consists of the technical evolution of road signalling trailers, so that a Maintenance vehicle towing a trailer that can be automatically detached at the start of the lane and keep enough distance to guarantee security in the event of a potential crash. The self-driving tow trailer follows the car (leader-follower technology) and places the traffic cones to channel traffic as per safety protocols and is able to detect obstacles and function with absolute safety. The tow trailer signals to inform drivers as per Ministry instructions.
When traffic restrictions are over, the self-driving tow trailer attaches itself again to the car without any worker coming off the vehicle, safely completing the operation.
This tow trailer includes a **robotic arm** that places and collects the traffic cones via an AI-powered algorithm system, which facilitates coordinates for proper manipulation and placement.
These **algorithms** take the trailer's and the vehicle's position into account, as well as the traffic cones' in relation to its open environment.
In this project, Sacyr partners with GMV, the company responsible for the design of the prototype of the robotic arm and the navigation system of the trailer through MagicGNSS technology, which allows GPS positioning with centimeter-level accuracy.

Illustration

Website

- https://www.sacyr.com/en/-/proyecto-innovacion_acm3s/proyecto-innovacion

Sacyr / SEOPAN

Project title

InRoad Evolution

Project's aim

Continuously evaluate the main indicators of road conditions that can impact user safety, using equipment with advanced sensors and artificial intelligence models;

Benefits of the project

Improve service quality, increase revenue and reduce costs.

Project timeline

2021- present

Project description

Automatic inspection methods to improve the efficiency of auscultations. With InRoad, we substantially increase the frequency with which we register data to learn more about the problems and their evolution.
Through this project, 11 monitoring units are implemented and deployed along the approximately 5,500 km of roads maintained by Sacyr Maintenance. Among them, more than 2,250 km belong to routes of the Trans-European Transport Network (TEN-T Network).

Illustration

Website

- https://www.sacyr.com/en/-/proyecto-innovacion_inroad-evolution

Social Media

- https://www.youtube.com/watch?v=2xpdpHSH8_o

ROADIS Infrastructure Holding / SEOPAN

Project title

Road Safety Awareness-raising Campaign “Your safety, Our priority”

Project’s aim

The project aimed to increase awareness among drivers on dangers of sleepiness, speeding and alcohol in Mexico.

Benefits of the project

Under the slogan “your safety, our priority” we have placed posters at toll plazas and distributed 8,000 flyers highlighting the importance of adopting safe behaviours. 380 participants joined the campaign, and 116 questionnaires were collected.

Project timeline

It is a periodic campaign. The first one was launched in September 2023.

Project description

During September 2023, ROADIS´s Mexican highways, CAMS and COPEXA, were the first ones to deploy the new road safety campaign “Your Safety, Our Priority”.
An awareness-raising campaign about the dangers of falling asleep at the wheel set up at the COPEXA’s Las Vigas rest stop that included video game to raise awareness of the effects of sleepiness on drivers and a game of skill with a football goal as an example of the consequences of driving while sleepy.
Moreover, flyers were distributed along the rest stops of the two highways to arise drivers´ awareness of the importance of not driving under the influence of alcohol and respecting speed limits.
The initiative was promoted on social media networks.

Illustrations

Social Media

- https://www.linkedin.com/posts/roadis_roadis-roadis-yoursafetyourpriotity-activity-6989146133528776704-VVt6/?originalSubdomain=es

18 ASECAP members

Project title

ASECAP Europe-wide Road Safety Campaign #(S)heWorks #ICare

Project's aim

The aim of the campaign is to draw public awareness on main risk road staff is facing is accident with a vehicle when working on the motorway. There is an increasing number of accidents involving staff and people working on the network to make it safer (police, ambulance, towing…° due to distraction of drivers mainly. Road safety both for our customers and our staff is remaining our first priority.

Same as 2023, the second edition took place on June 20th 2024.
Ensuring the safety of staff working on motorways while every year patrol staff tragically lose their lives in the course of their duties is a top priority of road infrastructure operators.

Benefits of the project

To reduce number of staff hurt as well as materials (patrol cars, arrows…) to be collided.

Project timeline

ASECAP is coordinating the participation of all ASECAP members using the same moto, same visual identity and common date of the campaign (June 20th).

Project description

The event, organised annually, takes place on a weekday. There are different options for members, either using their social media channels or on site events. Many Members are organizing event on a rest or service area. A meeting point is set up where motorway staff and drivers can chat over coffee and pastries, with, in some countries, help of translators who are part of the staff. Some ASECAP members are invited to a photocall together and the driver receive a print of the photo and a T-shirt with the moto and which is customised on site with his first name or any nickname he wants. There are large variety of actions implemented by members who may also have partneships with other organization like Red Cross. This simple action to implement created a good and friendly relationship with truck drivers and our staff.
First, all the tolling industry is strongly committed to road safety. It is part of our social contract both for the motorists and for our staff. Second, It is important to show that tolled motorway offer a high level of service, with people working on the road but also who take care of people, drivers and vehicles.

Toward the motorway staff also, it is very important to develop all kind of actions to ensure their safety. it is important to show them that their safety is our priority.

The simplicity and universality of the moto "(S)He Works / I Care" could help bringing together the road community, even wider than only the tolled infrastructures.

Illustrations

Website

- https://www.asecap.com

Social Media

- ASECAP's social media and ASECAP members' social media

Autostrada del Brennero S.p.A. / AISCAT

Project title

The A22 is increasingly ready for connected driving: C-Roads Italy 3 and the new mobile use cases

Project description

Following its pioneering role in C-Roads Italy, the third edition of the Autostrada del Brennero project saw the implementation of new mobile use cases and the acquisition of new Roadside Units, both stationary and mobile. The aim is to make the infrastructure ready for the increasingly connected and cooperative driving of the future.

Autostrada del Brennero has long been investing in the sector of digital mobility, taking part in various international projects. These include C-Roads Italy, coordinated by the MIT and co-financed by the European Commission. The third edition saw Autobrennero implement and enrich the already substantial progress achieved with C-Roads Italy: the project's aim was to study, implement and then test C-ITS (Cooperative Intelligent Transport Systems) under real traffic conditions. The system facilitates communication predominantly from infrastructure to vehicle (I2V), and potentially, from vehicle to infrastructure (V2I) as well. The information that vehicles and artery exchange, unlike in the past, is constantly updated and geolocalised, with constant and total mapping of the entire artery.
In the C-Roads Italy 3 initiative, the Company has taken a significant step forward. The project involved the acquisition of 5 new stationary RSUs and 15 new mobile RSUs to handle mobile use cases, which will subsequently be installed on CSA and winter service vehicles. In fact, mobile use cases have been the central focus of the Autobrennero project. Four of those were developed, two from the construction category and two from the special event notification category. The first saw the mobile RSU positioned on a winter maintenance vehicle, to warn oncoming road users that they would encounter such a vehicle in operation. The second staged a mobile construction site: those arriving were alerted to the presence, continuously updated in terms of geolocation, of the construction site. The last two cases involved emergency or priority vehicles. In one case, the antenna was installed on the ambulance or on the simulated patrol car that proceeded at high speed to reach a certain point, the location of the hypothetical emergency. The final case examined a hypothetical scenario where a mobile RSU was placed on a stationary vehicle at the expected point of an accident, broadcasting messages to approaching vehicles.
From a future perspective, equipping all cars with the necessary technology is expected to yield positive outcomes. Such messages would reverberate along the entire route, modulating speeds and adjusting travel times. As a result, the impact of any delays would be distributed over a larger area, preventing or diminishing the formation of queues.

Illustrations

Autostrada Brescia Verona Vicenza Padova - A4 Holding Group / AISCAT

Project title

C-Roads Italy 2

Project description

Autostrada Brescia Verona Vicenza Padova Spa took part in the C-Roads Italy 2 project, framed within the European "C-Roads" platform, with the aim of studying, implementing and testing C-ITS (Cooperative Intelligent Transport Systems) under real motorway and urban traffic conditions.
Specifically, C-Roads Italy 2 implemented a number of services including:

- GLOSA - Green Light Optimal Speed Advisory (technology that allows one to adjust the car speed to reach the traffic lights with a Green signal);
- Traffic signal priority request by designated vehicles - ambulances, police etc. - of the Green traffic signal);
- Signal violation/Intersection safety (system to alert the driver of a vehicle about to violate the red traffic light signal, or to alert the same driver when another vehicle is about to violate the red traffic light signal);
- Off and On street parking management & information;
- Traffic Information and Smart Routing;
- Weather condition warning.

In addition, a link was created between mobility and traffic management between the Municipality of Verona and Autostrada Brescia Verona Vicenza Padova.
On 23 November 2023, Autostrada Brescia Verona Vicenza Padova hosted the final event of the C-Roads Italy 2 and C-Roads Italy 3 projects entitled "C-ITS systems applied to urban and motorway mobility".
The results achieved by these experimentation phases make it possible to anticipate the future challenges of interconnected mobility and the achievable benefits in terms of improved road safety, greater transport efficiency, reduced energy consumption and fewer negative effects on the environment.

Illustration

Celtic Roads Group (CRG) Dundalk Western Bypass PPP Scheme / ITIA

Project title

M1 Motorway Public Lighting Reduction Project

Project's aim

Update existing public lighting infrastructure to comply with modern design standards, leading to a reduction in the number and type of columns & fittings and reduction in overall energy usage and carbon emissions.

Benefits of the project

Aligns with Irish Governments 'Climate Action and Low Carbon (Amendment) Act 2021'. The Act outlines ambitious air pollution targets. It commits Ireland to reducing greenhouse gas emissions by 51% by 2030 and achieving a climate neutral economy by 2050.
A reduced number of lighting columns provides significant improvements for network safety, reduced energy use and carbon emissions as well as reductions in the effects of light pollution.
The reduction in road lighting extents has resulted in a reduction of c340 tCO^2e per annum and c1.35GWh of energy use per annum.

Project timeline

Switch-off completed in May 2023. Subsequent removal of columns and infrastructure will follow a period of montoring for any safety concerns.

Project description

The project resulted in the switching-off of 667no. light columns and 53no. high-mast columns from a total stock of 768no. columns and 118no. high-masts. This represents a c80% and c50% reduction respectively in lighting stock.

Illustration

M1 PPP Carbon Reduction Measures for Road Lighting						
Column Height (m)	Unit	5m	10m	12m	14m	High Mast
Curent Lighting Population on M1 PPP Scheme	Number	3	98	643	24	118
Total Lighting Units to be removed	Number	0	82	561	24	53
Remaining Lighting population	Number	3	16	82	0	65
Lighting Units to be added	Number					
Ultimate final lighting population	Number	3	16	82	0	65
Percentage Reduction from Current	Number	0%	-84%	-87%	-100%	-45%
Column Wattage (8 lanterns per high mast)	Watts	150	150	250	250	3200
Total Reduction in Lamp Columns	Number	667				
Total Reduction in High Mast Columns	Number	53				
Total Reduction in High Mast Lanterns	Number	430				
Reduction in Power Consumption (KwH)	KWh	-	50,430	575,025	24,600	695,360
Additional Power Consumption for new units (Kwh)	Kwh	-	-	-	-	-
Annual Savings in Power Consumption						
Annual Burn Hours Per Year		4,100	hours			
Nett reduction in gWh and Kg of CO_2 per annum		1.35	gWh		339,529	Kg CO_2

Celtic Roads Group (CRG) M7/M8 Portlaoise Bypass PPP Scheme / ITIA

Project title

M7/M8 Motorway Public Lighting Reduction Project

Project's aim

Update existing public lighting infrastructure to comply with modern design standards, leading to a reduction in the number and type of columns & fittings and reduction in overall energy usage and carbon emissions.

Benefits of the project

Aligns with Irish Governments 'Climate Action and Low Carbon (Amendment) Act 2021'. The Act outlines ambitious air pollution targets. It commits Ireland to reducing greenhouse gas emissions by 51% by 2030 and achieving a climate neutral economy by 2050.
A Reduced number of lighting columns provides significant improvements for network safety, reduced energy use and carbon emissions as well as reductions in the effects of light pollution.
The reduction in road lighting extents has resulted in a reduction of c8 tCO^2e per annum and c0.027GWh of energy use per annum.

Project timeline

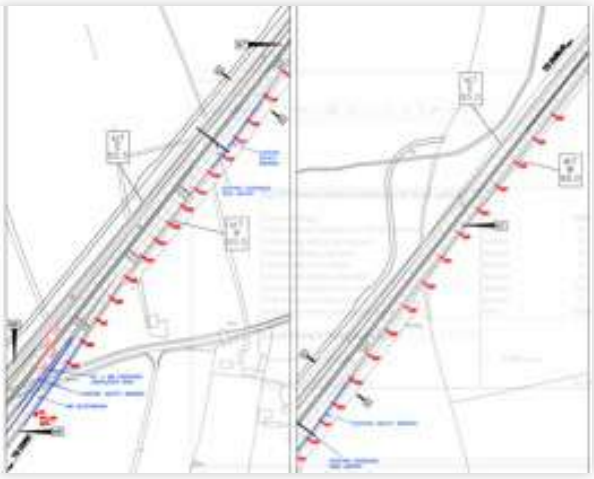
Switch-off was completed in November 2023. Subsequent removal of columns and infrastructure will follow a period of montoring for any safety concerns.

Project description

The project resulted in the switching-off of 26no. 250W light columns from a total stock of 195no. columns. This represents a c13% reduction respectively in lighting stock.

Illustration

Schematic of switched off lighting



Celtic Roads Group (CRG) Waterford Bypass PPP Scheme / ITIA

Project title

N25 Waterford Bypass Public Lighting Reduction Project

Project's aim

Update existing public lighting infrastructure to comply with modern design standards, leading to a reduction in the number and type of columns & fittings and reduction in overall energy usage and carbon emissions.

Benefits of the project

Aligns with Irish Governments 'Climate Action and Low Carbon (Amendment) Act 2021'. The Act outlines ambitious air pollution targets. It commits Ireland to reducing greenhouse gas emissions by 51% by 2030 and achieving a climate neutral economy by 2050.
A reduced number of lighting columns provides significant improvements for network safety, reduced energy use and carbon emissions as well as reductions in the effects of light pollution.
The reduction in road lighting extents has resulted in a reduction of c92 tCO^2e per annum and c1.046GWh of energy use per annum.

Project timeline

Switch-off was completed in October 2023. Subsequent removal of columns and infrastructure will follow a period of monitoring for any safety concerns.

Project description

The project resulted in the switching-off of 239no. light columns from a total stock of 475no. columns. This represents a c50% reduction respectively in lighting stock.

Illustrations

N25 PPP Carbon Reduction Measures for Road Lighting				
Column Wattage	Unit	150W	250W	400W
Current lighting Population on the N25 Scheme	Number	99	282	94
Total lighting units to be removed	Number	27	160	52
Remining lighting population	Number	72	122	42
Lighting units to be added	Number	0	0	0
Ultimate final lighting population	Number	72	122	42
Percentage reduction from current	Number	27%	56%	55%
Total reduction in lamp columns	Number	27	160	52
Reduction in Power consumption (KwH)	KWH	16808	166000	863200
Annual Saving in Power Consumption				
Annual burn hours per year	4150 hours			
Net Reduction in Co2 per Annum		92,347,875 g/CO2 in a year		

Autostrada Wielkopolska S.A. (AWSA) & Autostrada Wielkopolska II S.A. (AWSA II) / PAK

Project title

Rescue services exercises on Autostrada Wielkopolska

Project's aim

On Tuesday, 7th March rescue exercises were performed on the Autostrada Wielkopolska motorway, as a permanent part of cooperation with the services aiming at increasing the level of safety on the motorway and providing efficient and quick assistance in the event of an accident.

Benefits of the project

Thanks to such simulated actions, both motorway services, patrols as well as fire brigades, police and ambulance can practice response time, procedures and actions of individual rescue units. This is to enable efficient and effective reaction to help persons injured in the event of a real threat or an accident.

Project timeline

March 2023, June 2023

Project description

The exercise began with an arranged collision between passenger cars and a truck carrying hazardous substances. A complete information and action procedure was launched: starting from notifying the Operation and Maintenance Center by one of the witnesses of the event, through immediately transferring information to competent services, securing the scene, arrival of fire brigades from the stationing places, to providing assistance, neutralizing the threat and preparing traffic lanes for other users.

15 units of the State Fire Service took part in Tuesday exercises, a total of over 50 firefighters, including, among other, the Specialized Chemical and Ecological Rescue Group and Specialized Technical Rescue Group from the Poznań State Fire Service Headquarters.

State Fire Service units performed exercises on the Lubuskie section of our motorway as part of continuous cooperation between the road manager and rescue services. The purpose of the exercises is to improve safety on the motorway in terms of ensuring efficient and quick assistance in the event of an accident. This time the scenario assumed chemical and ecological rescue operations to eliminate the effects of a leak of a hazardous substance from a delivery vehicle.

Representatives of Autostrada Wielkopolska managing the A2 concession section meet monthly with representatives of the Operator and uniformed services operating on the A2 motorway, including the State Fire Service, the Police, the Road Transport Inspection, the National Revenue Administration and the Border Guard. They discuss and analyze untypical cases of the last 30 days in order to further improve cooperation in similar interventions, and also plan activities and cooperation for the next period.

Rescue drills are also organized from time to time to enable the employees of the motorway and the services to practice certain behaviors, test response speed and coordinate activities in a safe, simulated situation. Owing to such drills, in case of actual incident on the motorway, everyone knows what to do to help the injured persons efficiently and quickly.

Illustration

Website

- https://www.autostrada-a2.pl/en/news/exercises-of-rescue-services-exercises-on-autostrada-wielkopolska/
- https://www.autostrada-a2.pl/en/news/exercises-of-the-rescue-services-at-the-koryta-rest-and-service-area/

Social Media

- https://www.facebook.com/photo?fbid=589993579823613&set=pcb.589993643156940

ROADIS Infrastructure Holding / SEOPAN

Project title

Providing remedial education through skilling teachers, students and parents engagement

Project's aim

The project is to dedicate mental health counselor to help students overcome learning and motivational difficulties. It provides decent conditions for children learning and fosters their human development in a way that would not be possible without them.

Benefits of the project

Thanks to this initiative, there are close to 4,000 children, who live in families and populations with many needs, have access to quality education; teachers and infrastructure; STEM (science, technology, engineering and mathematics) and computer science skills; and mental health care programmes.

Project timeline

We established a long-standing collaboration with Khushi NGO. In 2022 we started with 3 schools and have expanded it in 2024 to reach the milestone of 10 schools in the states where ROADIS operates.

Project description

Children are always those who suffer most from the consequences of inequality or lack of opportunities. They are the most vulnerable group, and the ones we have the greatest responsibility to protect and help as a society. This is why a whole series of commitments are included in the UN's 4th SDG.
At ROADIS we always bear in mind that, when it comes to contributing to communities, not only can we not neglect the little ones, but they must be a fundamental part of our activity.
Since 2022, ROADIS has collaborated with **Khushi NGO** to participate in one of its education projects that called **Shikashantra Plus** programme.
In 2023 this initiative has been recognized at the 5th ESG Summit Awards in New Delhi for our work for the development of communities in India.

Illustrations

Website

- https://khushii.org/what-we-do/education/shikshaantra-plus/

Social Media

- https://www.linkedin.com/posts/roadis_khushii-ngo-for-children-child-welfare-activity-7132421119793319936-eE0m/?trk=public_profile_like_view&originalSubdomain=es

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

Project title

Autonomous driving

Project description

Driver-vehicle-environment interactions in road transport are based on the capabilities of the human driver, with the resulting consequences in terms of commitment (attention and fatigue of driving), use of time (devoted to driving) and safety (90% of accidents are exclusively or predominantly driver-related).
These characteristics of road transport are changing radically as a result of innovations and technological developments applied to vehicles, which support the driver and, in the future, will replace them.
Autostrade per l'Italia was the first concessionaire in Italy to allow autonomous-driving vehicles to circulate on its network for testing purposes. Autostrade per l'Italia is working alongside the Politecnico di Milano, a university that recently obtained authorisation for this type of test, supported by the Technical Support Observatory for Smart Roads and Connected and Autonomous-Driving Vehicles of the Ministry of Infrastructure and Transport.
The first road tests started in July on the A26 where the autonomous-driving car travelled 20 km in a section where there were no tunnels. At the end of October, the trial continued for another 30 km, again on the A26, this time also passing through the Valsesia tunnel.

Illustrations

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

Project title

Milano Green Door, an innovative modal interchange hub

Project description

Milano Green Door is an innovative initiative of Milano Serravalle - Milano Tangenziali S.p.A., located at the southern entrance to Milan. This green multimodal hub is designed to offer a wide range of mobility services while promoting sustainability and technological innovation.
The hub provides a spacious parking area complete with charging stations for electric vehicles, "park & ride" services featuring a fleet of shared electric cars, and designated spaces for parking bicycles and e-bikes. Additionally, an experimental autonomous-driving taxi service is being tested to provide rapid connections between Green Door and the city's popular destinations. The first floor offers users an information point with assistance for motorway services, meeting rooms outfitted for videoconferencing, and a refreshment zone with smart systems for buying fresh food. The interior spaces offer a panoramic view of the surrounding green environment, encouraging relaxation during breaks.
A room dedicated to the installation of state-of-the-art technology, the "Teleportation Room" provides users with the chance to engage with virtual assistants and partake in immersive virtual experiences. This feature enables one to virtually teleport to historical or tourist destinations, providing both educational and entertainment value.
Green Door stands out for its environmental sustainability, with the use of photovoltaic panels for renewable energy production, sound-absorbing barriers made of recycled materials and a modular, lightweight steel structure. In addition, LEED certification for building sustainability is actively being pursued.

Illustration

A35-Brebemi S.p.A. / AISCAT

Project title

"Arena of the Future", Testing of the ERS DWPT System

Project description

The testing of the dynamic charging system for electric vehicles is part of a process aimed at providing an important contribution to the decarbonisation of the transport sector and started in 2020. On that date, in fact, Brebemi launched a study with the Politecnico di Milano on the state of the art of technologies in the field of ERS electric mobility. This study was followed by a technical-scientific test launched with the support of industrial, scientific and institutional partners to create the conditions for development of the ERS DWT Dynamic power transfer system along motorway transport corridors.

After a careful design phase of the various components, what is now called the "Arena of the Future" was in constructed in 2021, an area on the A35-Brebemi motorway in which there is a 1,050-metre asphalt circuit that acts as a pilot track to study and test the DWPT charging system. In fact, the track's upper surface layers contain a system of coils powered by 1MW of electricity capable of zero-contact power transfer to special plates positioned under vehicles, allowing them to be charged not only statically, but also dynamically during their movement along the track.

In 2022, the track testing phase was launched, involving one light vehicle, a Fiat 500, and one heavy vehicle, an Iveco Bus.

The research objectives covered various areas and subjects of investigation:

1. Environment and Sustainability;
2. Safety: EMF and EMC with electromedical devices;
3. Public Works;
4. Installation Works;
5. Security

In 2023, research activities continued and a series of activities were carried out to update the plant's management software, and in particular, the activities required to power the "S-WPT" static induction recharge were carried out. Applications are also being verified and tested on other environments than purely motorway ones.

Autostrada Pedemontana Lombarda S.p.A. / AISCAT

Project title

Technology and Evolution of the Free Flow® System

Project description

Autostrada Pedemontana Lombarda was designed and developed with the Free Flow® toll collection system for barrier-free toll collection. It is a system that saves land, as it does not have physical barriers, and brings junctions closer together, a very useful feature in the case of motorway infrastructures that pass through densely urbanised areas, where users can take the route strictly necessary, even for short distances.
The Free Flow® toll collection system is characterised by "portals" covering the entire carriageway where detectors (cameras, classifiers, antennas, illuminators, etc.) are installed, which, as vehicles pass, register the number plate, attribute the relevant volumetric class and determine the toll.
Since its installation on the first sections of the Autostrada Pedemontana Lombarda (A36), as well as on the Como and Varese ring roads (A59 and A60), the technology has changed and evolved, becoming more precise and efficient. Payment systems have advanced due to the expansion of the electronic toll market and the increasing ease with which users handle electronic payments. Additionally, Autostrada Pedemontana has developed its own systems, positioning itself as an alternative to other service providers.
Today's challenge is one of continuous evolution, thanks to the enormous expansion of possibilities provided by the use of sensors and artificial intelligence, by more accurate number plate detection devices even in adverse weather conditions, which are also used to improve the safety of motorway users.
The Free Flow® system, implemented by Autostrada Pedemontana as the first of its kind in Italy, undergoes continual benchmarking against its international counterparts to unify standards and foster innovation in both systems and processes.
For the users, it represents a cultural change: the habit of the physical barrier, which coincides with the moment of payment, is eliminated. Users of electronic toll collection services benefit from the convenience and improvements offered by Free Flow®, while those accustomed to other payment methods, including cash, must adapt to a new system. It is a change that takes time, as it has not been fully established, but the increasing figures indicate a rising recognition and appreciation of the advantages that the system can offer.

Illustration

Olympia Odos S.A. / HELLASTRON

Project title

Smart street lighting system that adapts to real-time traffic data under safe driving conditions

Project's aim

Use of Artificial intelligence and machine learning in the service of road safety aiming at reducing energy consumption and associated emissions.

Benefits of the project

The adaptive lighting system, combined with the energy performance of the LED lights already fully implemented by Olympia Odos, will allow to reduce the highway's annual energy consumption for night lightening by up to 75%.

Project timeline

2023-2024

Project description

Olympia Odos becomes the first highway in Greece to implement a smart lighting system that adapts automatically the intensity of the highway's lightning to the level of traffic and to the quality of driving conditions.

This is a major step in Olympia Odos's environmental action plan, which aims to meet VINCI Highways' commitment to achieve operational Net Zero Emission on its network by 2050. The adaptive lighting system is among the best regional projects recognized by the VINCI Environmental awards.

The system uses Artificial Intelligence (AI) and machine learning to guarantee the highest safety standards. It determines the optimal lighting level by processing live data from multiple sources (traffic, weather, road incidents). Constant monitoring of the vehicle traffic at each interchanges allows the system to calculate the highways' total traffic and make forecasts for the next hour. When traffic decreases and predictive traffic remains low, the system will progressively reduce the lighting.

The system also includes real-time data from the highway's weather stations and cameras so as to immediately increase lighting in case of change in the driving conditions.

After the successful validation by the Safety Auditor, the system is put into trial operation on the Elefsina-Corinth section. It is expected that by next summer 2024, it will be implemented along the whole 8,100 light points of the highway.

The adaptive lighting system, combined with the energy performance of the LED lights already fully implemented by Olympia Odos, will allow to reduce the highway's annual energy consumption for night lightening by up to 75%. The adaptive lighting system has been developed in collaboration with the National Technical University of Athens (NTUA), with specialized partners from the University Community and the start-ups field.

Illustration

Website

- https://www.olympiaodos.gr/en/Grafeio-Tupou/Nea/Press-Releases/Eksupno-susthma-Prosarmos-tikou-Fotismou--ston-autokinhtodromo-Eleusina--Korinthos--Patra-/

Autostrada del Brennero S.p.A. / AISCAT

Project title

Autostrada del Brennero, a motorway for the territories: EUR 400,000 worth of equipment donated to Lilt

Project description

Autostrada del Brennero has donated to Lilt in Trento a mobile clinic and six ultrasound scanners to be used in the six provinces crossed by the route for a total value of about EUR 400,000: the aim is to promote a widespread and capillary culture of prevention, in all the territories crossed by the A22.

Autostrada del Brennero's attention to the territories and populations living along the A22 is manifested in many forms. The use of sound-absorbing asphalts, the installation of sound-absorbing barriers, and the careful design of the surrounding landscape are certainly concrete examples of this. But the support offered to earthquake victims in 2012 or the purchase of medical supplies for hospitals during the Covid-19 pandemic also serve the same purpose. Autostrada del Brennero is, after all, a motorway of the territories that wanted it and built it and that still make up 84.7% of its shareholders. It is in this context that the Company decided in 2023 to donate EUR 400 thousand to Lilt, the Italian League for the Fight against Cancer, for the purchase of a mobile outpatient clinic and six ultrasound scanners for the same number of Lilt associations in the provinces crossed by the route. This initiative represents an investment in the health of the communities residing in these regions.

Lilt, founded in 1922 and divided into 106 territorial associations, has as its main aim to spread the "culture of prevention". The project associated with Autobrennero is structured in two phases: a donation of EUR 191.6 thousand for acquiring a camper equipped with a portable ultrasound, and EUR 207.9 thousand allocated for the purchase of six ultrasound machines. The project is spearheaded by the Provincial Section of Trento Ets-Odv, which hosts the mobile clinic prepared for dispatch to the various provinces. The added value of the camper is certainly its ability to reach a wider segment of the population. The vehicle, traversing among the valleys and villages during awareness-raising events and national campaigns, will indeed promote the spread of a culture of primary prevention but also access to early diagnosis. On board, there will be actual visits and consultations for the potential detection of various neoplasms, including breast ultrasounds, skin and mole examinations, as well as urological and gynaecological assessments. The battle against cancer is significantly aided by prevention. Primary prevention involves individual awareness and the adoption of healthy lifestyles, while secondary prevention or early diagnosis enables the detection of cancer in its initial stages, allowing for less invasive treatments and interventions.

Lilt has consistently shown commitment to an initiative that is supported by Autobrennero's simultaneous donation of six ultrasound scanners. These scanners have been distributed and will be utilised in the Lilt offices located in the six provinces along the Autobrennero route. The high-performance equipment will broaden the range of Lilt services in areas where they are not yet available or facilitate the replacement of outdated devices.

Illustration

Autostrada Brescia Verona Vicenza Padova - A4 Holding Group / AISCAT

Project title

Synergies with the territory

Project description

Attention to the territory has always been a focal point for our business vision. That is why we work with our stakeholders to design and implement new works and infrastructures that can contribute to the economic development of the territories in which we operate. We also do this by choosing local suppliers, thus boosting the development of local businesses. We also support projects and initiatives of social interest.
In detail, the concessionaire's and the Group's commitment to supporting the local community took the form of a total of 19 initiatives in 2023. The primary focus of these initiatives is on key areas such as mobility and road safety, cultural integration, environmental conservation, and training and research. The intervention areas where we aim to have an impact through our initiatives include social welfare, arts and culture, socio-economic development, institutional strengthening, education, environmental protection, and the encouragement of active citizenship.
The Mass Impact report shows that for 2023, 44.1% of the initiatives are related to goal number 3 "Good health and well-being"; this is followed by goal number 9 "Industry, innovation and infrastructure" with 27.8% of the initiatives related to it, while 28.1% of the initiatives developed in 2023 are related to goal number 11 "Sustainable cities and communities".
In 2023, one of the initiatives supporting the territory was the participation in Tocatì, the International Street Games Festival, with the "Island of Sustainable Mobility" project. This project aimed to promote the fundamental principles of sustainable mobility, focusing on road safety, territorial integrity, and environmental conservation.
Throughout 2023, the longstanding partnership with the Arena di Verona Foundation was further strengthened during the 100th Arena Opera Festival. Autostrada Brescia Verona Vicenza Padova reaffirmed its commitment and support as a donor of the "67 Columns for the Arena di Verona" project.

Illustrations

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

Project title

Preparation of Türkiye's Highways' Intelligent Transportation Systems ready to use by Level 4 Autonomous Driving Feature Vehicles

Project's aim

The aim of the project is to prepare Turkey's highways for the integration of Level 4 Autonomous Driving feature vehicles by leveraging Intelligent Transportation Systems (ITS). This collaboration between ICA and Ford Otosan seeks to enhance traffic flow efficiency and safety by utilizing real-time data from highway sensor systems. Additionally, the project aims to support the algorithmic development of Level 4 autonomous trucks using data from these systems, creating a safer and more efficient driving environment.

Benefits of the project

- **Safety Improvements:** Significant reduction in driver-related accidents by utilizing autonomous driving technology.
- **Operational Efficiency:** 24/7 truck operation capability, leading to increased transportation efficiency.
- **Economic Impact:** Lower fuel consumption and emissions (up to 10% reduction), translating to economic benefits for logistics companies and end consumers.
- **Driver Shortage Solution:** Addressing the growing issue of finding qualified drivers in the logistics industry.
- **Environmental Sustainability:** Reduced emissions contribute to environmental sustainability.
- **Scalability:** Potential for widespread adoption by logistics, cargo, and freight companies, benefiting multiple stakeholders in the transportation sector.

Project timeline

2023-Continues

Project description

The project involves an ongoing collaboration between ICA and Ford Otosan to prepare Turkey's highways for Level 4 Autonomous Driving feature vehicles. The goal is to use real-time data from Intelligent Transportation Systems (ITS) to enhance the safety and efficiency of traffic flow. A test environment has been created where the data from sensor systems such as meteorological sensors, traffic sensors, and incident detection cameras are provided to a Level 4 autonomous truck. This data helps the truck to anticipate and respond to various driving conditions, accidents, and maintenance scenarios, ensuring safe and efficient operation. By doing so, the project aims to reduce driver-related accidents, address driver shortages in the logistics industry, and improve overall transportation efficiency. The knowledge and experience gained will contribute to developing a robust Cooperative Intelligent Transportation Systems (C-ITS) infrastructure, facilitating the broader adoption of autonomous driving technology in the logistics sector.

Illustrations

Website

- https://www.ysskoprusuveotoyolu.com.tr/

Social Media

- https://tr.linkedin.com/company/ica-yatirim-ve-isletme-as
- https://www.instagram.com/ysskoprusuveotoyolu/

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HUKA
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SUND & BAELT
Holding A/S

ASFA
Association professionnelle des Sociétés Françaises concessionnaires ou exploitantes d'Autoroutes et d'ouvrages routiers

HELLASTRON
Hellenic Association of Toll Road Network

AKA
Alföld Koncessziós Autópálya Zrt.

ITIA
Irish Tolling Industry Association

AISCAT
Associazione Italiana Società Concessionarie Autostrade e Trafori

PAK
Polskie Autostrady Koncesyjne

APCAP
Associação Portuguesa das Sociedades Concessionárias de Autoestradas ou Pontes com Portagens

PUBLIC ENTERPRISE ROADS OF SERBIA

DARS, d.d.
DRUŽBA ZA AVTOCESTE V REPUBLIKI SLOVENIJI, d.d.
(Motorway Company in the Republic of Slovenia)

SEOPAN
Asociación de Empresas Constructoras y Concesionarias de Infraestructuras

N.V. WESTERSCHELDETUNNEL

ICA

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Société Nationale des Autoroutes du Maroc

NDS
NÁRODNÁ DIAĽNIČNÁ SPOLOČNOSŤ,a.s.
(National Motorway Company)

Advisory Industry Partners

Kapsch TrafficCom AG

Kontron Transportation s.r.o.

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

ASECAP is the European Association of Operators of Toll Road Infrastructures, including motorways, bridges, tunnels and other toll roads. They operate, maintain, manage a network of more than 81,300 km across 18 countries with a long-term vision that ensures highest quality standards to make the road infrastructure safest targeting vision zero fatality and moving toward net zero carbon thank to the user/payer principle providing sustainable financing. ASECAP has also 2 Advisory Industry Partners.

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