

SUSTAINABLE TRANSPORTATION PLANNING AND POLICY

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Sustainable Transportation within the Framework of Green Deal - SPHERE

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Topic 1: Sustainable Transport: Concepts and Global Trends

Outline

1. The Concept and Fundamental Principles of Sustainable Transport
2. Global Trends and Challenges in the Transport Sector
3. The Relationship Between Sustainable Transport and the Sustainable Development Goals (SDGs)

Sustainable Transport: A Reliable Path to the Future

Transport is more than simply moving people and goods from one place to another. It plays a vital role in promoting economic growth, social well-being, and environmental sustainability. Today, sustainable transport systems have become a strategic priority worldwide. This presentation explores the concept of sustainable transport, its fundamental principles, global trends in the transport sector, and its relationship with the Sustainable Development Goals (SDGs).

SUSTAINABILITY

INNOVATION

SUSTAINABLE DEVELOPMENT



1. What Is Sustainable Transport?

Sustainable transport is a transportation system that enables the movement of people and goods in an environmentally, socially, and economically balanced manner. Its primary goal is to meet today's mobility needs while safeguarding the interests of future generations.

Economic Efficiency

A sustainable transport system supports economic growth through the efficient use of resources, reduced operating costs, and improved investment efficiency. Well-developed transport infrastructure enhances a country's competitiveness and promotes business development.

Social Inclusion

Sustainable transport provides safe, convenient, and affordable mobility for all members of society. Ensuring equal access to transportation for people with disabilities, older adults, and low-income communities is a key element of social equity.

Environmental Responsibility

Sustainable transport aims to minimize environmental impacts by reducing greenhouse gas emissions and promoting the efficient use of natural resources. The adoption of renewable energy sources and green technologies plays a vital role in achieving these objectives.

Fundamental Principles of Sustainable Transport

A sustainable transport system is built on three fundamental principles: **environmental sustainability**, **social equity**, and **economic efficiency**. Together, these principles support the long-term development of the transport system and guide transport policy, infrastructure development, and the adoption of innovative technologies.



Environmental Sustainability

Reducing the environmental impact of transportation is one of the primary objectives of sustainable transport. This includes lowering greenhouse gas emissions, reducing air and water pollution, and promoting the efficient use of natural resources. The adoption of electric vehicles, renewable energy sources, and green technologies plays a key role in achieving these goals.



Social Equity

Sustainable transport ensures safe, convenient, and affordable mobility for all members of society. In particular, it promotes equal access to transport services for people with disabilities, older adults, young people, and low-income communities, making social inclusion a fundamental component of a sustainable transport system.



Economic Efficiency

Sustainable transport promotes the efficient use of transport infrastructure, optimizes transportation costs, and improves investment efficiency. Modern transport systems create new employment opportunities, reduce logistics costs, and enhance a country's international competitiveness.

 A sustainable transport system depends not only on technological solutions but also on effective public policies, environmental awareness, and international cooperation.

2. Global Transport Trends

The global transport sector is evolving at a rapid pace. Digitalization, the growing adoption of electric vehicles, and green logistics solutions are shaping the future of transportation. Countries around the world are increasingly investing in modern technologies to develop transport systems that are safe, efficient, and environmentally sustainable.



🌿 Transition to Green Logistics

Companies and governments are adopting green logistics solutions to reduce carbon emissions. Electric freight vehicles, route optimization, energy-efficient warehouses, and environmentally friendly packaging technologies are improving the efficiency and sustainability of logistics operations.



💻 Digitalization and Smart Transport Management

Artificial Intelligence (AI), Big Data, and the Internet of Things (IoT) are transforming the way transport systems are managed. Smart traffic signals, real-time monitoring, and digital platforms help optimize traffic flow, reduce congestion, and improve overall transport efficiency.



⚡ Electric Transport and Renewable Energy

The global share of electric vehicles continues to grow steadily. Powering these vehicles with renewable energy sources, such as solar and wind, helps reduce environmental impacts. In addition, hydrogen technologies are emerging as a promising solution for heavy-duty road transport and railway systems.

Global Challenges in the Transport Sector

The global transport sector faces major challenges, including rapid urbanization, climate change, and dependence on fossil fuels. These factors highlight the need to modernize transport infrastructure, reduce emissions, and implement sustainable transport solutions.

MAJOR CHALLENGES

1 Traffic Congestion

Traffic congestion in major cities reduces travel speeds, increases fuel consumption and economic losses, and worsens air pollution. It decreases the overall efficiency of transport systems while negatively affecting both quality of life and urban economic productivity.

2 Dependence on Fossil Fuels

The transport sector remains heavily dependent on petroleum-based fuels. This dependence increases greenhouse gas emissions, accelerates climate change, and poses challenges to energy security. Therefore, transport electrification and the adoption of alternative energy sources have become key priorities.

3 Infrastructure Vulnerability

Roads, bridges, and railway infrastructure are increasingly exposed to extreme weather events caused by climate change. Strengthening climate resilience by adapting transport infrastructure to changing environmental conditions has become an essential priority.

GLOBAL INDICATORS

23%

Energy-related CO₂ Emissions

Share of global energy-related CO₂ emissions produced by the transport sector.

≈8 Gt CO₂

CO₂ Emissions in 2022

Amount of CO₂ emitted by the global transport sector in 2022.

91%

Dependence on Petroleum Fuels

Share of petroleum-based fuels in global transport energy consumption.

15%

Global Greenhouse Gas (GHG) Emissions

Share of global greenhouse gas emissions attributable to the transport sector.

Sources: IPCC AR6 (2022); IEA Transport – Energy System (2023).

Uzbekistan's Experience in Modernizing Transport Infrastructure

Uzbekistan is implementing large-scale reforms to develop and modernize its transport sector. Owing to its strategic location in Central Asia and its position at the crossroads of major international transport corridors, the country has significant potential to strengthen its role as a regional transit hub. Consequently, the modernization of transport infrastructure has become one of the government's strategic priorities.

Development of Railway and Road Infrastructure

Uzbekistan is implementing major projects to modernize its railway and road infrastructure. The railway network is being gradually upgraded, high-speed rail services are being expanded, and road infrastructure is being improved in line with international standards. These reforms are strengthening the country's transport and transit capacity.

Enhancing Transit Potential

Uzbekistan is one of Central Asia's key transport and logistics hubs. The development of international transport corridors, including the China–Kyrgyzstan–Uzbekistan Railway and the Trans-Afghan Transport Corridor, is expanding the country's transit opportunities. These initiatives are aimed at increasing foreign trade and improving logistics efficiency.

A Driver of Economic Growth

Investment in transport infrastructure supports economic growth, improves regional connectivity, and reduces logistics costs. As a result, export potential increases, the investment climate becomes more attractive, and new employment opportunities are created.

3. Sustainable Development Goals (SDGs) and Their Connection to Transport

The **United Nations Sustainable Development Goals (SDGs)** recognize transport as one of the key drivers of sustainable development. The transport sector directly contributes to several SDGs by promoting economic growth, environmental sustainability, and social well-being. The 2030 Agenda provides an important framework for shaping sustainable transport policies worldwide.

SDG 9: Industry, Innovation, and Infrastructure

Sustainable transport supports the development of modern and resilient transport infrastructure, encourages innovation, and improves the efficiency of logistics systems. The adoption of digital technologies and intelligent transport systems (ITS) plays a vital role in achieving the objectives of SDG 9.

SDG 11: Sustainable Cities and Communities

Sustainable transport provides safe, accessible, and affordable mobility for urban populations. Expanding public transport and improving pedestrian and cycling infrastructure contribute to more sustainable cities and a higher quality of urban life.

SDG 13: Climate Action

Reducing greenhouse gas emissions from the transport sector through transport electrification and the use of renewable energy sources is essential for addressing climate change. These measures represent key strategies for achieving the objectives of SDG 13.



Scientific and Educational Approach

Developing sustainable transport systems requires well-qualified professionals and continuous advancement in scientific research. International cooperation and educational programs facilitate the exchange of knowledge and experience, promote innovation, and support the development of modern expertise. Uzbekistan is actively participating in international initiatives in this field.

International Cooperation and Educational Programs

Within the framework of the **Erasmus+ Programme of the European Union** and in collaboration with **Politecnico di Torino**, higher education institutions in Uzbekistan are developing new academic programs in sustainable transport. These programs are designed to prepare highly qualified specialists at both the bachelor's and master's levels while adapting European best practices to local conditions.



New Bachelor's Programs

Specialized academic programs are being introduced in Sustainable Transport Systems, Smart Urban Infrastructure, and Green Logistics.



Research Centers

Collaboration between universities and transport-sector organizations is being strengthened to expand applied research and foster innovation.



International Certification

Professional qualification assessment and certification systems aligned with European standards are being introduced progressively.



Close cooperation between academia and industry is essential for implementing advanced technologies in practice. Meaningful progress is achieved when theoretical knowledge is effectively integrated with practical experience.



Uzbekistan–2030 Strategy and Transport Development

The **Uzbekistan–2030 Strategy** identifies the modernization of transport infrastructure, the digitalization of transport services, the improvement of road safety, and the development of environmentally sustainable transport systems as key national priorities.

2024–2025: Foundation

Modernize transport infrastructure, introduce digital transport management systems, align infrastructure with international standards, and expand the deployment of electric buses and charging infrastructure.

2028–2029: Integration

Gradually introduce environmentally sustainable transport systems under the Green Economy Program and develop transport infrastructure powered by renewable energy sources.

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2026–2027: Expansion

Strengthen transit capacity, deepen international cooperation, develop regional transport corridors, and implement Intelligent Transport Systems (ITS) and smart urban mobility solutions.

2030: Outcomes

Achieve a highly digitalized, safe, and environmentally sustainable transport system while strengthening Uzbekistan's position as a regional transport hub.

Enhancing Road Safety

Improve road safety in line with international standards and introduce advanced traffic safety technologies.

Green Economy

Develop environmentally sustainable transport systems under the Green Economy Program and significantly reduce carbon emissions.

Digitalization

Fully digitalize transport management through the adoption of Artificial Intelligence (AI) and Big Data technologies.

Sustainable Transport for a Sustainable Future

Sustainable transport is not only about adopting modern technologies; it is a comprehensive approach aimed at improving economic efficiency, ensuring environmental sustainability, and enhancing people's quality of life. Its development is essential for creating a safe, efficient, and sustainable transport system for future generations.



Quality of Life

Sustainable transport improves urban living by enhancing air quality, reducing noise pollution, and providing safer and more convenient mobility. These benefits contribute directly to a healthier, more livable environment and a better quality of life.



Innovation for the Future

Emerging technologies, digital solutions, and renewable energy are shaping the future of transportation. Every innovation contributes to making transport systems more efficient, safer, and environmentally sustainable.



Environmental Protection

Protecting the environment through reducing greenhouse gas emissions and promoting the efficient use of natural resources is one of the fundamental objectives of sustainable transport. These efforts help preserve a healthy environment for future generations.

Building a sustainable transport system requires a long-term strategy, consistent public policies, scientific research, and active public participation. As a result, safer, more efficient, and environmentally sustainable transport systems will be developed, strengthening the country's economic competitiveness.

Thank you for your attention!

