

4th ASECAP SUSTAINABILITY FORUM

15 December 2025
Rome, Italy



Hosted by



Organized by





ESA4 PROJECT

**How a resilient motorway
infrastructure must evolve to adapt
to climate risks and mobility shifts**

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A4 Holding - an Abertis Company

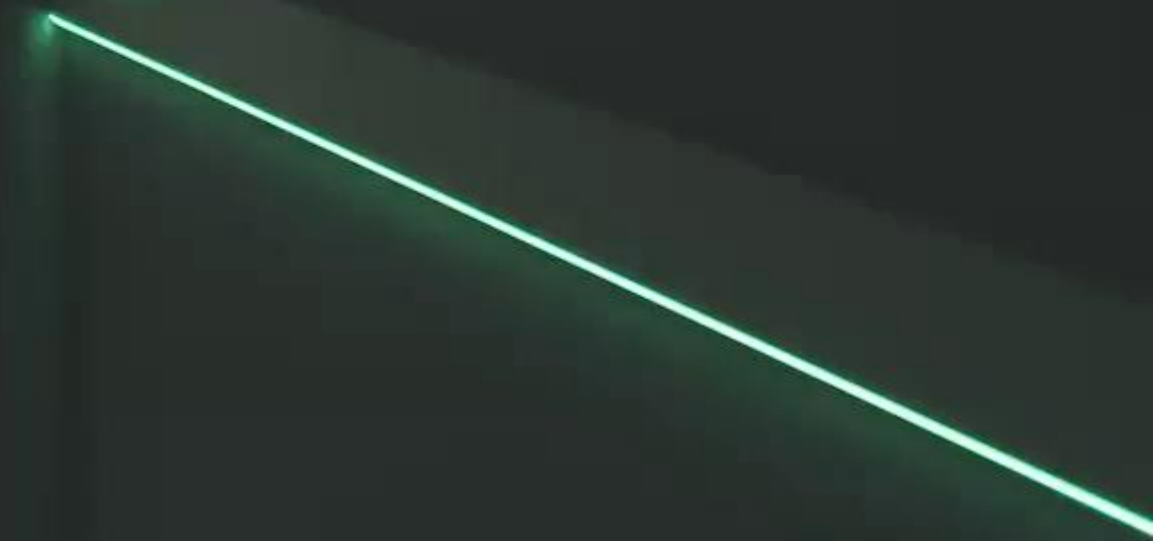


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A441000000
di Venezia



Centro
Operativo
V...tà



ESA4: the Sustainable Evolution of the A4 motorway from Brescia to Padova

1962

Opening of the A4 Brescia-Padova
The motorway is inaugurated, quickly becoming a key corridor for people and goods.

2000s-2020s

Traffic Saturation and Emerging Challenges
Daily traffic exceeds 150,000 vehicles on some sections. Level of Service D (critical) for 15% of daytime. Increasing congestion, environmental concerns, and climate risks highlight the need for a new approach.

2022-2023

ESA4 Project Development
Feasibility studies, stakeholder engagement, and design of a new model: not just more lanes, but a sustainable, resilient, and smart motorway. DOCFAP submitted to the Ministry of Infrastructures.

1970s-1990s

First Expansions
Third lane added to respond to growing traffic.

2021-2022

Stakeholder Engagement Begins
Local authorities, businesses and communities express the urgent need for sustainable solutions. Environmental and climate resilience become central themes.

2025

The Next Step
ESA4 is proposed as a strategic project to address future mobility, climate, and community needs along the A4 corridor.



ESA4 - The Origins: From Traffic Saturation to Sustainable Solutions



A motorway under pressure

- The A4 Brescia–Padova is one of the most congested stretches in Italy and Europe.
- Daily, thousands of vehicles—families, commuters, goods—face delays, stress, and increased accident risk.
- By 2040, without intervention, over a third of the day would see critical congestion, with unacceptable service levels.



The search for a solution

- ESA4 Project (Evoluzione Sostenibile della A4 Brescia e Padova) was born from the need to guarantee safe, efficient, and sustainable mobility for the future.
- The project is the result of listening to local communities, authorities, and businesses, all calling for a new model of infrastructure.
- The goal: not just more lanes, but a smarter, greener, and more resilient motorway.

LOS – Level Of Service / Livello di servizio

CONDIZIONI BUONE /OTTIMALI



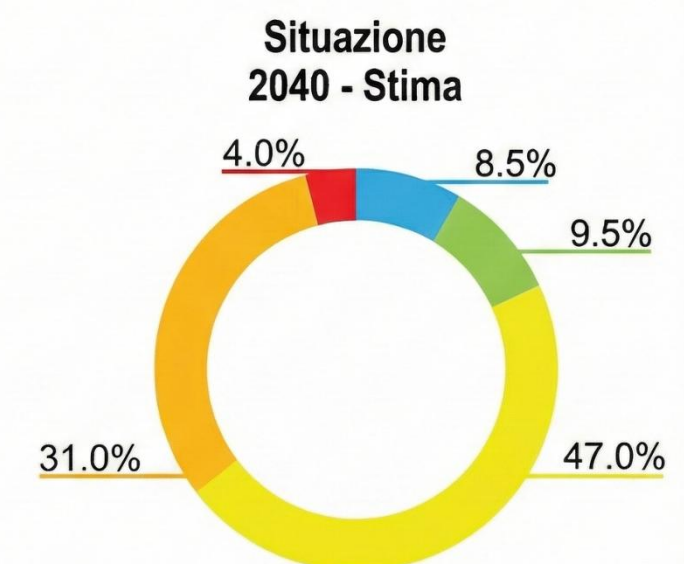
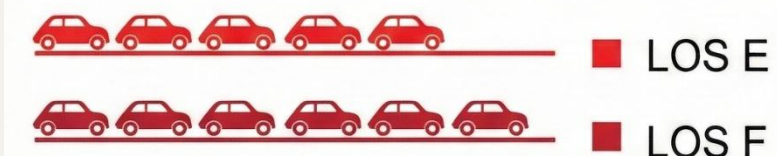
CONDIZIONI ACCETTABILI



CONDIZIONI CRITICHE



CONDIZIONI MOLTO CRITICHE

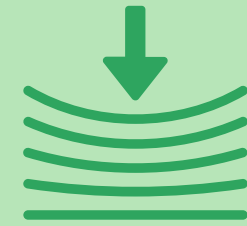


ESA4 - Objectives



Manage traffic flows efficiently

- Optimize current and future traffic conditions
- Improve user safety
- Facilitate connections with the surrounding territory



Be a future-proof infrastructure

- Capable of managing the effects of climate change
- Contribute to the resilience of the territory, communities, and local economies



Adopt innovative smart mobility technologies

- Address the challenges of future mobility
- Integrate traditional environmental mitigation with territorial enhancement



Propose a new model of infrastructure

- Efficient
- Sustainable
- Resilient
- A driver of development for the regions it crosses

ESA4 – Design Principles



Material Circularity

Use recycled and recyclable materials; design for reuse and end-of-life recovery.



Energy Efficiency & Renewables

Integrate solar, wind, and other clean energy sources; reduce energy consumption.



Climate Resilience

Design to withstand floods, heatwaves, and seismic events; ensure long-term durability.



Scalability & Flexibility

Modular solutions that adapt to future mobility needs and traffic growth.



Critical Redundancy

Backup systems for essential functions to guarantee operational continuity.



Smart Monitoring & Data-Driven Operation

IoT sensors and predictive analytics for proactive maintenance and safety.



Cybersecurity-by-Design

Protect data and infrastructure from cyber threats; implement secure architecture.



Technological Interoperability

Use standards to ensure compatibility with future systems.



Inclusion, Accessibility & Co-Design

Usability for people with different abilities, ages, or socio-economic contexts; co-design with communities and stakeholders.



Positive Environmental & Social Impact

Go beyond mitigation: create green spaces, enhance biodiversity, and deliver community benefits.

ESA4 – Approach

What Has Been Done

- **We involved** local authorities, citizens, and businesses before starting the design phase.
- We used a **digital platform** to collect ideas and needs from stakeholders.
- Every decision was made **through open dialogue and transparency**.
- **Stakeholder feedback** led to improvements in junctions, emergency lanes, ecological corridors, and service areas, enhancing safety, accessibility, and sustainability.
- The **participatory process** took place over four phases and two years, ensuring all voices were heard.



APRIL/MAY 2022
Interviews with economic categories and interest representatives

37 ORGANIZATIONS
21 INTERVIEWS



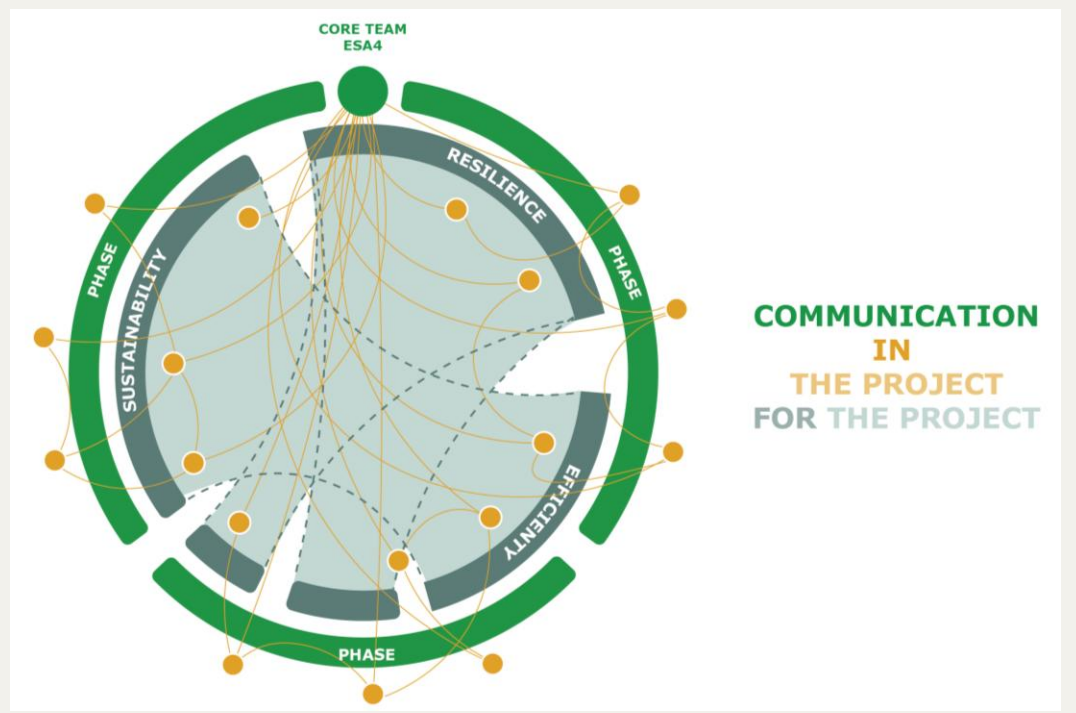
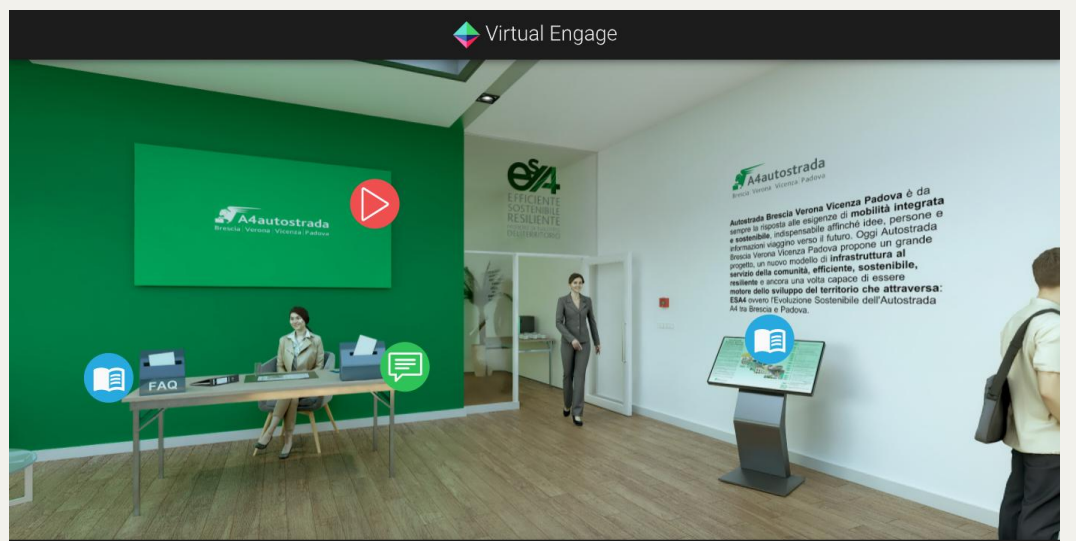
JULY/SEPTEMBER 2022
Provincial roundtables with local territorial bodies and local administrations

2 REGIONS
21 PROVINCES
132 ADMINISTRATIONS/ENTITIES

<p>20/07 Province of Paduva</p> <p>34 PARTICIPANTS 33 ADMINISTRATIONS</p>	<p>20/09 Province of Verona</p> <p>78 PARTICIPANTS 26 ADMINISTRATIONS</p>
<p>37/07 Province of Vicenza</p> <p>38 PARTICIPANTS 33 ADMINISTRATIONS</p>	<p>05/10 Province of Brescia</p> <p>55 PARTICIPANTS 37 ADMINISTRATIONS</p>



JUNE 2023
Interregional seminar:
• Presentation of first project results
• Start of second listening phase



ESA4 – Performance Indicators & Measurable Results



ESA4 is designed to deliver smoother, safer mobility and measurable sustainability benefits:

- **Mobility:** Targeting over 99% of time in optimal or acceptable traffic conditions.
- **Environment:** Aiming for at least 15% less CO₂ emissions compared to traditional projects.
- **Waste:** Project goal of 95% of demolition and construction materials to be recovered or recycled.
- **Community:** Expected creation of 85,000 jobs and expanded digital services for travelers.




Continuous Measurement & Transparency

- Every impact will be tracked and reported, from traffic flow to CO₂ reduction and waste recycling.
- Results will be shared openly with stakeholders and communities.



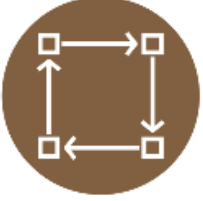




Sustainability Standards & Certification

- ESA4 aims for Envision certification—an international mark of excellence in sustainable infrastructure.
- Alignment with EU Taxonomy and best practices is a project commitment.



ENVISION

	Quality of life
	Leadership
	Resource Allocation
	Natural World
	Climate & Resilience

THANK YOU

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