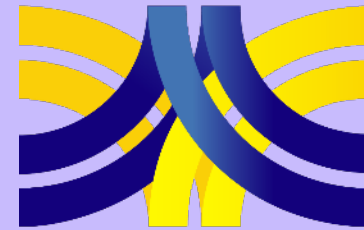


49th ASECAP DAYS

*Decarbonizing Road Infrastructure : Challenges,
Perspectives and Actions in Tough Economy*

ASECAP DAYS

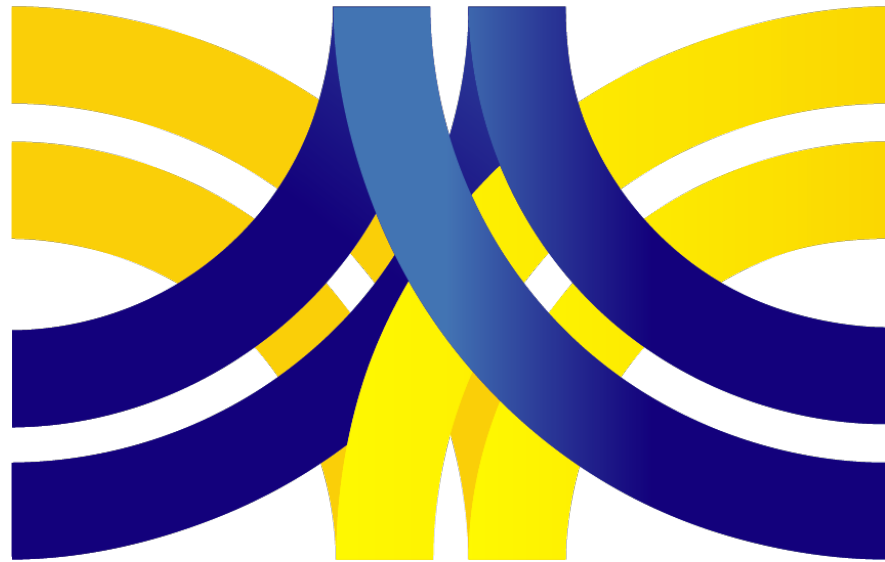


BRUSSELS 2022



Hotel Marriott Grand Place, Brussels
24 – 25 November 2022

ASECAP DAYS



BRUSSELS 2022

“PASSANTE DI BOLOGNA”, BOLOGNA BYPASS PROJECT: KEY IMPROVEMENTS TOWARDS SUSTAINABILITY TO THE CITY’S MOTORWAY CONNECTOR SYSTEM

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Sustainable Development Global Strategy

Turning a need into an opportunity



GREEN DEAL
and the EU Taxonomy and Recovery and Resilience Facility (RRF)

"Sustainable development is...
... development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Brundtland Commission on Environment and Development Report 1987 - UN

In the decision-making process underlying sustainable infrastructure design, the question:

«ARE WE DOING THE PROJECT RIGHT?»

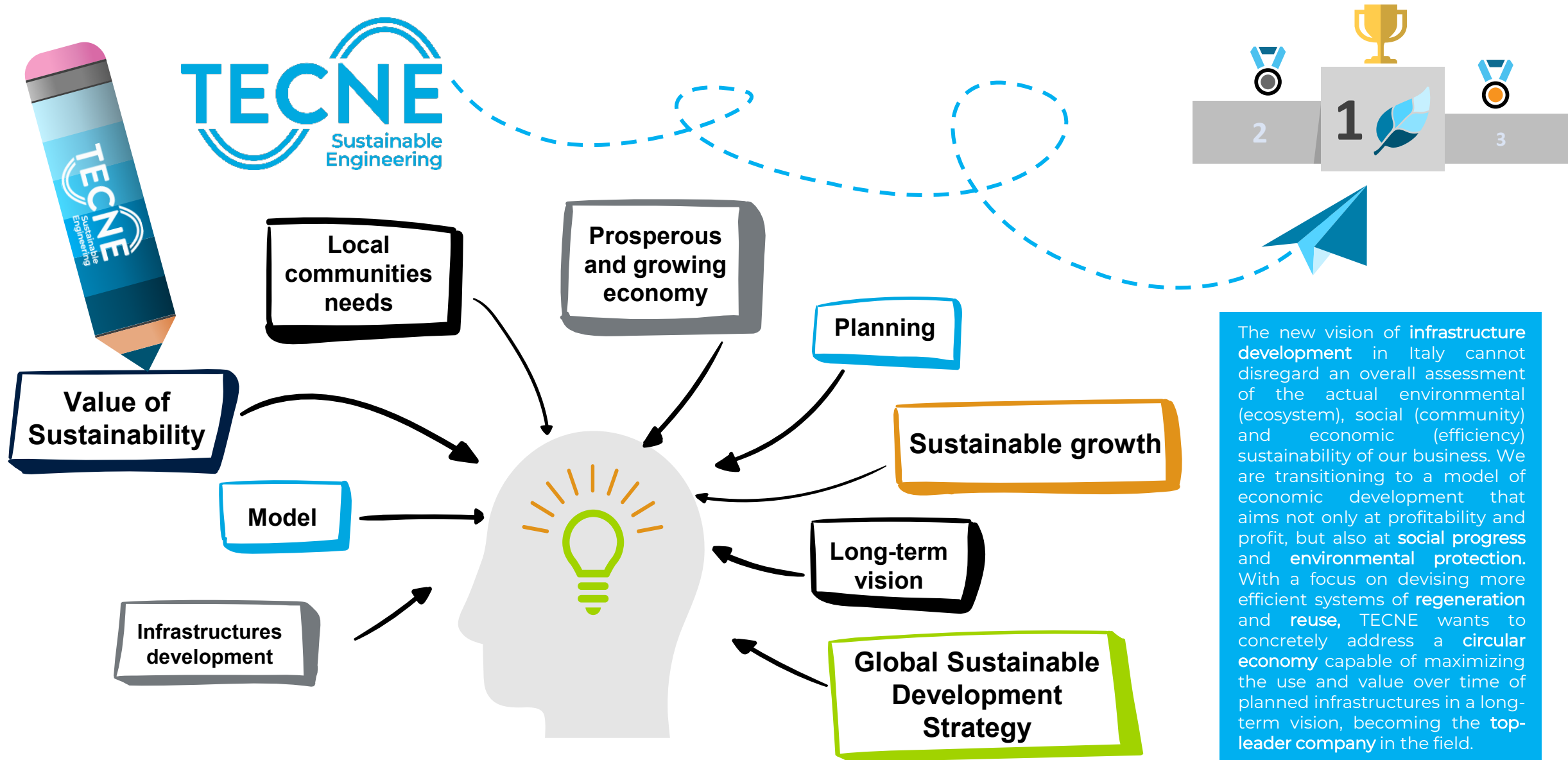
must necessarily be implemented with a new and more important objective:

«ARE WE DOING THE RIGHT PROJECT?»

Sustainability hence it is not only an *essential driver throughout the development of the «RIGHT» projects*, but it becomes itself a **planning and design tool** to be held and to be shared with **local communities** in order to **create value** and **opportunities for future generations**.

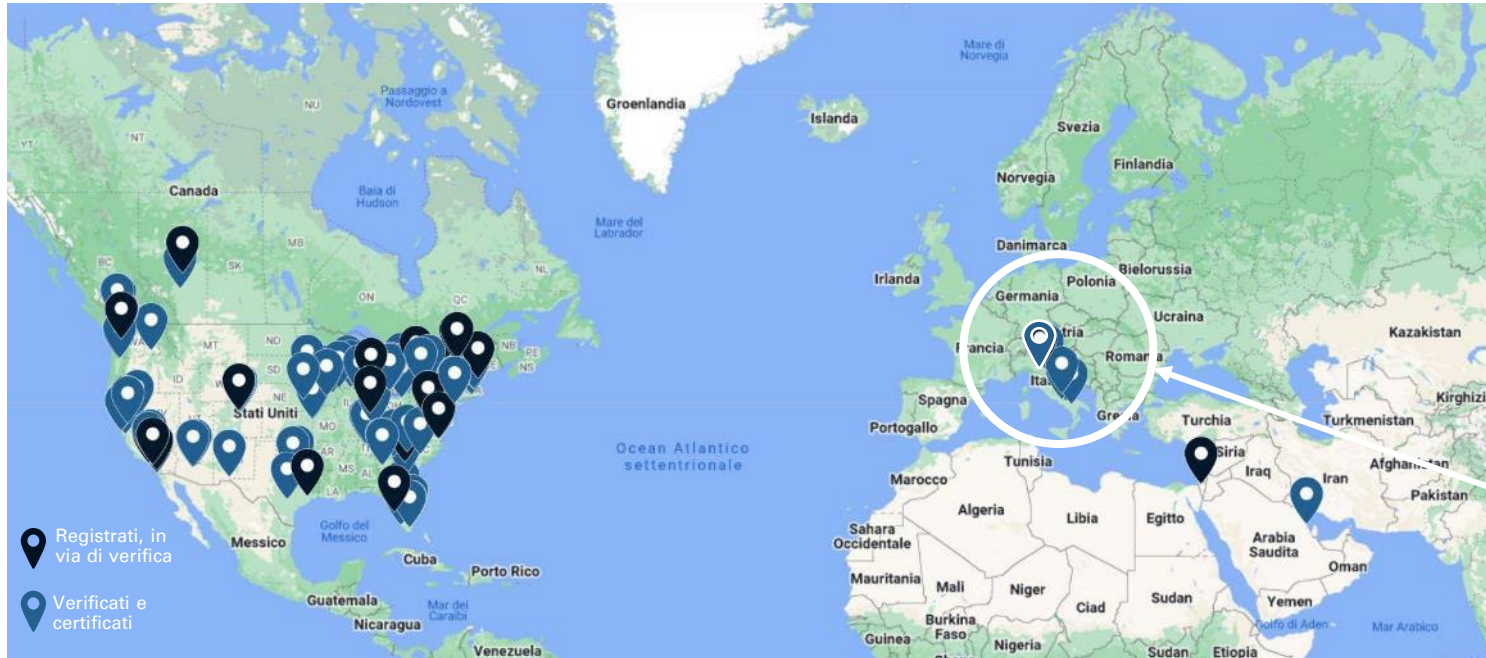
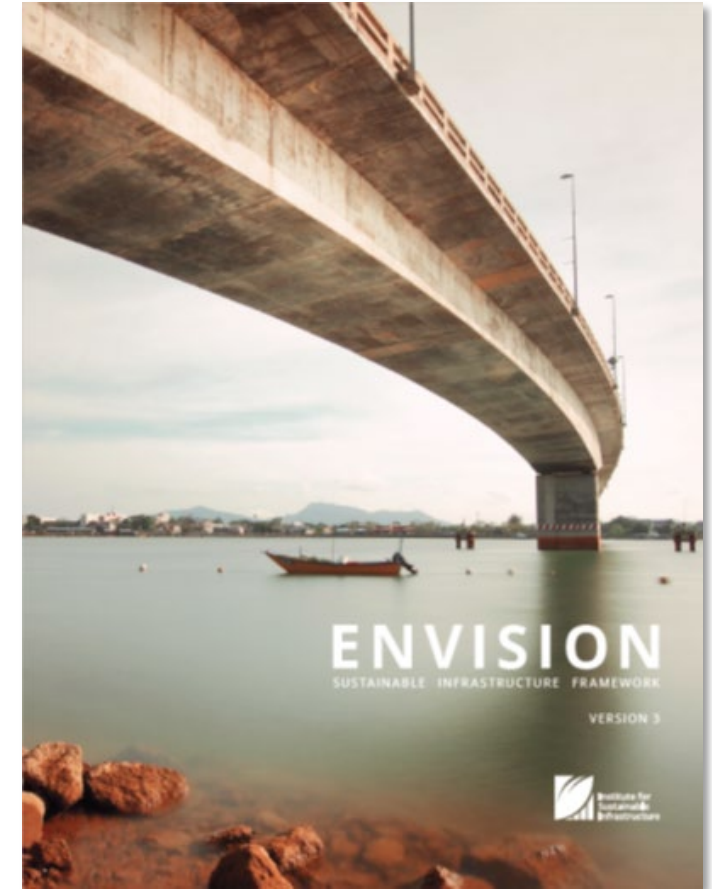
Sustainable Engineering

Sustainability as an opportunity and an unbiased corporate approach



Standard for the definition of a sustainable infrastructure

How ENVISION was born - Certified projects



Envision is represented through *Envision Italia* by ICMQ that acts as support to ISI/Envision on national territory (training and verification).

Sustainability & resilience indicators

ENVISION framework: categories, subcategories and scores

Quality of Life - Max Score: 200



Wellbeing

- Improve Community Quality of Life
- Enhance Public Health & Safety
- Improve Construction Safety
- Minimize Noise & Vibration
- Minimize Light Pollution
- Minimize Construction Impacts

Mobility

- Improve Community Mobility & Access
- Encourage Sustainable Transportation
- Improve Access & Wayfinding

Community

- Advance Equity & Social Justice
- Preserve Historic & Cultural Resources
- Enhance Views & Local Character
- Enhance Public Space & Amenities

Natural World - Max Score: 232



Siting

- Preserve Sites of High Ecological Value
- Provide Wetland & Surface Water Buffers
- Preserve Prime Farmland
- Preserve Undeveloped Land

Conservation

- Reclaim Brownfields
- Manage Stormwater
- Reduce Pesticide & Fertilizer Impacts
- Protect Surface & Groundwater Quality

Ecology

- Enhance Functional Habitats
- Enhance Wetlands & Surface Water Functions
- Maintain Floodplain Functions
- Control Invasive Species
- Protect Soil Health

TOTAL MAX
SCORE: 1000



Climate & Resilience- Max Score: 190



Emissions

- Reduce Net Embodied Carbon
- Reduce Greenhouses Gas Emissions
- Reduce Air Pollutant Emissions

Resilience

- Avoid Unsuitable Development
- Assess Climate Change Vulnerability
- Evaluate Risk & Resilience
- Establish Resilience Goals & Strategies
- Maximize Resilience
- Improve Infrastructure Integration

Leadership - Max Score: 182



Collaboration

- Provide Effective Leadership & Commitment
- Foster Collaboration & Team
- Provide for Stakeholder Involvement
- Pursue Byproduct Synergies

Planning

- Establish a Sustainability Management Plan
- Plan for Sustainable Communities
- Plan for Long-Term Monitoring & Maintenance
- Plan for End-of-life

Economy

- Stimulate Economic Prosperity & Development
- Develop Local Skills & Capabilities
- Conduct a Life-Cycle Economic Evaluation

Resource Allocation- Max Score: 196



Materials

- Support Sustainable Procurement Practices
- Use Recycled Materials
- Reduce Operational Waste
- Reduce Construction Waste
- Balance Earthwork On Site

Energy

- Reduce Operational Energy Consumption
- Reduce Construction Energy Consumption
- Use Renewable Energy
- Commission & Monitoring Energy Systems

Water

- Preserve Water Resources
- Reduce Operational Water Consumption
- Reduce Construction Water Consumption
- Monitor Water Systems

Mitigation Hierarchy

Project strategies for sustainability and ENVISION rating



In taking practical steps toward sustainability, it can be difficult to discern how to prioritize options or even take the first step. Many sustainability best practices have roots in a mitigation hierarchy. For example, the “3 Rs” of material use include: Reduce, Reuse, Recycle; and these practices are prioritized in this specific order to optimize how materials are used.

Expanding this example to a more general hierarchy becomes:

- **Offsetting:** Measures taken to **compensate** for any residual adverse impacts
- **Abatement:** Measures taken to **rehabilitate** degraded ecosystems
- **Minimization:** Measures taken to **reduce** the duration, intensity or extent of **impacts** that cannot be avoided
- **Avoidance:** Measures taken to **avoid** creating **impacts** from the outset
- The Envision framework applies this hierarchy across a range of topics.

BETTER STRATEGY



Third-party verification and four AWARDS levels



Passante di Bologna

Project details



Passante di Bologna

A glimpse of the project: bridges



CURRENT STATE



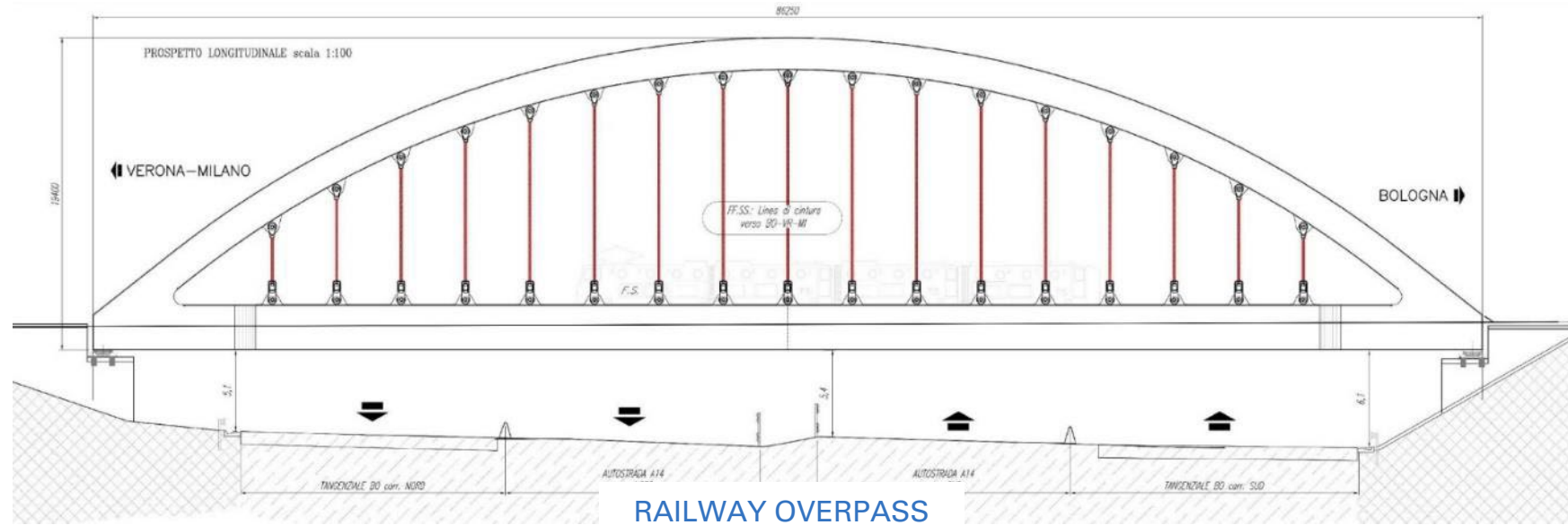
PROJECT VIEW



RENO BRIDGE (CGI)

Passante di Bologna

A glimpse of the project: bridges



VIA BENAZZA OVERPASS (CGI)

Passante di Bologna

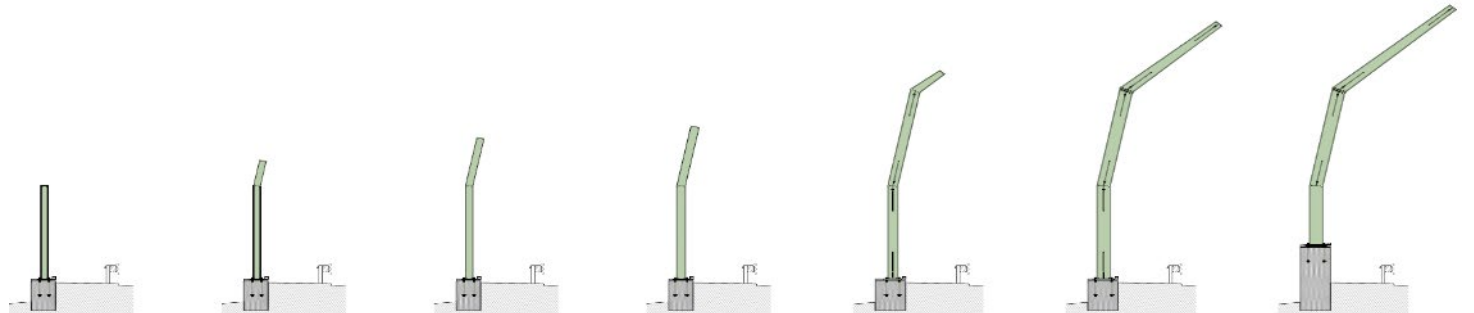
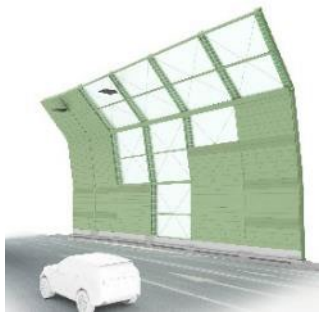
A glimpse of the project: acoustic mitigation and urban regeneration



OPAQUE / TRANSPARENT ACOUSTIC BARRIER (CGI)



MESHED OPAQUE ACOUSTIC BARRIER and URBAN UNDERPASS (CGI)



BROAD COLLECTION OF MATERIALS AND HEIGHTS FOR THE ACOUSTIC BARRIERS

Passante di Bologna

A glimpse of the project: urban implementation with San Donnino Tunnel



CURRENT STATE



PROJECT VIEW



SAN DONNINO PLAZA (CGI)

Passante di Bologna

A glimpse of the project: urban implementation and public spaces regeneration



SAN DONNINO PARK

UNDERPASS
REDEVELOPMENT



Passante di Bologna

Aerial view – state of art



Design Award

With the support of Tecne, ASPI is the first motorway operator in Europe that has obtained the ENVISION certification



The certification process consists of two steps:


DESIGN AWARD

Platinum certification 

ENVISION Verification

Iterative verification process 

Preliminary Assessment

First performance recognition 



Design phase
Certification of the design project

Design Award

to be confirmed in the next phase



Post-Construction phase
Certification of the infrastructure when completed

Final Award



General assessment

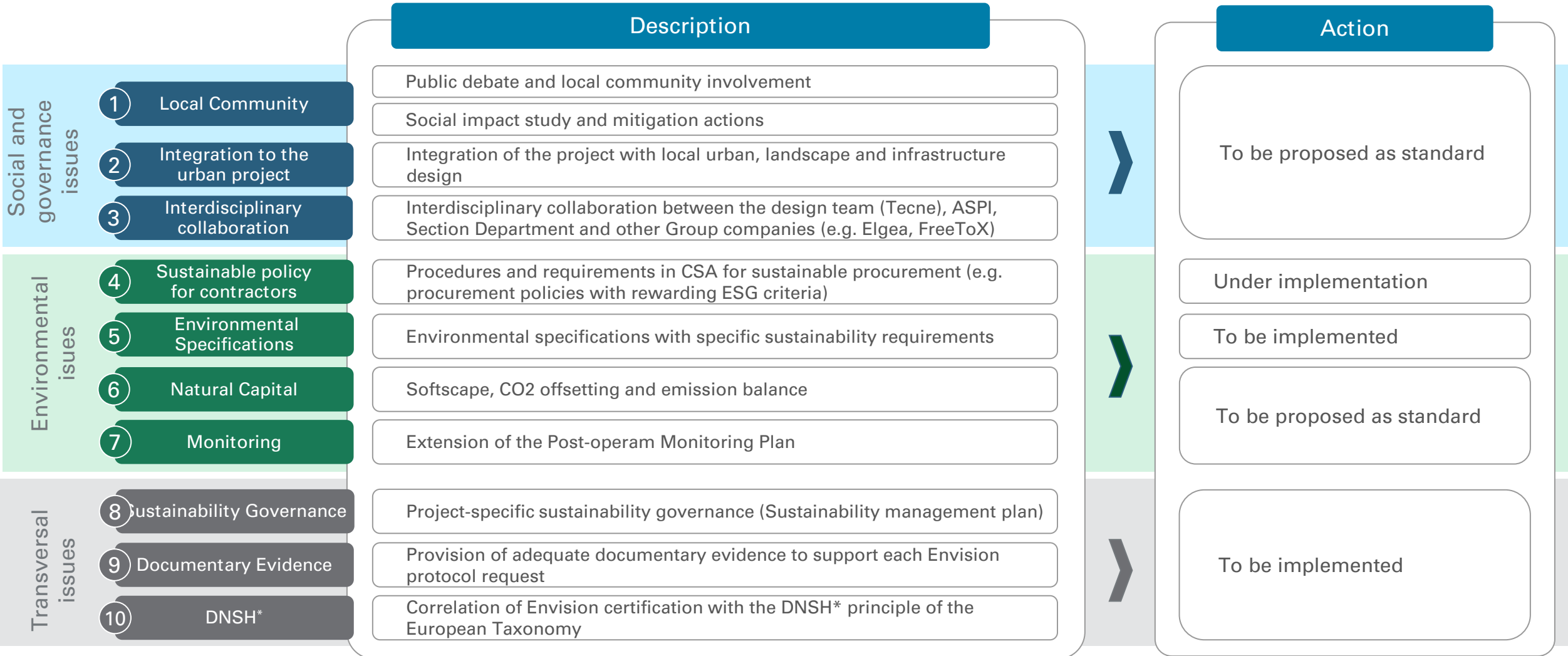
The Passante di Bologna Project achieved an overall score of 58%, that brings to Platinum Award

	Category	Score (%)	Strengths	Possible improvements
Social and Governance issues	Quality of Life	198 / 200 99%	<ul style="list-style-type: none"> Stakeholder Involvement (Public debate) Environmental impact study and mitigation strategies Social impact study and mitigation strategies Urban integration Safety and AI technology (ARGO, SCADRA, ecc) 	
	Leadership	116 / 182 64%	<ul style="list-style-type: none"> Interdisciplinary collaborative teamwork Cost-benefit analysis. Group strategies and commitments on ESG issues 	<ul style="list-style-type: none"> Sustainability management plan Local training courses. Synergy with third parties
Environmental issues	Resource Allocation	68 / 196 35%	<ul style="list-style-type: none"> Waste management (construction and operational) Renewable energy Tender criteria integrated with sustainability requirements 	<ul style="list-style-type: none"> Green material procurement LCA e LCCA² Energy self-sufficiency Commissioning and monitoring
	Natural World	115 / 194 59%	<ul style="list-style-type: none"> Green areas and planting (Natural Capital)¹ Return to natural state of developed areas Preservation and improvement of existing habitats and undeveloped areas 	<ul style="list-style-type: none"> Reuse of water resources (during construction and operation)
	Climate & Resilience	57 / 190 30%	<ul style="list-style-type: none"> Risk assessment and vulnerability analysis. CO2 emission balance and CO2 compensation (Natural Capital)¹ 	<ul style="list-style-type: none"> Climate change adaptation and resilience strategies Embodied CO2 calculation(LCA²) Reduction of CO2 emissions during operation
	Total (Platinum)	554 / 962 58%		

1. Natural Capital: see *Deep Dive* slide
 2. LCA: Life Cycle Assessment; LCCA: Life Cycle Cost Analysis

Lesson Learned

Areas of improvement/implementation



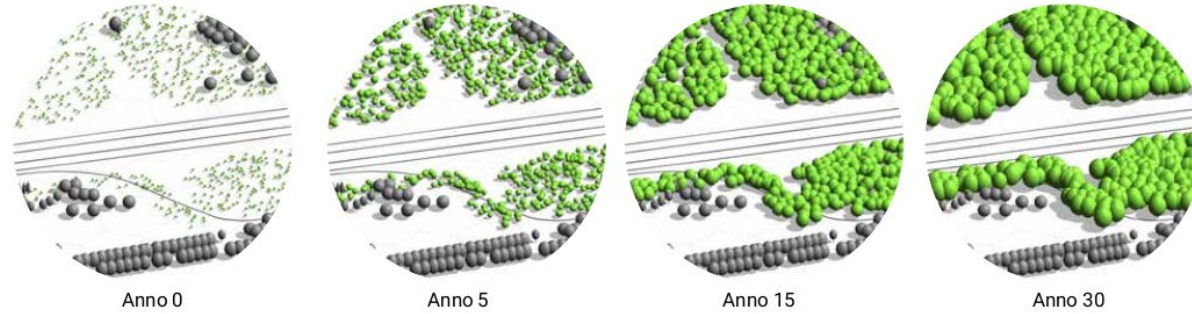
* DNSH: Do Not Significant Harm

Deep Dive: Natural Capital

Improving biodiversity and ecosystem services

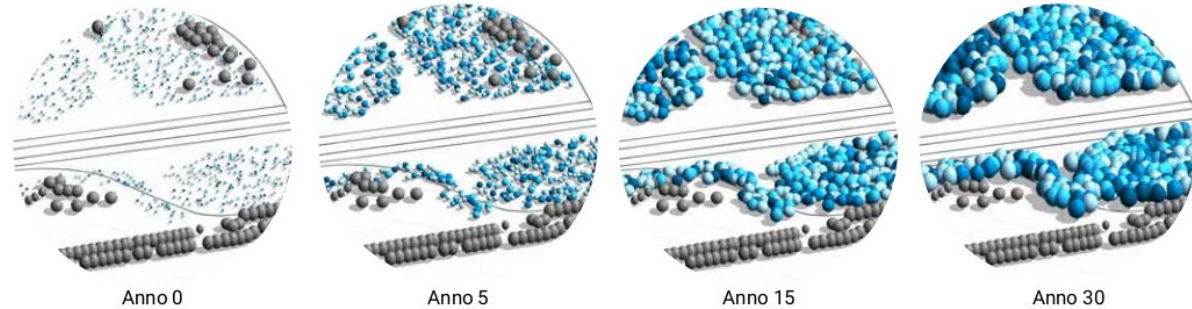


PREVISIONE DI ACCRESCIMENTO DINAMICO DEL CAPITALE NATURALE DELLE FORESTE



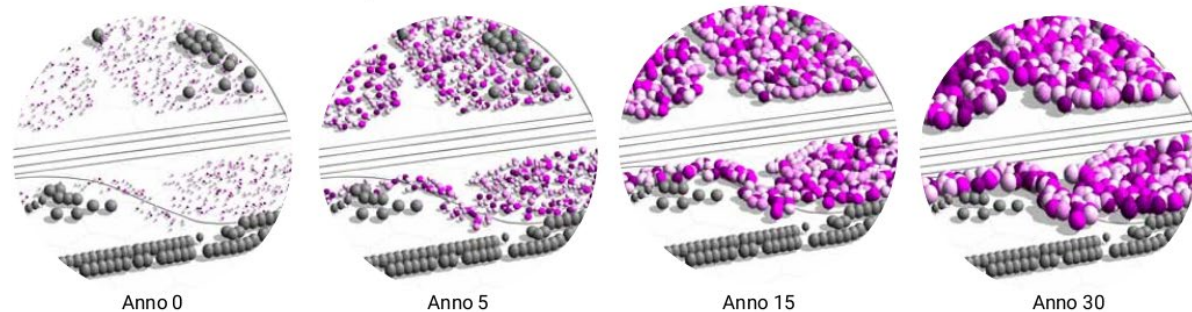
+ 1.743.700 mq
di Copertura vegetale

PREVISIONE DI ACCRESCIMENTO DINAMICO DELLA PRODUZIONE DI OSSIGENO

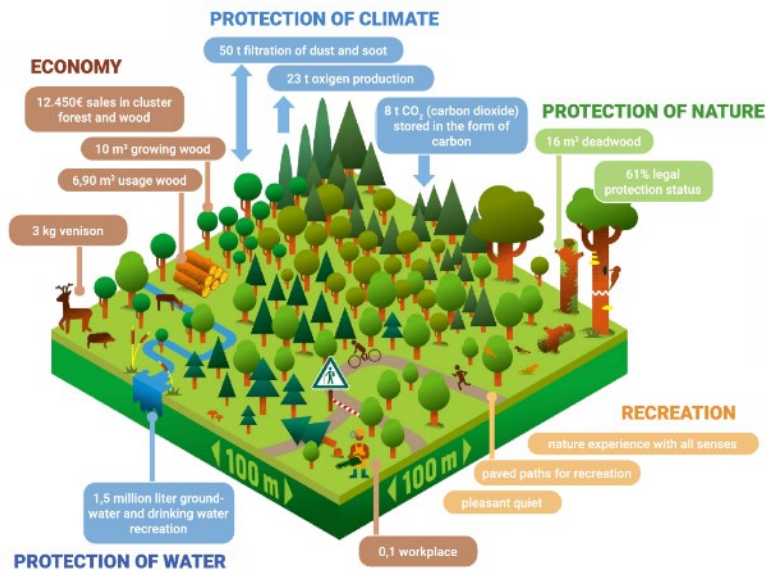


+ 500.000 Kg/y
di Ossigeno prodotto

PREVISIONE DINAMICA DEL SEQUESTRO DI CARBONIO



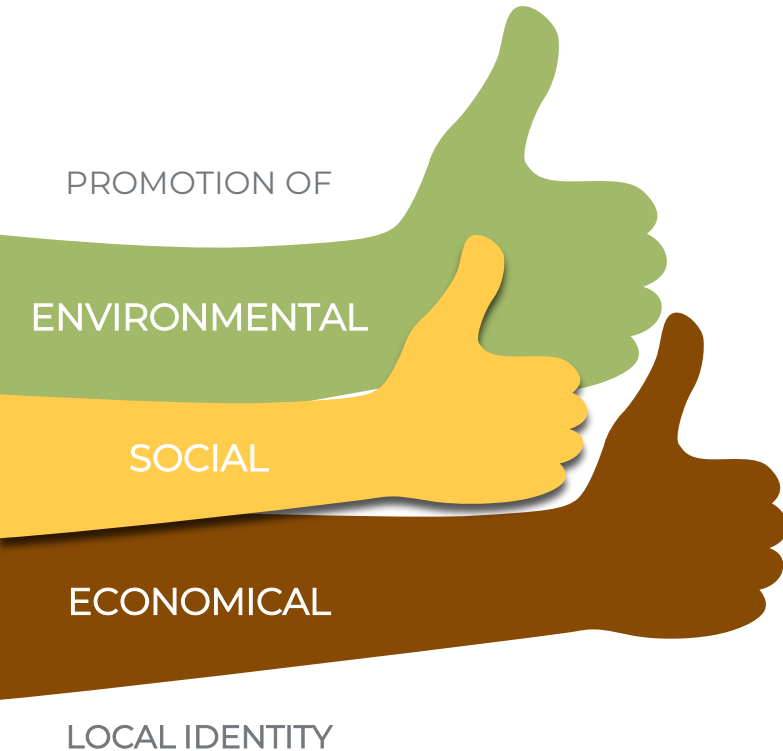
+ 695.000 Kg/y
di Carbonio sequestrato



TECNE Sustainable Engineering Targets

Infrastructure as a generative element of new dynamics of sustainable development

The “RIGHT” approach as an opportunity for a corporate **sustainability strategy** characterized by:

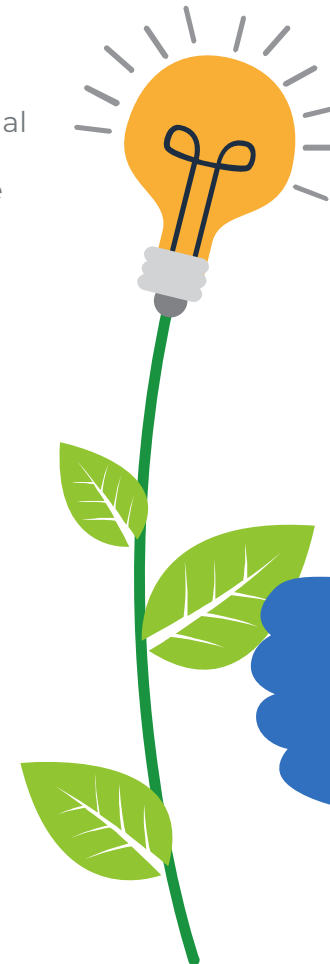


Sustainable growth over time, with an entrepreneurial action aimed at achieving long-term economic and commercial results, reducing the risks related to the volatility and instability of the economic and institutional environment and reducing the risks associated with a planning focused exclusively on short-term objectives.

Respecting people’s value and opinion, fostering a constant development of skills and professionalism and encouraging recognition of the individual contribution to the success of the projects.

Sensitivity to the social, cultural and natural context, enhancing a sustainable transformation and an economical growth in local context and communities impacted by the projects, providing critical services and addressing local needs.

Reduction of direct and indirect (environmental, social and economical) impacts, related to road infrastructures by taking measures to maximize users safety, limit the consumption of soil, energy, water, and to reduce greenhouse gas emissions to facilitate the ecological transition, promoting resilience strategies.



TRIGGERING NEW
SUSTAINABLE
DEVELOPMENT
OPPORTUNITIES FOR
A TERRITORY MORE

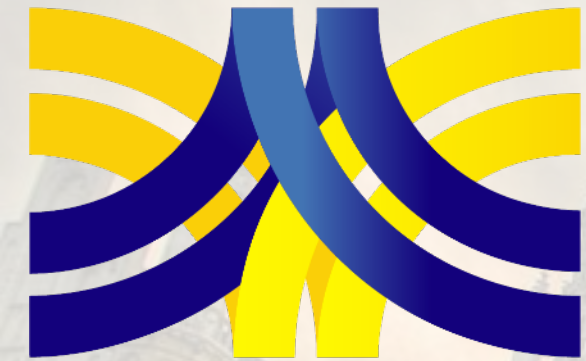
ACCESSIBLE

INCLUSIVE

INTEGRATED

The **design** of *major projects* (such as the Passante di Bologna and the Gronda di Genova) and the “**regenerative maintenance**” of *existing motorway assets*, play a strategic role within the global transformation in act: we, as designers, promote the conceptual shift in the transformation taking place through the definition and adoption of **more sustainable design criteria, with transparent actions and objectifying data on sustainability, highlighting project efforts throughout environment, innovation, and mobility.**

ASECAP DAYS



BRUSSELS 2022

**THANK YOU FOR
YOUR ATTENTION**

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