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BOOK OF PROCEEDINGS

INTERNATIONAL CONFERENCE

SUSTAINABLE MOBILITY

5-6 MARCH

2026

The INTEC International Conference brings together academics, researchers, policymakers and industry experts to discuss innovative approaches and collaborative solutions for a sustainable future in engineering and mobility. The conference will be hosted by POLIS University in Tirana, Albania, and co-organized by partners from across the EU as part of the Erasmus+ CBHE Project 101081873-ERASMUS-EDU-2022-CBHE-STRAND-2.

INTEC International Engineering Competence Centres to push sustainable mobility development in Albania and Montenegro
Project Reference: 101081873-ERASMUS-EDU-2022-CBHE-STRAND-2

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Project Partners:

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TABLE OF CONTENTS

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38

OPTIMIZING PUBLIC TRANSPORT CORRIDORS USING AI-BASED SCENARIO MODELLING: A CASE STUDY ON TIRANA'S RING ROAD

DOI: 10.37199/c41001038

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Abstract

European cities experiencing rapid growth face mounting pressures to strengthen the performance, reliability, and environmental integrity of their public transport systems. Tirana is no different; escalating travel demand, a limited street network, and fragmented modal integration have revealed the shortcomings of traditional planning techniques, particularly during the initial decision-making phases when service concepts and corridor alignments are determined. To address these challenges, digital modelling platforms and artificial intelligence offer new opportunities for systematically and evidence-based examination of complex mobility issues. In Tirana's east-west urban axis, this study investigates how a combined workflow using Autodesk InfraWorks, Giraffe.Build and an AI-based optimization layer can support the identification and improvement of public transport corridor alternatives.

The research followed a comprehensive three-stage methodology. First, Giraffe.Build generated a set of preliminary corridor scenarios through quick urban network modeling and massing analysis. Next, these scenarios were imported into InfraWorks, where each alignment was checked for geometric feasibility, multimodal compatibility, intersection performance, and sensitivity to the urban context. A machine-learning model was then used to evaluate the scenarios based on various weighted criteria, including accessibility improvements, travel time efficiency, right-of-way impacts, and integration with pedestrian and cycling infrastructure. The AI component refined and ranked the alternatives to find the most balanced and contextually suitable configurations.

The integrated workflow clearly highlighted corridor concepts, revealing how variations in alignment and stop distribution affect performance outcomes. The AI model consistently preferred

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scenarios that improved interchange opportunities and reduced geometric constraints, while InfraWorks simulations verified improvements in operational continuity and intersection behavior. The findings indicate that a blended digital workflow can greatly improve early-stage mobility planning by integrating conceptual urban modeling with detailed engineering validation and systematic optimization. Besides its technical merits, this approach provides a replicable framework for cities aiming to achieve more transparent and data-driven decision-making processes in their transition toward sustainable mobility systems.

Keywords: sustainable mobility, public transport, AI optimization, digital modelling, corridor planning, urban simulation

I. INTRODUCTION

Urban mobility networks across Europe are experiencing a period of profound transformation, driven by environmental concerns, congestion pressures, and legislative commitments linked to the European Green Deal. Cities are progressively mandated to diminish reliance on automobiles while improving the performance and attractiveness of public transport. It is particularly challenging to make this transition in rapidly growing urban contexts, where existing road infrastructure has often been designed primarily to accommodate private vehicles. Tirana represents a relevant example of such conditions, combining rapid urban expansion with limited public transport prioritization along major road corridors.

Traditional approach of planning public transport corridors usually tends to rely on sequential and discipline-specific analysis. This often means that critical decisions about road alignment, stop placement, and integration are put off until later design stages. As a result, opportunities to explore alternative configurations and evaluate trade-offs systematically are frequently constrained by time, data availability, or institutional fragmentation. Recent improvements in digital modelling systems and artificial intelligence have opened new possibilities for supporting early-stage decision-making by enabling rapid scenario generation, evaluating performance, and comparing options.

Within this context, AI-assisted planning tools can play a complementary role to conventional methods of transport engineering. Rather than replacing expert judgement, such tools can help structure complex decision spaces, highlight non-intuitive trade-offs, and improve transparency in the selection of preferred solutions. When integrated with urban modelling and infrastructure simulation environments, AI-based methodologies are very good at testing modifications on a corridor scale. This happens because these tools do consider about things like space, operations and city design.

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This paper focuses on improving the public transportation routes along Tirana's recently completed ring road, known as *Unaza e Madhe e Tiranës*. While the ring road currently functions predominantly as a private vehicle corridor, it offers significant latent potential for future public transport integration, including orbital bus services, bus rapid transit (BRT), and park-and-ride systems. The study doesn't focus exactly at how well existing services are performing, because through a simple interview or survey the results would be that it does not work good at all, as an everyday proof to stressful commutes. Instead, it looks ahead to how alternative types of public transport configurations could be added and tested at an early design stage.

The research proposes a hybrid digital workflow combining the platform Giraffe.Build for early-stage scenario generation, Autodesk InfraWorks for geometric and multimodal simulation, and an AI-based optimization layer for multi-criteria evaluation. A strategic segment of the ring road between the Ish-Shqiponja interchange and the Kombinat overpass is selected as a representative testbed. The main objective of the study is to demonstrate how such a workflow could help make decisions on public transport corridor choices in car-centric infrastructures that are clear and based on data.

The report addresses the following scientific inquiries:

1. How might early-stage digital modelling tools help generate and analyze different scenarios for public transit corridors?

2. What other advantages does checking to see if a proposed corridor is achievable with infrastructure-level modeling bring?

3. How could AI-based optimization help choose corridor solutions based on criteria that are sustainable for the environment?

II. METHODS

1. Case Study Definition

The selected case study focuses on a 2.5-kilometre segment of Tirana's ring road extending from the *Ish-Shqiponja interchange* to the *Kombinat overpass*. This segment was chosen due to its structural role in the metropolitan mobility network. It has a strategic location, geometric complexity, and proximity to mixed land-use areas including residential neighborhoods, industrial zones, and major access routes to the city center. Although the corridor is currently dominated by private vehicle traffic, it was intentionally selected as a prospective testbed for future public transport integration, consistent with scenario-based planning approaches advocated in sustainable mobility research (Banister, 2008; European Commission, 2020).

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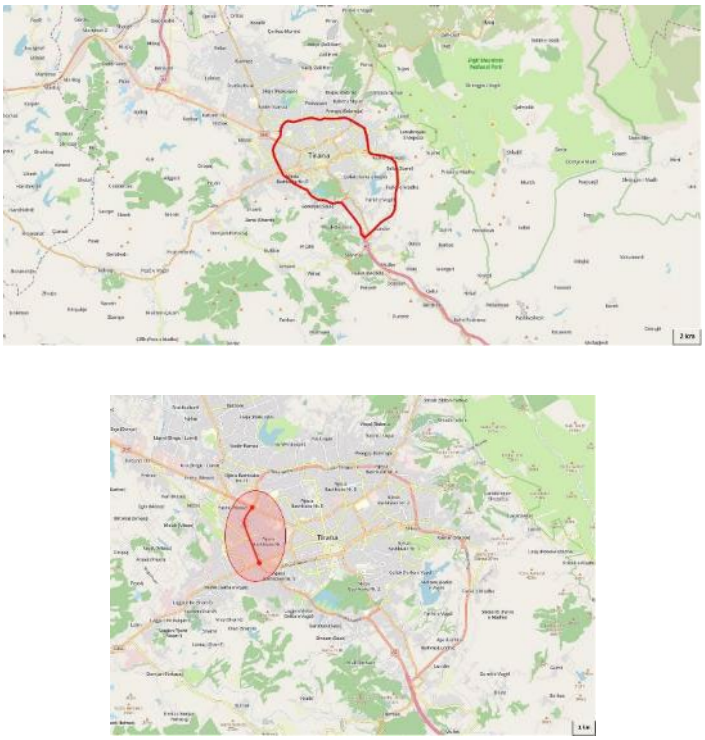

Figure 9. Tirana's big ring road (left) and selected segment for case study (right) (source: Author & OpenStreetMap, 2026)

Ring roads are increasingly recognized in European policy and practice as critical infrastructures for enabling orbital public transport, park-and-ride systems, and modal shift strategies (Newman & Kenworthy, 2015; OECD, 2020). The selected segment combines grade-separated junctions, wide right-of-way sections, and transitional urban conditions, making it suitable for testing different corridor typologies under realistic spatial constraints. From a methodological perspective, the corridor offers sufficient complexity to demonstrate the value of integrated digital workflows while remaining manageable within the scope of a conference paper.

2. Integrated Digital Workflow

The proposed methodology adopts a three-stage digital workflow integrating early-stage urban modelling, infrastructure-level simulation, and AI-supported multi-criteria optimization. The workflow is designed to support early decision making, where flexibility and rapid comparison of alternatives are more critical than detailed operational forecasting (Geertman et al, 2015; Te Brömmelstroet, 2017).

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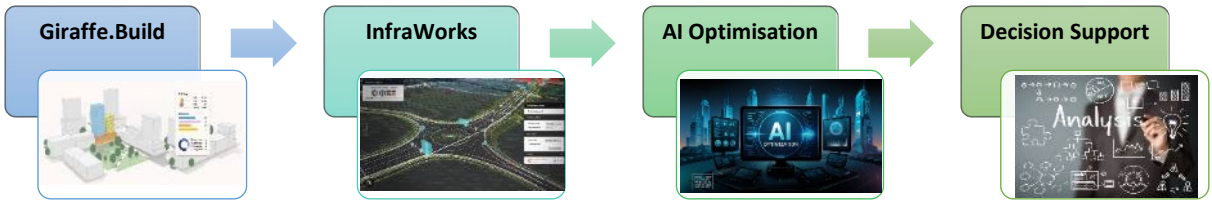

Figure 10. The conceptual workflow diagram of methodology

In the first stage, Giraffe.Build is employed to model the urban context and generate alternative public transport corridor scenarios. The platform enables rapid manipulation of network layouts, stop spacing, and corridor typologies, allowing planners to explore a wide solution of scenarios without the rigidity of detailed engineering models. This approach aligns with planning support system principles, where computational tools assist planners in structuring complex design spaces rather than prescribing solutions (Pettit et al, 2018).

In the second stage, selected scenarios are transferred into Autodesk InfraWorks for geometric validation and multimodal performance assessment. InfraWorks allows integration of terrain, roadway geometry, and surrounding built form, enabling verification of alignment feasibility, intersection behavior, and spatial compatibility. At this stage traffic flow and movement simulations are used to assess operational continuity rather than to produce detailed traffic forecasts, consistent with early-stage transport modelling practices (Ortúzar & Willumsen, 2011).

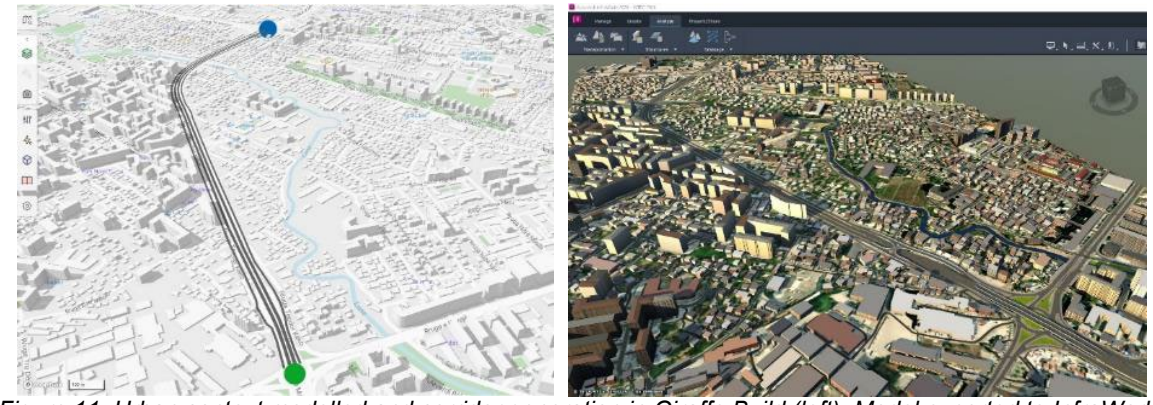

Figure 11. Urban context modelled and corridor generation in Giraffe.Build (left). Model exported to InfraWorks for vertical and horizontal geometry validation (right). (source: Author, 2026)

The third stage introduces an AI-based optimization layer that evaluates and ranks the corridor scenarios using a set of predefined performance indicators. The AI component does not generate new geometries but operates on the results produced in the previous stages, supporting systematic comparison and transparent decision-making.

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Figure 12.Traffic simulation and analysis at the junctions of Ish-Shqiponja interchange (left) and the Kombinat overpass (right). (source: Author, 2026).

2.1. Scenario Definition

To ensure analytical clarity and comparability, three public transport scenarios were defined:

- Scenario A _ Centre-Running BRT, featuring a dedicated, center-running bus rapid transit (BRT) corridor with median stops and signal priority at intersections;
- Scenario B _ Side-Running Priority Bus, with bus lanes located along the outer edges of the carriageway, with stops integrated into the sidewalk system;
- Scenario C _ Hybrid Orbital Service, combining dedicated bus lanes and interchange-focused stopping strategy, prioritizing connectivity with radial routes and park-and-ride facilities.

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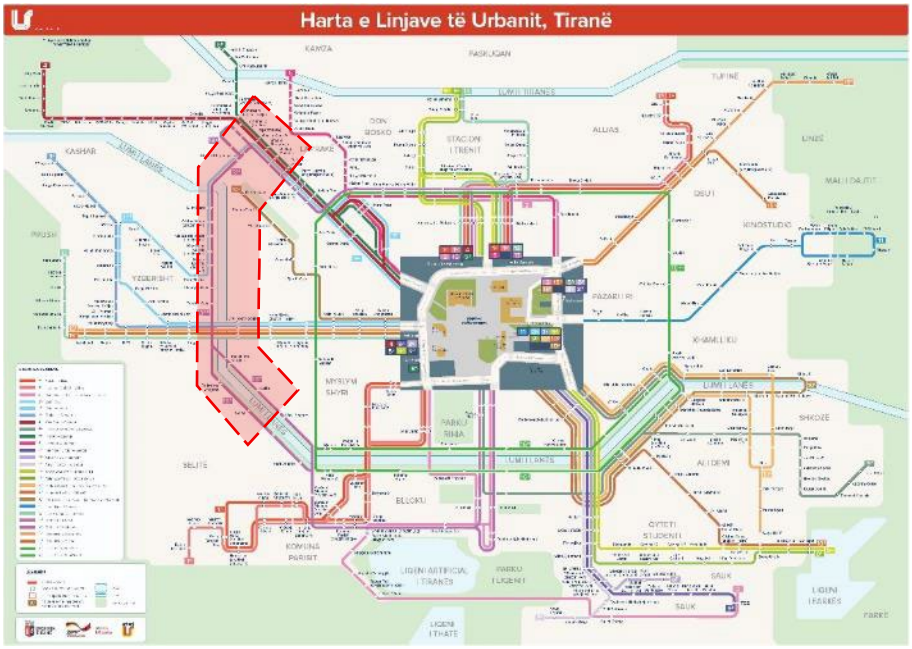

Figure 13. The existing public bus transit routes of Tirana, case study contoured in red. (source: Municipality of Tirana)

These typologies reflect established public transport corridor strategies discussed in the literature on BRT and high-performance bus systems (Cervero & Dai, 2014; Hidalgo & Muñoz, 2014). The frequency of service and capacity of vehicles were held constant across scenarios to isolate the spatial and infrastructural effects of corridor design.

2.2. AI-based multi-criteria Optimization

In the third stage an AI-supported multi-criteria evaluation framework was introduced, in order to compare and rank the scenarios. Five performance indicators were selected, based on sustainable mobility objectives and planning relevance:

- Travel Time Efficiency: relative reduction in corridor travel time compared to baseline conditions.
- Accessibility: quality of pedestrian access to stops and spatial coverage of surrounding urban areas.
- Geometric Feasibility: compatibility with existing road geometry and intersection layouts.
- Intermodal Connectivity: integration with walking, cycling and radial transport routes.
- Urban Integration: visual and spatial compatibility with surrounding urban fabric.

Multi-criteria decision-making methods are widely recognized as effective tools for evaluating transport infrastructure alternatives involving heterogeneous and partially conflicting objectives (Sideris et al, 2020).

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The AI-based model was applied to aggregate and weight each criterion, producing a transparent ranking of scenarios. Rather than generating new geometries, the AI component operates as a decision-support mechanism, assisting planners in interpreting trade-offs and identifying balanced solutions. This approach reflects contemporary view on the role of artificial intelligence in urban planning, where AI augments professional judgement rather than replacing it (Batty, 2018; Kandt & Batty, 2021).

III. RESULTS

The comparative evaluation demonstrated clear differences between the three scenarios. Scenario A achieved the highest scores in travel time efficiency and network continuity due to its dedicated alignment and reduced interference with private traffic. However, it required more significant geometric adaptions at interchanges. Scenario B demonstrated higher compatibility with existing geometry but performed less favorably in terms of accessibility and operational reliability.

Scenario C achieved the most balanced overall performance, combining moderate geometric requirements with strong intermodal connectivity and acceptable travel time improvements. When weighted sustainability criteria were used, the AI-based ranking always favored Scenario C, showcasing it as a good choice for a car-oriented corridor that is transitioning.

The results demonstrate that the integrated workflow enables clear differentiation between alternatives and supports informed decision-making at an early planning stage.

The findings confirm that AI-supported digital workflows can enhance early-stage public transport planning by structuring complex decision spaces and improving transparency. The selected ring road segment proved to be an effective testbed, allowing exploration of future public transport integration without being constrained by existing service patterns.

The technique used emphasizes that AI tools should be seen as decision-support mechanisms rather than automated solution generators. By combining rapid scenario modelling with infrastructure-level validation, the workflow bridges the gap between conceptual planning and technical feasibility. Limitations include dependence on data quality and the simplified nature of early-stage simulations. Nevertheless, the approach offers strong potential for transferability to other cities facing similar challenges.

Table 5. Comparative performance of public transport corridor scenarios

Indicator	**Scenario A** Centre-Running BRT	**Scenario B** Side-Running Priority Bus	**Scenario C** Hybrid Orbital Service

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Travel Time Efficiency	**High** (dedicated lanes, signal priority)	**Medium** (interference at accesses)	**High** (priority at key segments)
Accessibility	**Medium** (median stops require crossings)	**High** (direct sidewalk access)	**High** (interchange-focused stops)
Geometric Feasibility	**Medium-Low** (interchange constraints)	**High** (minimal geometric change)	**Medium** (selective adaptations)
Intermodal Connectivity	**Medium** (limited direct integration)	**Medium-Low** (linear service logic)	**High** (radial + orbital integration)
Urban Integration	**Medium** (strong visual impact)	**High** (embedded in streetscape)	**Medium-High** (balanced spatial presence)
Overall AI Ranking Score	0.78	0.65	0.84
Rank	2	3	1

IV. CONCLUSIONS

This paper demonstrated how a hybrid workflow integrating tools as Giraffe.Build, Autodesk InfraWorks, and AI-based optimization can support early-stage public transport corridor planning. Applied to a strategic segment of Tirana's ring road, the methodology enabled systematic comparison of alternative corridor configurations and highlighted the potential of car-oriented infrastructures to support future sustainable mobility.

The findings underline the value of AI-supported scenario evaluation in guiding transparent and evidence-based planning decisions. Future research could extend the workflow by incorporating economic analysis, demand modelling, and real-time data integration.

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Figure 14. Conceptual illustration showing the evaluation and ranking of alternative public transport corridor scenarios based on weighted performance indicators (source: Author's illustration generated using AI-based image generation model)

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REFERENCES

Banister, D. (2008). *The sustainable mobility paradigm.* Transport Policy, 15(2), 73-80. https://doi.org/10.1016/j.tranpol.2007.10.005

Batty, M. (2018). *Artificial intelligence and smart cities. Environment and Planning B: Urban Analytics and City Science*, 45(1), 3-6. https://doi.org/10.1177/2399808317751169

Batty, M., et al. (2012). *Smart cities of the future. The European Physical Journal Special Topics*, 214, 481-518. https://doi.org/10.1140/epjst/e2012-01703-3

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Biljecki, F., et al. (2021). *Extending city models with semantic 3D data for urban analytics. Computers, Environment and Urban Systems*, 88, 101667. https://doi.org/10.1016/j.compenvurbsys.2021.101667

Cervero, R. (2013). *Linking urban transport and land use in developing countries*. Journal of Transport and Land Use, 6(1), 7-24. https://doi.org/10.5198/jtlu.v6i1.425

Cervero, R., & Dai, D. (2014). BRT TOD: *Leveraging transit-oriented development with bus rapid transit investments.* Transport Policy, 36, 127-138. https://doi.org/10.1016/j.tranpol.2014.08.001

Deb, K., Pratap, A., Agarwal, S., & Meyarivan, T. (2002). *A fast and elitist multiobjective genetic algorithm: NSGA-II.* IEEE Transactions on Evolutionary Computation, 6(2), 182-197. https://doi.org/10.1109/4235.996017

Eastman, C., Teicholz, P., Sacks, R., & Liston, K. (2018). *BIM handbook* (3rd ed.). Wiley.

European Commission. (2020). *Sustainable and smart mobility strategy – putting European transport on track for the future.* Publication Office of the European Union.

European Commission. (2019). *The European Green Deal*. Publications Office of the European Union.

Geertman, S., Ferreira, J., Goodspeed, R., & Stillwell, J. (2015). *Planning support systems and smart cities.* Springer.

Givoni, M. & Banister, D. (2010). *Integrated transport: From policy to practice.* Routledge.

Hidalgo, D., & Muñoz, J.C. (2014). *A review of technological improvements in bus rapid transit systems.* Public Transport, 6(1-2), 39-58. https://doi.org/10.1007/s12469-013-0079-0

Kandt, J., & Batty, M. (2021). *Smart cities, big data and urban policy*. Urban Studies, 58(1), 1-18. https://doi.org/10.1177/0042098020953079

Newman, P., & Kenworthy, J. (2015). *The end of automobile dependence: How cities are moving beyond car-based planning.* Island Press.

OECD. (2020). *Integrating transport and land use policies for sustainable development.* OECD Publishing.

Ortúzar, J. de D., & Willumsen, L. G. (2011). *Modelling transport* (4th ed.). Wiley.

Pettit, C., et al. (2018). *Planning support systems for smart cities.* City, Culture and Society, 12, 13-24. https://doi.org/10.1016/j.ccs.2017.10.002

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them. Project ref.: 101081873-ERASMUS-EDU-2022-CBHE-STRAND-2

Sideris, A., Tsirimpa, A., & Polydorpoulou, A. (2020). A *review of multi-criteria decision-making methods for transport infrastructure planning.* Transportation Research Procedia, 47, 563-570. https://doi.org/10.1016/j.trpro.2020.03.132

Te Brömmelstroet, M. (2017). *PSS are more than just tools.* Environment and Planning B: Urban Analytics and City Science, 44(3), 581-596. https://doi.org/10.1177/0265813516649005

UN-Habitat. (2013). *Planning and design for sustainable urban mobility.* United Nations Human Settlements Programme.

Vuchic, V.R. (2007). *Urban transit systems and technology*. John Wiley & Sons.

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International conference on sustainable mobility

Agenda

Project title: International Engineering Competence Centres to push Sustainable Mobility Development in Albania and Montenegro
Acronym: INTEC

Work package	
WP11	**International conference**
TASK	
11.4	Coummunity Building Events

Dates	05.03.-06.03.2026
City	Tirana
Meeting venue	POLIS University Entrance Hall
Address	Rr. Bylis 12, Kodi Postar 1051, Kutia Postare 2995, Tirana, Albania

05.03.2026	
Entrance Hall, POLIS University	
8:30 – 9:00	**Registration**
9:00 – 9:30	**Opening Performance**
Welcome session – Auditorium A5 (Ground floor)	
9:30 – 10:00	**Opening Remarks** **Dr. Elona Karafili** (Vice Rector, POLIS University) **Dr. Flora Krasniqi** (Head of Office of Projects and Internationalization, POLIS University) **DI Daniela Wenzl** (INTEC Project Coordinator)
Auditorium A5 (Ground floor)	
10:00 –11:00	**Keynote speakers** **DI Horst Pflügl AVL** Collaborative Research for sustainable Mobility **DPSHTRR Representative** – (General Directorate of Road Transport Services in Albania)
11:15 – 11:30	**Coffee break (Moving into parallel sessions)**

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11:30	SESSION 1: POLITICAL AND REGULATORY FRAMEWORK AULA B1	SESSION 2: TECHNOLOGICAL INNOVATION AULA B4
11:30 – 11:45	**Opening Session:** Prof. Emeritus dr Nataša Gospić (FSKL)	**Opening Session:** Associate Prof. Ivan Tolj (US)
11:45 – 12:00	**Integrating Event Data Recorder (EDR) Technology into Sustainable Road Safety Frameworks within the European Green Deal** Eriselda Alimeti, Parid Milo, Mentor Çejku, Anis Sulejmani, Odhisea Koça	**Empirical Comparative Study of Structural CFRP Sandwich Structure Inserts for Out-of-Plane loads** Imre Kovács
12:00 – 12:15	**Infrastructure Readiness for Sustainable Mobility: EU Frameworks and the Case of Albania** Ervin Kalemaj, Parid Milo, Mentor Çejku, Anis Sulejmani, Odhisea Koça	**The Role of Intermodal Transportation for the Sustainable Mobility** Márton Kovács
12:15 – 12:30	**Review of the Evolution of International Ship Energy Efficiency Regulations and the Albanian context** Dr. Blenard Xhaferaj, Doklejda Hodaj	**Impact of Heat Pump Systems on Winter Energy Use and Driving Range in Battery Electric Vehicles** Luis Henrique Pereira Martins
12:30 – 12:45	**Renewable Energy Procurement (CPPA) and Transport Electrification: European Perspectives and Albanian Challenge** Antonio Ndoci, Anis Sulejmani, Odhisea Koça, Mentor Çejku, Parid Milo	**Liquid Cooling Systems for Electric Vehicle Batteries: Improving Safety, Performance and Sustainability** João Miguel de Almeida Ribeiro Silva
12:45 – 13:00	**The Current Status of Autonomous Vehicle**	**Analysis of Battery Charging and Discharging Behavior for Electric Vehicle Applications** Leona Markic, Luka Filipović

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	Technology Adoption in the Balkan Region Darjana Lopičić, Oliver Popović, Miloš Ilić, Bojan Kocić	
13:00 – 14:00	**Lunch**	
14:00 – 14:15	**Reviewing the European Green Deal in Energy, Mobility and Industry** Veselinka Calasan, Ivana Ognjanovic	**Automotive Cooling Systems Sustainability: A Focus on the Expansion Tank** Ana Inês Barbeiro Casimiro
14:15 – 14:30	**The European Green Deal and its National Implementation: From Strategy to Practice** Blerina Bektashi, Andi Bektashi	**Design and Development of a Constant-Volume Combustion Chamber for Optical Investigation of Hydrogen and Water Injection Under Engine-like Conditions** Julius Hollerith, Prof. Dr. Bhavin Kapadia
14:30 – 14:45	**From Prediction to Regulation: Evidence Production Approaches in Autonomous Mobility Research and Their Policy Implications** Sadmira Malaj	**Emission Reduction of Marine Propulsion Systems in SECA Zones Through the Integration of Hydrogen Technologies** Motalleb Miri, Ivan Radaš, Marija Mandić, Ivan Tolj
14:45 – 15:00	**Questions and Discussion**	**A Comprehensive Analysis of Ventilation System for Enhanced Energy Efficiency in Marine Propulsion Applications** Sara Blašković, Gojmir Radica, Jakov Šimunović

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15:00 – 15:15		**Design and Topology Optimization of a Lightweight Chain Sprocket for Electric Motorcycle Applications** Teo Čolović, Ivo Marinić-Kragić
15:15 – 15:30	**SESSION 3: ECONOMIC AND BUSINESS PRESPECTIVES + CASE STUDIES AND GOOD PRACTICES** Aula B1	**Questions and Discussion**
	Opening Session: Dr. Anis Sulejmani (PUT)	
15:30 – 15:45	**Managing Renewable Energy Resources as a Foundation for Sustainable Mobility Transitions** Deivi Sinanaliaj, Martin Bektashi	
15:45 – 16:00	**Feasibility of Electric Bus deployment in Montenegro: A Case Study of Budva (Erasmus+ INTEC / IECC Context)** Anastasija Mrkajic, Vinko Nikic.	
16:00 -16:15	**Children Paths as an Urban Regeneration Strategy: Naim Frasheri Study Case** Dejvi Dauti	
16:15 – 16:45	**Questions and Discussion**	

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International conference on sustainable mobility

Agenda

Project title: International Engineering Competence Centres to push Sustainable Mobility Development in Albania and Montenegro
Acronym: INTEC

Work package	
WP11	International conference
TASK	
11.4	Coummunity Building Events

Dates	05.03.-06.03.2026
City	Tirana
Meeting venue	POLIS University Entrance Hall
Address	Rr. Bylis 12, Kodi Postar 1051, Kutia Postare 2995, Tirana, Albania

06.03.2026		
First Floor Hall, POLIS University		
8:30 – 9:00	Registration	
9:00– 9:15	**SESSION 4: SOCIAL AND ENVIRONMENTAL IMPACT** AULA B1	**SESSION 5: FUTURE SCENARIOS** AULA B4
9:00 – 9:15	**Opening Session:** Prof. Dr. Bhavin Kapadia (FHF)	**Opening Session:** MA Adrian Millward-Sadler (FHJ)
9:15 – 9:30	**Comparison of Lifecycle Emissions of a SUV with Fuel Cell and Battery Electric Powertrains** - Bhavin Kapadia, Alper Sayin, Sandra Eisenträger	**GENAI Literacy as a Transversal Skill for Emerging Professionals: Implications for Sustainability-Critical Knowledge Work** – Adrian Millward-Sadler
9:30 – 9:45	**Smart Mobility Technologies and their Impact on Urban Sustainability: Insights from**	**Effects of Technical Traffic Calming Measures** – Filip Perović

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	European and Western Balkan Cities – Alma Gjonaj, Vjola Ziu	
9:45 – 10:00	**The Disappearing Squares: Social and Environmental Impacts of Urban Mobility Planning in Durres –** Arjola Sava	**Cybersecurity Vulnerabilities in Electric Vehicle Operating Systems: A Global Awareness Analysis -** Aleksa Radević
10:00 – 10:15	**The City that Demands Continuous Movement: The Disappearance of the Right not to Move within the Framework of Sustainable Mobility –** Avrili Meshi	**Development of a risk assessment model for the transport of hazardous materials using ALOHA and GIS software tools –** Marko Radetić
10:15 – 10:30	**Between Rhetoric and Reality: Discursive Framings, Greenwashing and Outcomes in Sustainable Mobility –** Kejsi Veselagu	**Mapping Distance and Time Leveraging Isochrone Intelligence in Emerging Cities** - Andia Vllamasi, Erjon Cobani
10:30 – 10:45	**Reimagining the City Through Green Mobility Strategies: The Case of Tirana** - Vjola Ziu, Alma Gjonaj	**Can AI develop its Own "Taste" Automotive Design?** - Gregor Andoni, Kristjana Meço
	Coffee Break	
11:00 – 11:15	**Linking Morphology, Perceived Safety, and Sustainable Mobility in Post-Socialist Urban Contexts-** Sindi Doce	**Optimizing Public Transport Corridors Using AI-Based Scenario Modelling: A case Study on Tirana's Ring Road** - Erjon Çobani, Julian Beqiri, Merita Guri
11:15 – 11:30	**Towards Sustainable Transport: A Comparative Analysis of Electric Vehicle Adoption in Montenegro and Albania -** Radmila Milić	**Threat Landscape and Multi-Layered Protection Mechanisms for Autonomous and Electric Vehicle Systems** - Marko Asanovic, Oliver Popović, Zoran Avramović, Nataša Gospić

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11:30 – 11:45	Questions and Discussion	**Cybersecurity Challenges in Modern Vehicular Communication Networks** - Aleksandar Grgurević, Nataša Gospić, Oliver Popović
11:45 – 12:00		**Green Transition in Albania: Challenges and Future Actions** - Erik Kushta, Andi Hyka, Enea Nasto
12:00 – 12:15	**SESSION 6: CONTROVERSIES AND CHALLENGES** Aula B1 **Opening Session:** Prof. Kristofor Lapa (UV)	**Use of AI in the Process of Green Transformation and Impact on Public Health** - Esmeralda Hamiti, Federika Alliaj, Kristi Metushi
12:15-12:30	**The Adoption of Electric Vehicles in Albania: A Comparative Study with Other Western Balkan Countries** - Doklejda Hodaj, Andrea Lapa	**Development of an Automatic Traffic Sign Detection System Using YOLOv8** - Valentina Vojinović, Luka Filipović
12:30-12:45	**Application of Quality Tools in the Analysis of Factors Influencing the Development of Electromobility in Montenegro** - Jelena Šaković Jovanović, Draško Jovanović, Mirjana Grdinić Rakonjac, Marko Lučić, Miloš Perović, Aleksandar Vujović, Gordana Radulović	**The Historical Development of Artificial Intelligence and Its Influence on the job market in Automotive Engineering** - David Josef Pilgram
12:45 – 13:45	**Questions and Discussion**	**Questions and Discussion**
13:45	**Lunch**	

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