



# 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:



**INTEC International Conference**  
February 2026  
POLIS University, Tirana, Albania

**INTEC**>>>



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**INTEC International Conference**  
February 2026  
POLIS University, Tirana, Albania

**INTEC**>>>



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University of Split (US), Croatia  
POLIS University (POLIS), Albania  
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**MANAGING RENEWABLE ENERGY RESOURCES AS A FOUNDATION FOR SUSTAINABLE  
MOBILITY TRANSITIONS**

**DOI: 10.37199/c41001020**

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**Abstract**

*Sustainable mobility is often discussed primarily in technological terms; however, its success increasingly depends on how renewable energy resources are managed from an economic and governance perspective. Well-designed renewable energy management frameworks can reduce system costs, increase investor confidence, and open new opportunities for low-carbon mobility markets. This paper adopts a qualitative and descriptive approach based on the review of European and national energy and transport policies, regulatory frameworks, and selected illustrative examples. The analysis focuses on the interaction between renewable energy management and sustainable mobility development, with particular attention to economic efficiency and investment conditions. The findings suggest that weak coordination between energy and transport planning limits the economic potential of sustainable mobility and creates uncertainty for private investors. Conversely, improved policy alignment and resource management can enhance cost-effectiveness, support innovation, and accelerate the transition towards low-carbon transport systems. The paper concludes that renewable energy resources should be understood not only as environmental assets, but also as strategic economic foundations for sustainable mobility and long-term development.*

**Keywords:** renewable energy management, sustainable mobility, economic efficiency, policy integration, low-carbon transport

## **I. INTRODUCTION**

The transition towards sustainable mobility has become a central objective of climate and energy policies worldwide. While technological innovation plays a key role, experience increasingly shows that technology alone is not sufficient. Economic conditions, governance structures, and resource management practices largely determine whether sustainable mobility solutions can be implemented at scale.

Albania offers a particularly interesting case for examining this relationship. Almost all domestic electricity production is based on renewable sources, mainly hydropower. At the same time, the transport sector remains highly dependent on fossil fuels. This contrast highlights a missed opportunity: despite abundant clean electricity, renewable energy has not yet been effectively integrated into transport planning and mobility systems.

From an economic perspective, fossil-fuel-based transport generates high external costs and exposes the country to energy import risks. Renewable energy-based mobility, by contrast, can reduce long-term costs, strengthen domestic value chains, and create space for new business models. At the European level, strategies such as the European Green Deal clearly emphasize the need to connect clean energy deployment with sustainable transport development.

Against this background, this paper explores how renewable energy resource management can act as a foundation for sustainable mobility transitions, focusing on economic efficiency, investment attractiveness, and policy coordination.

This study is conceptually informed by established approaches in the energy transition and policy integration literature. In particular, it draws on energy transition theory, which emphasizes that transitions towards low-carbon systems are not driven by technology alone, but by the interaction between technological change, governance structures, economic incentives, and institutional coordination (Geels, 2011). Within this perspective, renewable energy resource management represents a key enabling condition for the diffusion of sustainable mobility solutions.

In addition, the analysis aligns with policy integration frameworks, which stress the importance of horizontal coordination between sectors such as energy and transport in order to achieve complex sustainability objectives. Fragmented policymaking is widely recognized as a barrier to efficient implementation and investment, while integrated approaches can enhance policy coherence, reduce uncertainty, and improve economic performance (Nilsson et al., 2012).

Finally, the paper is consistent with sustainable mobility models that view mobility systems as socio-technical systems, in which infrastructure, energy supply, regulation, and user behavior are interdependent. From this standpoint, the effective management of renewable energy resources is

essential for supporting the economic viability and long-term scalability of low-carbon transport systems (Banister, 2008).

## **II. METHODS**

This study adopts a qualitative and descriptive research design, which is appropriate for analyzing policy frameworks and management approaches related to renewable energy and sustainable mobility. The analysis is based on a structured review of European Union strategies, national policy documents, legal frameworks, and publicly available reports.

Documents were selected according to three main criteria:

- i. their relevance to renewable energy deployment and sustainable transport development;
- ii. their strategic or regulatory significance at European or national level; and
- iii. their implications for economic efficiency, investment conditions, and policy coordination.

Particular attention is given to renewable energy sources with high relevance for the Albanian context – namely hydropower, solar energy, and wind energy – and their potential role in supporting electric mobility and charging infrastructure.

The study does not rely on quantitative modelling or primary data collection. As a result, its findings are primarily analytical and interpretative in nature. While this represents a methodological limitation, the chosen approach allows for a coherent assessment of governance gaps, economic implications, and strategic priorities related to renewable energy management and sustainable mobility transitions.

## **III. RESULTS**

The analysis indicates that Albania possesses a strong renewable energy base capable of supporting sustainable mobility in a cost-effective manner. However, this potential remains largely underutilized due to limited coordination between energy resource management and transport sector planning.

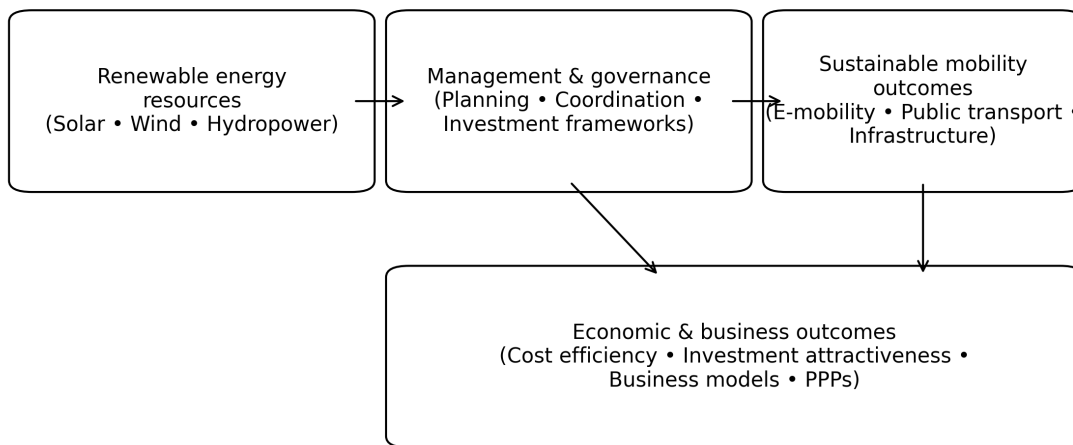
The results show that fragmented governance frameworks create economic inefficiencies by increasing uncertainty around infrastructure development, grid capacity planning, and long-term regulatory conditions. In particular, the absence of integrated planning between electricity generation, grid management, and transport electrification leads to higher perceived investment risks. This situation discourages private-sector engagement in electric mobility services and charging infrastructure deployment.

From an economic perspective, the lack of coordination also limits the ability to optimize system costs. Renewable energy resources are not systematically aligned with mobility demand patterns, reducing opportunities for cost savings through smart charging, load management, and decentralized energy solutions. As a result, potential efficiency gains related to renewable energy-powered mobility are only partially realized.

Conversely, the findings indicate that improved renewable energy management and stronger policy alignment between the energy and transport sectors could significantly enhance economic performance. Coordinated planning can lower operational costs, improve grid utilization, and increase predictability for investors. These conditions are particularly important for enabling public-private partnerships and fostering innovative business models related to electric mobility, charging services, and integrated energy-mobility platforms.

Overall, the results suggest that renewable energy management acts as a critical enabling factor for sustainable mobility, influencing not only environmental outcomes but also economic efficiency and investment attractiveness.

Figure 1. Conceptual framework linking renewable energy management and sustainable mobility.



To further illustrate the conceptual framework presented in Figure 1, the analysis highlights several practical dynamics observed in comparable European contexts. In countries where renewable energy management is closely aligned with transport electrification strategies, coordinated planning has enabled the gradual development of charging infrastructure linked to renewable electricity availability. This alignment reduces operational costs and improves investment predictability by ensuring that mobility demand is supported by adequate grid capacity and stable regulatory conditions.

By contrast, in contexts where energy and transport policies evolve in parallel but without effective coordination—such as in the current Albanian case—electric mobility initiatives tend to rely on fragmented pilot projects rather than scalable business models. The absence of integrated planning limits opportunities for cost optimization through mechanisms such as smart charging, time-of-use tariffs, or decentralized renewable energy solutions. As a result, economic benefits remain limited despite the availability of renewable energy resources.

From an investment perspective, the findings suggest that clearer coordination between renewable energy management and mobility planning can significantly improve risk allocation. Predictable frameworks support private participation in charging infrastructure, fleet electrification, and energy–mobility services, particularly through public–private partnerships. These insights reinforce the role of renewable energy management as a critical economic enabler rather than a purely technical component of sustainable mobility transitions.

#### **IV. DISCUSSION AND CONCLUSION**

Recent policy developments in Albania suggest growing recognition of the importance of energy–mobility integration. The adoption of Law No. 24/2023, the National Energy and Climate Plan (NECP), and the Sustainable Transport Action Plan (2024–2028) represent important steps towards a more coherent framework. However, the effectiveness of these instruments depends on how well they are implemented and aligned in practice.

From an economic and business perspective, sustainable mobility requires more than environmental ambition. Investors and service providers need predictable rules, coordinated infrastructure planning, and clear signals regarding long-term priorities. Renewable energy management plays a decisive role in shaping these conditions.

This paper argues that renewable energy resources should be treated as strategic economic assets rather than isolated energy inputs. Strengthening management practices and aligning energy and transport policies can improve investment attractiveness, support innovation, and accelerate sustainable mobility transitions, particularly in emerging economies.

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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

<b>Work package</b>	
<b>WP11</b>	<b>International conference</b>
<b>TASK</b>	
11.4	Community Building Events

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

<b>05.03.2026</b>	
Entrance Hall, POLIS University	
<b>8:30 - 9:00</b>	<b>Registration</b>
<b>9:00 - 9:30</b>	<b>Opening Performance</b>
<b>Welcome session - Auditorium A5 (Ground floor)</b>	
<b>9:30 - 10:00</b>	<b>Opening Remarks</b> 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)
<b>Auditorium A5 (Ground floor)</b>	
<b>10:00 - 11:00</b>	<b>Keynote speakers</b> DI Horst Pflügl AVL Collaborative Research for sustainable Mobility DPSHTRR Representative - (General Directorate of Road Transport Services in Albania)
<b>11:15 - 11:30</b>	<b>Coffee break (Moving into parallel sessions)</b>

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

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

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

## International conference on sustainable mobility

# Agenda

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

<b>Work package</b>	
WP11	International conference
<b>TASK</b>	
11.4	Community Building Events

<b>Dates</b>	05.03.-06.03.2026
<b>City</b>	Tirana
<b>Meeting venue</b>	POLIS University Entrance Hall
<b>Address</b>	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

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

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	Use of AI in the Process of Green Transformation and Impact on Public Health - Esmeralda Hamiti, Federika Alliaj, Kristi Metushi
	Opening Session: Prof. Kristofor Lapa (UV)	
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	