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# ENVIRONMENTAL PROTECTION - SUSTAINABLE DEVELOPMENT - TRANSPORT: CHRONOLOGY OF THE APPROACH AND POLITICAL-STRATEGIC FRAMEWORK

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# ENVIRONMENTAL PROTECTION - SUSTAINABLE DEVELOPMENT - TRANSPORT: CHRONOLOGY OF THE APPROACH AND POLITICAL-STRATEGIC FRAMEWORK

## *ABSTRACT*

Since the need for movement/transport has conditioned the development of transport networks, the management of the transport infrastructure largely depends on the guidelines or the policies for the development and management of transport. However, although there were concerns about the impact on the environment in the past five decades, it was only in the early 21st century that the effects of transport on the environment were adequately evaluated through the formulation of transport policies. It is important that a global consensus has been reached on the fact that the impacts of transport infrastructure and transport on the environment are essential. Still, it is far more important for the policies of protecting and improving the environment not to conflict with economic competitiveness so that properly formulated regulation could lead to discoveries and improvements, which would result in a win-win situation for both the public and the manufacturers and the improvement of the credibility of competent institutions and organisations in particular. Through a chronological summary of the transformation, this paper moves from the basic environmental protection toward sustainable development in global and European frameworks, and it emphasises the essential aspects that must be addressed in defining a political and strategic framework for the management of transport infrastructure and transport in underdeveloped and developing countries to meet the requirements for sustainable development.

***Keywords:*** *transport infrastructure, transport, sustainable development, policy, integration*

## 1. INTRODUCTION

An important basis for all considerations related to the future development of society, not only within one country but also on a global scale, is the concept of sustainability. The Brundtland Commission [1] defined sustainability as the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs while integrating the compatibility of the environment, economy, and society (Figure 1) with the goal of meeting the present and future human needs.

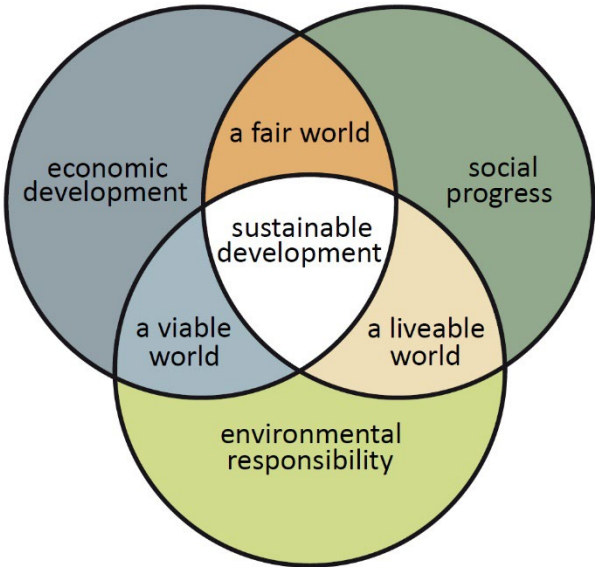


*Figure 1. Common sustainability dimensions [2]*

All human activities take place in the context of specific relations that exist between society, economy and environment, i.e. bio-physical world. Any form of development must necessarily include the change in these relations. The changes in nature and the environment are the product of natural events and the implementation in specific development models, practices, and lifestyles. Similarly, any change in the natural environment has significant social and economic consequences for the quality of life.

The development of society has also changed these relations. In some instances, the development resulted in benefits for both sides. In some other cases, there were benefits for the human population to the detriment of the abilities of the ecosystem, which resulted in the reduction of their capacity for the future. Such negative changes were not particularly relevant when they took place on a scale insignificant for the natural environment. At a time when the human population was smaller and new territories could be conquered after the local capacities were depleted, the abandoned areas had sufficient time to recover and return to their initial capacity. However, with the growth of the human population, particularly during the 20$^{th}$ century, a serious problem of disbalance occurred in which the society could no longer function as if economy and ecology were two independent disciplines without the need to rely on one another. Human activities would be reduced to a pattern that can be sustained in the future by approaching the problems of the environment and development with the goal of harmonizing human needs with the planet's capacity to deal with the consequences of human activities.

## 1.1. GROWTH AND SUSTAINABILITY

Modern economic thought has long been under the influence of the doctrine that production is the driving force of economic growth, that the capital is made through the economy and the natural resources are interchangeable, and that nature is free. The growth of production and consumption as basic driving forces has led to the attitude that clean air, water, and ecosystems are, in fact, "free" raw materials, which are consumed in the production process without restrictions and bring larger profit. Everything was subordinated to the growth of production and consumption at any cost, which has tragically degraded the human reputation. Consumer society was created, a society which abuses the scientific and technical achievements by its treatment of nature and fails to establish a balance between human abilities and needs. A logical consequence of such behaviour is the creation of a new image of scientific rationality as an imperative of power and technical and technological prestige. Modern technology thus serves the economic and financial endeavours, political goals, exploitation and dominance systems, i.e. the system of power and social control.

According to the changed perspective, the concept of sustainable development was introduced instead of the concept of economic growth. The difference is in that growth refers to the increase in the physical volume of production, while sustainable development refers to the qualitative changes in the physically unchanged economic system. The basic concept of this approach is the creation of a new efficient resource distribution and uses a system based on the principle that the reserves of natural resources should not be wasted beyond the limits of the ability of the natural system to recover. The concept of sustainable development emphasizes the maintenance of natural resources and the natural environment as a prerequisite for developing any economic activity to achieve human well-being and quality of life. Nature provides "life support mechanisms and services" as a basis for social environment and progress. Economic activities are the means to utilize these resources and to release their potential value to society to meet human needs. According to this model, economization is the human activity that continually converts natural resources into the quality of life as expressed in terms of goods and services. Clearly, a healthy environment and wise use of natural resources are indispensable for sustainable development providing the basis for long-term quality of life.

Sustainability should not, as it often is, be regarded as a finished concept but as a development goal. Today's understanding of the concept of sustainable development is based on equal treatment of components of ecology, economy and society when formulating development policies and strategies. An integral approach and consideration of the interdependence of these factors become the foundation for development planning. In the long run, sustainable development of the human community can only be expected if all three aspects of sustainability are balanced in development planning. In this way, adequate development quality is achieved as a goal, which basically represents sustainability.

Sustainability is far more related to the human species and its activities than the environment. Nature "recognizes" all possible ways of managing its own systems in a sustainable way, and has been creating and developing strong, sophisticated ecological systems and very complex species for an immeasurable number of years. Sustainable development, therefore, represents a roadmap for the progress of mankind by which the

human species would manage its systems in a manner that is consistent with nature's ways, rather than systematically damaging such systems as it is today.

When the environment is observed in the framework of sustainable development, it is not implied that the best solution for the environment is to remain unchanged forever, or that the return to its initial condition is necessary. The human population is constantly introducing changes to its environment, and clearly, the needs of the growing population cannot be met without any change in the environment. However, changes must be introduced carefully and methodically, especially when they relate to possible effects that cannot yet be fully comprehended.

When designing development strategies based on the idea of sustainable development, it is necessary to bear in mind that this concept implies certain, but not absolute limitations that are imposed on natural resources by the existing state of technology and social organization, as well as the ability or capacity of the biosphere to absorb all kinds of harmful and waste matter primarily resulting from the economic activities. However, the technology and social organization can be managed satisfactorily and thus can be significantly improved to create the necessary prerequisites for a new, qualitatively different economic development. Sustainable development, as the middle way between very rapid development with low tech-economic efficiency and development with huge costs and a significant reduction in the country's social product, is a philosophy that is characterized by the integration of economics, technology, sociology and ecology in development planning and realization, where investments in the environment give immediate positive financial results.

### 1.2. SUSTAINABLE TRANSPORT INFRASTRUCTURE

As an essential basis for achieving inclusive development, a sustainable infrastructure that also includes transport infrastructure supports all economic activities. Inadequate infrastructure remains one of the most prominent obstacles to growth and sustainable development and, therefore, to fight against poverty. Good infrastructure removes economic growth constraints and affects the increase in production and productivity. Investments in sustainable infrastructure can help create jobs, increase international trade, and promote industrial growth and competitiveness while reducing inequalities both within and across countries.

Sustainable transport infrastructure is essential for reducing poverty and extreme hunger, and achieving social prosperity, as it partially improves access to basic services and facilitates access and knowledge of job opportunities, thereby increasing human capital and the quality of life. It also improves the level of health and education, helps to achieve gender equality, and provides clean water and sanitary conditions as well as access to responsive energy and housing. Sustainable infrastructure promotes sustainable consumption, production and use of resources to ensure the resilience of habitats and settlements and sustainable ways of using the ecosystems and associated resources. On the one hand, quality infrastructure increases food safety through more efficient use of resources and reduces vulnerability to environmental shocks. On the other hand, poor infrastructure may even kill people, largely by air and other types of pollution and traffic accidents. Also, it exerts pressure on the use of land and natural resources to the extent that can threaten the sustainability of future generations and create an unsustainable economic burden in the future.

Transport infrastructure management systems, through the transport network planning and construction, operation planning, as well as system maintenance at a satisfactory quality level, have some of the key implications for implementing the concept of sustainable development since there is a task to meet the social and economic needs of individuals and communities in relation to the movement of goods and people while ensuring the conditions for rational use of natural resources and healthy life of the population.

## 2. ON THE JOURNEY FROM PROTECTING THE ENVIRONMENT TO SUSTAINABLE DEVELOPMENT

At the end of 2001 [3], a survey was organized in 30 countries, including OECD (Organization for Economic Co-operation and Development) countries, developing countries in Africa, Asia, and Latin America, as well as the Eastern European and Central Asia countries with economies in transition. Around 30,000 people participated in the survey. The results showed that 44% of respondents identified the degradation of natural resources (12% of respondents) and the pollution of the environment (32% of respondents) as the biggest threats to future generations. Other important issues included economic hardship (22% of respondents), wars and conflicts (13% of respondents), diseases (12% of respondents) and lack of food (6% of respondents). Although a survey showed a high general concern for the environment, there were also significant differences in approaches depending on the countries' development levels. In countries with a high gross domestic product (GDP), residents are more concerned about the general problem of environmental endangerment, compared to countries with low or medium GDP, where the concern is of local or national character, especially in relation to air and water pollution. This high level of concern provides a political basis for additional strategies and financing activities relating to the environment and sustainable development. Accordingly, and under the auspices of the UN (United Nations Organisation), significant actions are taking place. Various aid organisations are formed to preserve what can be preserved in developed societies and to protect and preserve the large sources of resources found in the underdeveloped world.

Up until 30-40 years ago, the focus was mainly on mitigating the pollution and destructive use of natural resources. Today we are interested in integrating the care for the environment into the notion of economic growth and development. The initial understanding of the environment as a barrier or a limiting factor for economic activities has changed to the understanding that sound and sustainable economic development can only be achieved by respecting the ecosystem functionalities and by using the benefits from new opportunities resulting from the appropriate use and/or preservation of the environment.

### 2.1. GLOBAL ACTIONS

The first organized responses to the humankind environmental crisis appeared in the 1960s. Initiatives to protect and improve the environment have been launched by the UN.

At the first UN Conference on Human Environment, held in Stockholm in 1972, a declaration was published with 26 principles concerning the major issues of the environment, from social and economic development issues, resource consumption and the pollution of the environment, to the role of education and science in the environment protection [4, 5]. In addition, the Conference established a set of new principles, including the following:

- sovereign right of States to exploit their own natural resources;
- responsibility for cross-border pollution;
- integral development planning;
- "the polluter pays" and alike.

An important result of the conference was the establishment of the United Nations Environmental Programme (UNEP), an institution whose task is to assist the actions to solve problems related to the impact on the environment within the membership framework. The conference also gave a strong incentive for the preparation of international recommendations and regulations for environmental protection, as well as national legislations. At this stage, the institutionalization of environmental policies took place in many countries, accompanied by the establishment of ministries or agencies for the environment, the adoption of laws and by-laws on environmental protection, as well as the adoption of certain economic instruments and set up of national environmental monitoring systems. All over the world, NGOs and groups for environmental protection were established having an increasing influence on the environmental protection policy. The characteristic of this period is a passive defence of the environment from pollution in manufacturing processes using different filters and/or purifiers.

In 1987, the World Commission on Environment and Development published a report entitled "Our common future", which came to be known as the "Brundtland Report" [1]. It was concluded that the existing relationship between the economy and the environment has resulted in numerous problems, such as: global warming, ozone depletion, acidification, deforestation, the disappearance of biological species, desertification, and radioactive and other hazardous waste. This report promotes the idea of sustainable development, the concept of which is integrated into the documents of the Conference on Environment and Development, held in Rio de Janeiro in 1992. The documents adopted in Rio represent the basis for a new attitude of the international community towards the environment, with sustainable development as the basic strategy for the relations between the economy and ecology. The conference will be remembered for the following five official agreements:

- Declaration on Environment and Development;
- Framework Convention on Climate Change;
- Convention on Biological Diversity;
- Principles for a global consensus on management, conservation and sustainable development of all kinds of forests;
- Agenda 21.

Agenda 21 [6], i.e. the action plan for the achievement of sustainable development, is particularly important as a detailed programme dealing with the basic requirements for sustainable development in the 21st century. It consists of 40 chapters organized into four sections, in particular the following: social and economic dimension, conservation and management of development resources, the role of social groups, and means of implementation. The approach from the lower local communities towards the higher international forms of organization is emphasized in many areas. This is probably one of the reasons why many of the results stipulated by the Agenda at the international level have not been successfully achieved. On the other hand, numerous successes have been achieved at the level of local communities.

Agenda 21, as well as the other key documents produced by the conference, do not represent a binding agreement. It may need to be understood as a set of harmonized views on the nature of the problem, the relevant principles, and the framework of desirable and possible pathways towards solutions, considering the national and other interests. Due to the significance of the transport infrastructure management activities, it is necessary to specify the activities proposed to achieve the goals:

- achieving the integration between the environmental protection and economic development approaches;
- improving decision-making processes;
- improving planning and management systems;
- improving the information resources;
- building of sustainable development institutions at the national and international level;
- adopting a national strategy for sustainable development.

This document, as well as the concept of sustainable development, were both praised and criticized. Still, Agenda 21 undoubtedly represented an instruction and reference document for economic development and environmental issues in the coming years.

At the same time, the UN principles of environment and development, known as the Principles of Sustainable Development, were also adopted. Since then, the concept of sustainable development has been considered the basic strategy for the development and future relationship between the economy and ecology. It reaffirms the human right to a healthy and productive life in line with nature, as well as the need for close cooperation between countries with a view to achieving sustainable development.

Five years after Rio, a UN Conference was held in New York, the “Earth Summit +5”, with the aim of showing the extent and how the tasks set in 1992 were accomplished, especially how Agenda 21 was implemented. The general conclusion was that very little was done from what was agreed upon in Rio, although there was indisputable progress [7]. This summit dedicated special attention to the worrying climate changes, deforestation, piling of hazardous and other waste in all three states of matter, the increasing need for clean drinking water, and at the same time, to growing poverty and other trends.

The third Summit took place in 2002 in Johannesburg. However, significant results in terms of protection and improvement of the environment on Earth were lacking. It is particularly important to emphasize that there has been a major divergence in the attitudes of the world’s most advanced countries that should actually be beacons for other countries when it comes to ensuring the sustainable development of the planet [8]. A similar trend continued in Rio de Janeiro in 2012 and New York in 2015. The 2012 outcome document, entitled “Future we want”, reaffirmed the principles set in Rio in 1997, established a plan to define sustainable development goals by 2015 and give clear support to the so-called “green economy”. One of the emphasized elements was sustainable transport as a component of sustainable development that can help economic growth and improve accessibility. It expressed support for the development of sustainable transport systems, including energy-efficient systems of multimodal transport (mass public transport systems in particular), clean fuels and vehicles, as well as the improvement of transport systems in rural areas.

The most important result of the Summit on Sustainable Development (New York, 2015) was the preparation of a new Agenda for Sustainable Development by 2030 and its 17

Sustainable Development Goals (SDG). The agenda was later adopted at the session of the UN General Assembly in September of the same year [9]. SDGs, also known as the Global Goals, represent a universal call for action to eliminate poverty, protect the environment and ensure peace and prosperity for all. The goals are interconnected since the key to the success of one goal often lies in considering challenges inherent to another goal. A strong emphasis has been placed on the need to establish new forms of partnerships between governments, business sectors and civil society, as well as on the strengthening of international institutions. Sustainable development goals are defined in detail by their targets, i.e. results.

The transport infrastructure and transport are mutually interconnected through SDGs [9]. Thus, target 11.2 (SDG 11 - Sustainable cities and communicates) is to provide access to safe, affordable, accessible, and sustainable transport systems for all, improving road safety, notably by expanding public transport. In support of economic development and the well-being of society, it is necessary to ensure quality, reliable, sustainable, and resilient infrastructure, with a focus on affordable and equitable access for all (target 9.1 of the SDG 9 - Industry, innovation and infrastructure). From the point of view of environmental protection, target 3.9 (SDG 3 - Good health and well-being) requires to substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution, while target 9.4 requires upgrading infrastructure and retrofitting industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes.

If it is necessary to quantify the transport that could be achieved by meeting the set sustainable development goals, it should be stressed that sustainable transport represents the provision of infrastructure and services for the movement of people and goods (enhancing economic and social development for the benefit of the present and future generations) in a way that is safe, responsive, accessible, effective and resilient, while minimizing the carbon emissions and other emissions, as well as the impact on the environment [10]. Sustainable transport supports inclusive growth, job creation, poverty reduction, access to markets, empowerment of women and the well-being of people with disabilities and other vulnerable groups. It is also essential as the support for the efforts intended to combat climate change, reduce air pollution, and improve safety on the transport infrastructure.

### 2.2. EUROPE

Radical changes in the policies of developed countries, from the protection of the environment towards sustainable development, lead to the integration of environmental aspects into the development policies in other areas: energy, industry, agriculture, transport, trade and alike. However, members of the European Union (EU), the Netherlands and Scandinavian countries, in particular, have, over time, spread their proactive attitude across the EU.

Important determinants for policymaking within the EU were the adoption of the Single European Act [11] and the Treaty on the European Union [12], which practically created the basis for achieving the goals and guiding principles when it comes to the environment. These acts also contain the determinants allowing for the introduction of the need for protection and the improvement of the environment in other community documents of any level and bring environmental protection to the policy level. The only differences that could

not have been agreed upon at the community level were: “environmental” fees, spatial and urban planning, and land use, where the Member States retained their right to form their own attitudes.

An important document for actions in the field of transport is the resolution of the European Conference of Ministers of Transport dated November 23, 1989 [13]. The resolution reflects the harmonized attitudes of the official government representatives in the field of transport that will continue to act both at the national and international levels in the spirit of these very concrete commitments.

The first part of the resolution clearly states that it was adopted because the problem of the impact of transport on the environment became acute in Europe, because of the obvious tendency to increase the volume of transport, especially road transport, as well as the emergence of very endangered areas, such as the mountain regions and river valleys.

The preamble to the resolution emphasizes that there is strong scientific evidence of the severity of the problem and the need for immediate action. Although the users of transport services should have the freedom to choose the means of transport, specific measures in relation to vehicles (emission control, vehicle improvement, quality of fuel), transport and infrastructure management in urban and interurban areas (project assessment, design, assessment of the need for new construction) are recommended.

While assessing the projects, it was recommended that infrastructure investment projects should, from the very beginning, include the assessment of direct and indirect effects on the environment, and that the assessment of the proposed investment must include the transport and the assessment of the impact on the environment in evaluating the options, including those options based on the expansion of rail or other public transport infrastructure and those without such expansion. Furthermore, it is also important to address the recommendations regarding public involvement in project planning, particularly where no voting is organized in the national parliaments, with the right to access detailed information on projects and potential realistic alternatives. Design recommendations include the choice of route, the use of techniques and materials that are not detrimental to the environment, and the obligation to exchange information at the international level.

In 1992, the European Commission also published a White Paper on the Common Transport Policy, which was adopted the following year [14]. The White Paper provides a broader approach to the transport policy with a focus on promoting sustainable mobility through improving the quality of transport systems in relation to competition, safety, and environmental impact. The trend of a proactive approach to sustainable mobility is also maintained in the following policies adopted for the EU territory. The current transport policy (White paper for the period up to 2050 [15]) raises serious issues for the EU member states with an obligation to decide on the direction of action and development of transport in line with the basic principles of sustainability, with the aim of creating a single European transport territory with a prominent competition and fully integrated transport networks. The main objective of European policy is to respond to the increasing mobility needs of citizens, goods, and services within the EU through the development of a modern network of transport infrastructure allowing faster and safer journeys, while promoting sustainable and digital solutions. The main challenges and obstacles encountered in the achievement of this goal include the following:

- congestions, which primarily affect road and air transport;
- sustainability, since the transport is still dependent on oil in meeting the majority of energy needs, which is environmentally and economically unsustainable;
- air quality, since the EU committed to reduce emissions by 60% by 2050 compared to 1990 levels and to continue to reduce pollution from vehicles;
- infrastructure that does not have a uniform quality across the EU;
- competition, where the fast-growing transport markets in other regions threaten the EU transport sector.

Since 1972, the EU has adopted seven Environmental Action Plans (EAP), while the eighth is in the final stage of preparation. In the first two action plans (1973-1981), the basic principles were: prevention is better than cure, the polluter pays principle, the obligation to assess the impact of investment projects on the environment and alike. The third and fourth action plans (1982-1986, 1987-1992) sought to provide a more comprehensive strategy to protect the environment and natural resources, shifting the focus of action from the protection against pollution to the prevention of pollution of the environment.

The fifth EAP (1993-2000) is clearly based on the concept of sustainable development, relying on the institutional framework established in the 1992 Maastricht Agreement. The plan defines the goals, targets, and deadlines for achieving the basic goal, which was not characteristic of the previous plans. This plan strived to establish a normal balance between human needs for economic and social progress, on the one hand, and the precautions and concerns aimed at preserving the environment and conserving natural resources, on the other hand. The main goals of the plan are to improve the implementation of regulations on the environmental impacts, to integrate the policies on the control of the environmental impact in all sectoral policies, and to ensure the participation of the public and the private sector in making development decisions. The plan specifically elaborates on the basis for the implementation of the sustainable development concept, namely the integration of requirements for environmental protection in five sectors, in particular the following: energy production, transport, tourism, agriculture, and industry.

The sixth EAP (2002-2012) provides strategic direction for EU policies on the control of the environmental impacts during the decade in question, which includes the following priority areas:

- climate changes,
- nature and biodiversity,
- environment and health, and
- natural resources and waste.

It is of particular importance to emphasize that the sixth EAP provides an environmental protection component for the implementation of the sustainable development strategy. In this context, key approaches should be underlined which allow the implementation of the adopted concept:

- ensure the implementation of the legislation in force;
- ensure the integration of the issues pertaining to the protection and improvement of the environment in all relevant sectoral policies;
- development of partnerships between countries, manufacturers and consumers in order to find solutions in a joint effort;

- provide better and more accessible information on the environment for the citizens;
- develop a much more comprehensive attitude towards the use of land.

The seventh EAP (2014-2020) highlighted the following as the main goals:

- to protect, conserve and enhance the natural capital;
- to reduce emissions and provide more efficient use of renewable and non-renewable natural resources in the economy;
- to safeguard the citizens from environment-related pressures and risks to health and well-being.

The main tools identified as the assistance in the achievement of these goals are the following:

- better implementation of legislation;
- better quality of information by improving the knowledge base;
- more and wiser investment related to requirements of environment and climate policy;
- full integration of environmental requirements and considerations into other policies.

The proposal of the eighth EAP (for the period until 2030) aims to speed up the transition to a climate-neutral, resource-efficient economy that would return to the planet more than it needs. The plan basically recognizes that human well-being and prosperity depend on healthy ecosystems in which we live and work.

It is important to emphasize that the previous seventh and the future eighth EAP do not replace the EU Sustainable Development Strategy but complement and support it. The first EU strategy was adopted in 2001 [16] with the aim to identify and design the activities that would allow for continuous improvement of the quality of life through the creation of sustainable communities capable of using and efficiently managing the resources, to use the potential ecological and social-economic innovations in commerce, and to ensure the prosperity, environmental protection, and social cohesion. The main areas covered by the strategy were the following:

- climate change and clean energy;
- sustainable transport;
- sustainable consumption and production;
- conservation and management of natural resources;
- public health;
- social inclusion, demography and migration;
- global poverty and the challenges of sustainable development.

The strategy was revised in 2006 [15] primarily because of the unsatisfactory results (transport, problems in urban areas, poverty, health) and new challenges (climate changes). The main threats to sustainable development are highlighted as follows: global warming, resistance of certain diseases to antibiotics, long-term effects of hazardous chemicals, food safety, poverty, population ageing, loss of biodiversity and land, increase in the amount of waste, congestion in traffic, especially in urban settlements, and regional imbalances. There is a pronounced need for gradual changes in relation to unsustainable consumption and production processes, as well as towards an integrated approach to policy-making and global cooperation.

In 2010, the EU adopted a Europe 2020 Strategy [17] with the aim of helping the EU countries exit the economic crisis so that the economy of Europe would become smart, sustainable, and inclusive. The priorities of this strategy included the following:

- smart growth - the development of a knowledge-based and innovation-based economy;
- sustainable growth - promoting a more competitive economy that uses the resources effectively and takes care of the environment;
- inclusive growth - promoting an economy with a high degree of employment that generates economic, social, and territorial cohesion.

Transport plays a significant role in the implementation of the Europe 2020 Strategy through the implementation of activities related to the use of renewable energy sources, modernization and decarbonization of transport, promotion of energy efficiency, improvement of infrastructure, development of smart transport systems, improvement of the efficiency of the EU transport system, tackling the problem of congestion and emissions in urban areas, and providing support for the industry. In line with its aspirations, strategies and goals, the EU has significantly influenced the design of the global sustainable development agenda [9].

## 3. TRANSPORT POLICY AS SUPPORT TO SUSTAINABILITY

The transport policy is a part of society's economic policy and represents a synthesis of public interests in the domain of transport and an important component of social activities in the domain of development, even in countries with a highly competitive economy. While the market principles have applied or still apply in such countries, due to market imperfections and the need to combine some of the more general interests and attitudes, the need for society to have and implement a predefined policy in the field of transport has been loudly or silently recognized to a lesser or greater extent. The transport policy as part of the general economic policy of each country is, above all, conditioned by socio-economic development, the goals of such development and the targets set in a certain period. On the other, the achieved level and the structure of the transport system of a country also define the policy. The transport policy in most developed countries has begun to gain new significance and dimensions since the middle of the last century, especially after the first energy crisis (October 1973 - March 1974) and after noticing the negative effects of transport on the environment.

During the 1980s, a shift in the formulation of transport policies took place in developed countries, primarily because of forecasting a very rapid increase in the traffic volume on roads. With investments in the construction of new transport capacities, the investments were mostly focused on expanding the existing capacities and preventing congestion, while in the 1990s, a sustainable transport policy model was promoted, with a focus on the quality of the environment, in line with the set principles of sustainable development. This came because of the unsustainability of policies based on continuous demand satisfaction and the inability to meet the criteria of economic, social, and environmental justification.

The economic justification of the policies could not be met due to congestion in the transport network. Congestions have caused massive business costs, and the construction of infrastructure was unable to eliminate them. This happened because the construction of the transport infrastructure, in particular the road infrastructure, generates and attracts traffic, and thus results in the increase of the length and duration of the journey, as well as

in the transition to car transport from other forms of transport, rather than increasing the number of journeys and the quantity of goods transported by means of mass transport. While the transport planners have assessed the increase in transport due to the improvement in infrastructure as positive, the fact is that the construction of roads leads to such an increase of transport that relatively quickly cancels all the achieved savings in time and costs of transport, as well as to the creation of larger traffic congestions.

The social unsustainability of the transport network development is reflected in the fact that there is an increased use of land for roads and stationary transport and the change of the purpose of land along roads, whereas reducing the use of public transport causes the increase of dependence on cars, which endangers people who do not own their own vehicles. Therefore, poorer households tend to give up on some other necessities and decide to procure cars, which is accompanied by the negative health effects of loneliness and isolation among those who do not own vehicles, as well as health problems caused by air, soil, and water pollution. Another category, having both a social and economy impact are traffic accidents. Costs of traffic accidents are very difficult to quantify and significantly differ between rich and poor countries.

Following modern trends, transport policies and strategies have been developed and adopted in the former Socialist Federal Republic of Yugoslavia (SFRY) from time to time. However, the need to invest in new road and rail routes represented a great burden, given the lack of a modern network encountered by the country in the mid-20$^{th}$ century.

After World War II, there were very few roads with modern pavement built on the territory of SFRY (only about 1,200 km of roads covered with stone blocks or asphalt), which had a very significant impact on the transport infrastructure development policy. The emphasis was on the construction of modern roads and the interconnection of major regional centres with the rest of the country. The situation was somewhat better in terms of railways (about 7,400 km of normal gauge and about 2,300 km of narrow gauge), but a significant amount was destroyed during World War II. In the 1990s, due to the reduction of the economic power of the country and the wars, there was first a period of stagnation, followed by a complete cessation of investments in new transport infrastructure. The trend of investing in a new infrastructure was mostly renewed at the end of the 20$^{th}$ and the beginning of the 21$^{st}$ century (depending on the newly formed countries). Still, the needs for improvement, rehabilitation and reconstruction of the existing roads and railways have increased significantly, as well as the infrastructure needed for other modes of transport. At the same time, it must be emphasized that most countries in the region face a significant population decline due to migration towards developed countries. This impacts their potential to increase internal traffic demand, except in large cities. Also, former SFRY states that are not yet EU members have limited potential for increasing transit traffic.

At the current stage of development, considering the current situation and the recommendations of experts, it is necessary to accept the fact that most of the transport activities in the region, as in most Central and Eastern European countries [18], take place on the roads, and that the trend of growth will continue to be very high in the next (at least) ten years. So, it is important to provide the necessary infrastructure for such needs, with maximum observance of the human right to a quality environment. Trends in road traffic lead to even greater inefficiency, congestions, pollution, damage to health and dangers to life, which is particularly favoured by the long service life of existing vehicles. To develop

the country's transport policy, it is necessary to adopt certain recommendations that pertain to the following:

- development of a long-term, ambitious, and realistic vision of the transport future, which would lead to the shaping of sustainable transport,
- changing the fact that the transport policy is based on demand,
- significant improvement of the quality and offer of public transport,
- development of means and centres of multimodal and intermodal transport as an alternative form of transport demand management,
- increasing traffic safety,
- use of advanced transport management systems to increase the efficiency of transport networks, especially in urban areas,
- introduction of consideration of external effects of transport, both in terms of costs and benefits, while adopting the policies,
- development of national strategies and programs that would include the setting of national goals and targets for reducing the impact of transport on the environment, based on international conventions and other binding documents,
- introduction of a tariff system for road use that would reflect unfavourable conditions of congestion and other types of external costs,
- establishing a system for monitoring basic environmental indicators related to transport impacts,
- construction of new roads only in places where it is extremely necessary to meet the needs, and
- introducing mandatory strategic environmental impact study when considering the adoption of transport policy.

With these recommendations in mind, three questions are raised that emphasize the potentially contradictory goals of the transport policy:

- whether the existing relationship between economic development, environmental protection, and support for the right to personal choice is appropriate,
- whether it is necessary to change this relationship (e.g. towards a higher degree of protection or greater competitiveness by reducing congestions), what measures should be taken and how their goals will be achieved, and
- whether we are ready to accept the wider consequences (for the environment, personal choice, industry competitiveness, employment, and the economy as a whole) of any of these measures.

As previously mentioned, the decision is related to the current relations in a specific country and the level of its economic development. It often happens that the desire for better and more efficient transport connections prevails over the desire for protection and improvement of the environment, which is not in line with sustainable development goals. In many underdeveloped and developing countries, the length of transport infrastructure is still one of the main indicators of development, which is a very big obstacle in formulating the transport policy in accordance with the principles of sustainable development. Related to this is the idea of the need to separate economic and environmental development goals. This option does not reject the strategic goals pertaining to environmental protection and improvement, but their solution is left for later, after the "appropriate" economic progress is achieved. This approach is not promising because if new investments would not take

environmental protection measures and their costs into account, there would be unjustifiably large environmental damage and significantly higher costs in the future.

Regardless of the choice of development strategy, the price of its implementation must be paid, either by the current generation or by transferring the costs to future generations. Each of these alternatives will have long-term consequences for the national economy, the environment, and the social status of citizens. Therefore, most underdeveloped and developing countries still do not have a clearly formulated environmental protection and transport development strategies within the concept of sustainable development, nor the development strategies in other spheres of human activities.

Without ignoring the basic goals of formulating the transport policy, such as economic development, better connectivity, industrial development, etc., it is necessary to formulate certain goals that would make the transport policy sustainable:

- ensure that transport policy at all levels of government is linked to land use planning, and reduce the need for mobility accordingly;
- stop endangering the land by transport infrastructure in areas that are under a certain type of protection, such as conservation zones, national and natural parks, cultural goods, etc.;
- achieve a level of air quality that will prevent threats to human health and the environment, according to the recommendations of the World Health Organization;
- reduce carbon dioxide emissions from traffic;
- reduce traffic noise emissions;
- improve the quality of life, especially in cities and settlements, by reducing the dominance of passenger and freight vehicles, and by providing and encouraging alternative modes of transport and means of mass passenger transport;
- increase the share of individual travel and the transport of goods by transport means that are less harmful to the environment, with the best possible use of the existing infrastructure;
- reduce subsidies for inefficient modes of transport;
- significantly reduce the share of materials and energy sources in transport infrastructure and the vehicle industry that cannot be recycled or renewed;
- change the travel behaviour of individual participants;
- improve the safety of all the transport participants.

In accordance with the said goals, it is necessary to recommend appropriate measures by developing strategies, where all possible options should first be studied well in the light of the three previously mentioned questions and considering the experiences of developed countries that faced the problem of sustainable transport much earlier. In each of these domains, both in theory and in practice, some countries have developed complex, more or less coherent programs from the technical, technological and economic points of view that provide a certain reduction of negative effects on the environment in acute situations.

## 4. CONCLUSION

For underdeveloped and developing countries faced with numerous problems on which their further course of development depends, the concept of sustainable development is a

major challenge. While acknowledging its necessity, especially in the domain of transport, such societies must act gradually since complex factors of the concept of "how and in what way" give way to the decisive "by which means" concept. The specific characteristics of individual Member States also impose additional difficulties for which the solution must be found in the regulatory framework, laws and documents that guide further development and protect the environment in accordance with proclaimed global trends. It should be borne in mind that developing countries are often among the countries in which the technical and technological equipment of the population has developed faster than the development of their consciousness and wisdom of the state to avoid the traps and the negative effects of such development.

The most important thing is to define sustainable transport with established goals based on the quality of the environment and the health of the population, as well as to adopt criteria by using international standards, goals, and guidelines, which at the same time meet the local, regional, and global requirements. Through consistent and balanced measures focused on vehicle technology, fuel, and infrastructure, on the one hand, and the shift in transport activities and management, on the other hand, it is possible to achieve the set goals. Meeting the goals requires coordinated cross-sectoral action, with the establishment of certain priorities.

Experiences from developed countries show that measures, such as the increase in fuel prices and the introduction of various fees and taxes for using private vehicles during peak periods of congestion in cities, do not significantly affect the quality of the environment [19]. There is a need to focus on important improvements in vehicle technology, better integration of public transport systems, better connectivity of transport planning and land use planning, better transport management strategies and strategies that emphasize the modal distribution of transport. Of course, it should be borne in mind that the implementation of the policy would also require appropriate regulations, establishing of simple, measurable indicators, ensuring sufficient financial resources and involving all levels of government in solving problems, with adequate awareness raising among the public.

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## ЗАШТИТА ЖИВОТНЕ СРЕДИНЕ - ОДРЖИВИ РАЗВОЈ - САОБРАЋАЈ: ХРОНОЛОГИЈА ПРИСТУПА И ПОЛИТИЧКО-СТРАТЕШКИ ОКВИР

Сажетак: Како је потреба за кретањем, односно саобраћајем условила развој саобраћајних мрежа, управљање саобраћајном инфраструктуром у великој мери зависи од смерница односно политике развоја и управљања саобраћајем. Међутим, иако је у последњих педесетак година постојала забринутост везана за утицаје на животну средину, тек је почетком XXИ века утицај саобраћаја на животну средину адекватно вредновaн кроз формулисање саобраћајних политика. Значајна чињеница је да је на глобалној основи постигнута сагласност да су утицаји саобраћајница и саобраћаја на животну средину битни, али је далеко важније да политике заштите и унапређења животне средине не буду у сукобу са економском конкурентношћу, како би одговарајуће формулисана регулатива могла да доведе до проналазака и унапређења, што би резултирало добитном ситуацијом и код јавности и код произвођача, а нарочито у порасту кредибилитета надлежних институција и организација. У раду се, кроз хронолошки преглед трансформације приступа од базичне заштите животне средине ка одрживом развоју у глобалним и европским оквирима, указује на битне аспекте који морају бити обрађени приликом дефинисања политичко-стратешког оквира за управљање саобраћајном инфраструктуром и саобраћајем у неразвијеним и земљама у развоју са циљем испуњавања захтева за одрживи развој.

***Кључне речи:*** *саобраћајна инфраструктура, саобраћај, одрживи развој, политика, интеграција*