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ROAD INFRASTRUCTURE ASSET MANAGEMENT IN ALBANIA (ALBANIA SITUATION)

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ABSTRACT

Road infrastructure projects after the realization of their investment affected by two main difficulties: a) complexity of each project as a function of a) classification based on the Highway Code and road design standards, as well as b) the risks that threaten progress throughout the life cycle of road use. In these conditions, the implementation of successful and effective means, techniques of effective management of funds in function of benefit from the users of the road infrastructure, becomes necessary for the achievement of the objectives during maintenance, objectives aimed at minimizing fuel costs, preserving means of transport, reducing the number of accidents. Albanian Roads Authority is the administration body under the Ministry of Infrastructure and Energy, which govern the maintenance process of the roads network. Another agency of road infrastructures is Albanian Development Fund, which managed the funds for the construction of regional, urban infrastructures road and rural roads. The developed strategy for efficiency management of the investment are based on the financial management, putting the accounting and technical principles in force and the efficiency in the use of funds for improvements. This includes using a balance of investments made to launch a database over years and developing basic documents for planning and controlling spending in such activities.

The question raised and require deep analysis is:

i. How possible is to calculate the accept value for the road infrastructure on its useful life, using the principles of valuation of properties for assets applied internationally?

The economic and technical of property evaluation theory of the investments is consider in this study. International and national standards is applied. The results show that for a better control of huge budget charged in infrastructure construction, within useful time of their design construction, the principles of property valuation and accounting are suitable for efficiency infrastructure management. The key immediately aspect is the creation of the database, update the inventory for all road categories and prioritize refinancing and maintaining in long term of road assets. the based on technical, economical and social indicator.

KEYWORDS - Infrastructure, asset management valuation, lifetime payment, real valuation.

1. Introduction

Network infrastructure, is based in the ground transportation system, and representing the largest capital investment, taken over several generations and being organized by the public and private sectors.

Albanian Roads Authority is the administration body under the Ministry of Infrastructure and Energy. Albanian Development Fund is a non-public agency that manages public and foreign funds are required to provide rural, regional and urban of road infrastructure

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investment in Albania. Two agencies have the main activity financing, refinancing and maintaining of the road infrastructure in good condition associated with maintenance, repair and restoration of road assets.

Due to the government compressed budged for construction of infrastructure also the need for an raised alert in management skills, processes and practices available to ensure that road infrastructure services are delivered on budget and on time is recommended and should follow as below:

i. Enable an efficient process for making investments.

ii. Improve the budget allocation process after inventory updated and database created

iii. Improve the effectiveness of budget allocations to insure profit for the costs during span live of assets, based on policy decisions.

The valuation based on market values is an aspect of road asset management that analyzed in this article as the application of asset management methods and techniques in Albania's situation. Using sound of property valuation principles applied internationally it will be possible to calculate a generally accepted value for the infrastructure over its useful life. Concepts such as asset management, valuation and depreciation highlighted.

The aim is the importance of road assets valuation consider the expectancy, needs of users and suppliers also identifying the benefits of valuation as a tool for asset management for formulating proposals for road infrastructure assessment during the maintenance period after database update.

We supported our conclusion base on the supportive documentation; verification of the results based on interviews with key personnel in the management of civil works of road infrastructure and their maintenance.

2. Valuation of Asset Management

2.1 - Scope

The definition according to the OECD (Organization for Economic Cooperation and Development), adopted by the world of the road to asset management is:

"A systematic process for effective maintenance, improving well by combining engineering principles with sound business practices and economic rationalization, providing tools to foster a more organized and flexible approach in making decisions to meet public expectations."

Currently in some European countries, costs from infrastructure and expenses calculated for maintenance are valuable and prioritized in road maintenance management. The situation in the aspect of costs from road congestion or costs from

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accidents and environmental damage are still poorer than those in the narrow sense of infrastructure.

The provision of assistance for road maintenance has had its origin since 1987 even in our country. Considering the fact that Albania had about 50-70% of the road network in need for rehabilitation and despite the funds invested in the years 2007 - 2018 in the road system, again it is found that new investments lack maintenance due to mismanagement or of insufficient funds in the assessment of their maintenance.

Sector reforms in Albania for road investments result in financial expand in road infrastructure, which led to new rules for the valuation and depreciation of assets. The situation in Albania is very different from the western context, created the department of property management in Albanian Roads Authority interested for money managed and planned of public efficiency for road infrastructure. This broad definition of road asset management means managing a road network (roads, bridges, traffic signs, etc.) to meet the needs of business and road users, with the lowest possible cost over a long period.

Within the Albanian context, the goals and objectives of base maintenance performance are as follows:

- ✓ Minimizing any combination of agency costs, user costs and value of the rest of the road network according to a selected time schedule, subject to minimum quality level restrictions (Ferreira et al. 2009a; Madanat 2006).
- ✓ Maximizing the overall network quality or performance subject to annual constraints of the budget (Abaza 2006; Nunoo and Mrawira 2004).

The quantitative and qualitative evolution in transport has been accompanied by the expansion and improvement of the road network. However, the large capital values that solidify in motor transport, high cost per unit ton kilometer, where the road factor takes the largest part, raised to the researchers the challenges related to quality improvement and cost reduction. Table 1 shows statistically the increase of vehicles in road transport in the period 2012-2016, the movement of which is carried out on this road network.

Road transport vehicles	**Unit**	**Years**				
		2017	**2018**	**2019**	**2020**	**2021**
Recorded road transport vehicles	pieces	394,638	445,956	490,899	522,008	562,658
Road transport vehicles that have performed annual technical control	pieces	386,946	307,609	346,404	376,028	401,499

The valuation of the assets subject to road Agencies jurisdiction is one of the main requirements as a key element of their management and planning strategy. Asset evaluation requires:

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- Structure asset management;
- Approval of valuation and methodology to evaluate assets based on technical and economic issue;
- Performance and depreciation indicator for the future value of assets;
- Updated systems for reporting based on the actual state of road network and the actual value of them.

For a better planning and strategic management of activities road agencies should develop a systematic maintenance and evaluation plan as an important role to guaranty the correct management and optimization of the total cost as the whole life cycle of the Albanian road network.

2.2. Assessment

Studies have shown that assessment plays an important role in creating the possibility for reporting of the physical condition of the road network in monetary terms. In addition, the assessment helps managers to inform owners (Ministry of Infrastructure and Energy, Districts) about the effects of current funding levels and reviewing their strategies.

The graph below shows the level of expenses realized on the roads network as a result of their conditions. The green graph represents agency costs because of agency maintenance roads, the graph in blue represents user costs and the graph in red represents sum of costs to users and agencies. When agencies have budgets to fund maintenance according to the required level of service, transportation costs are reduced as illustrated in figure 1.

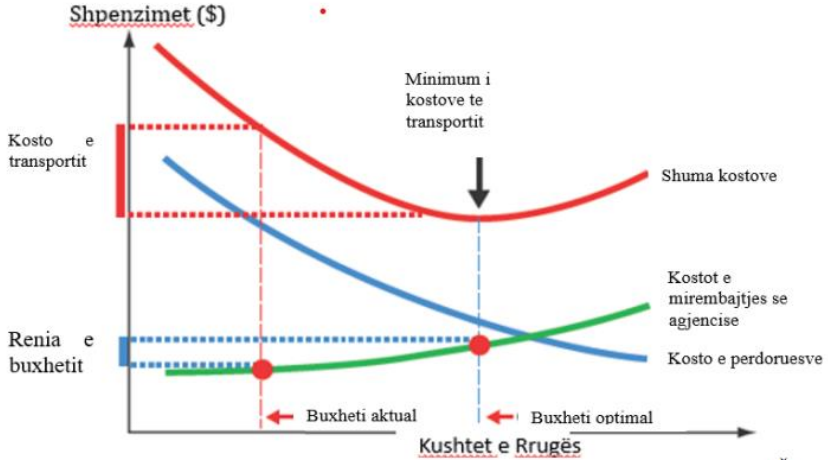

Figure 1: Expense report from road conditions

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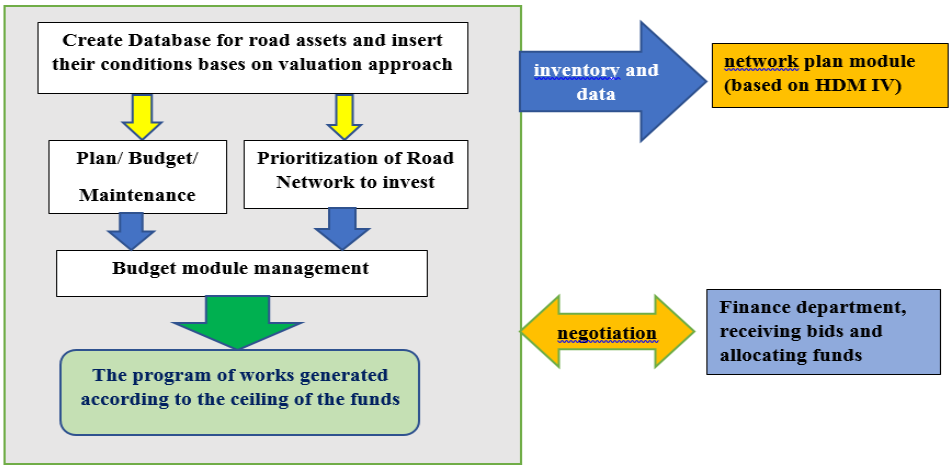

Figure 2. Road infrastructure asset management plan.

The data refers to in this study carried out for the realization of Road Cadaster conditions inventory on the basis of their inspections and the creation of an updated database, based on the best experiences for valuation of road infrastructure. Albanian road agencies use these standards which are based on national and international valuation standards for their assets.

Maintenance budgeting strategy and options can differ from eliminating all the flaws of doing nothing. Based on the terms of their assets and stocks, which is currently not finished, but we have developed a simple way of collecting electronic data and placing them in a database of investments made after 2016, and the valuation of those assets It can take place through the use of replacement cost, based on international standards, relevant laws and decisions. The valuation process has been identified as a tool for efficient asset management.

Valuation and depreciation of assets should be undertaken in accordance with the appropriate Financial Reporting Standards, International Accounting Standard mostly 16 - Real Estate, (IASB, 2016). The purpose of the valuation is to describe the property, based on accounting statements regarding the definition of clear information regarding investments in street activities. The main problems are the recognition of the assets, the content in constituent elements, the determination of the book value, the determination of the level of depreciation.

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2.3. Methods of assets evaluation

The main purpose of evaluating investment alternatives is to measure the inputs (costs) that are spent and the benefits (income) produced by an investment and construction of a system logic to connect them with each other.

Although the standard system of cost-benefit analysis is one of the most rigorous methods for evaluation and analysis of large investment projects in the public sector, is e important to make a rapid assessment of the alternatives identified with the goal at the outset eliminating the initial phase of those alternatives, which for various reasons may not be feasible. This is because in the further stages the development and analysis of proposals requires a lot time and energy and if these are wasted on an alternative or project that has no future, it will it was a misuse of a country's human and financial resources

"Every authority must manage income, expenses, investment and attention and in order to promote the interests of the present and future global financial relations to its community." Approximate valuation for determining market value (the estimated amount for which a property is expected to change) include:

Tangible costs and benefits affected by making the investment are those direct costs or benefits. Costing will apply /marginal benefits for analysis purposes – increase or decrease of costs/benefits if the project will be undertaken referring to Spackman, (OECD, 2000).

Technical and economic analysis to determine the desired road maintenance standards of the network carried out using the HDM-4 model, simulates the total conditions of the life cycle of road assets and the costs for different items of the project. In order to provide economic and technical criteria for allocation optimal funds according to planned budget resources. Strategic analysis for maximization of benefits (net present values - NPV) was used to determine the standards optimal road maintenance.

Desired levels of service are determined for each type of route analyzed, based on data on its condition, road use by users and the satisfaction of traveling with in order to serve as analysis parameters. Reduction of travel time, reduction of expenses operating vehicles, as well as future traffic trends, reducing accidents and the number of victims taken into consideration during the analysis. During the analysis, they taken in consideration unit costs for road maintenance work, based on market e domestic and international.

Costs can divided into two basic groups, which are:

Direct costs of government, including all lower levels of government – the cost of insurance of a service or the cost of administering construction, rehabilitation or maintenance financing of the road network.

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Non-direct costs in the economy are environmental and social effects or competition, in new and reduced investments. At this point, the fact that cost and benefit in one is important period should be evaluated at the constant value of a given day and not at the current level of prices (J. Keci, Phd Dissertation 2017).

2.4. Depreciation methods

In practice, the costing method includes an assessment of the depreciation of investment taking into account technical factors.

Replacement cost of depreciation is an application of the cost criterion used for valuation of specialized assets for financial statements purposes, in which evidence directed to the market is limited or unavailable. Infrastructure classified as a non-current asset that is tangible because the infrastructure is used much longer than one point (such as one year). Since most infrastructure assets will be specialized in nature, they will be valued using an amortized cost-of-replacement approach. Infrastructure consists of several components with different services. These components are crucial for accounting asset write-downs and valuation and its determination. Expert judgment will be needed to decide how the various components of the component elements of the infrastructure matter in assessment terms; the depreciation is of property rights proportional to the consumption of this asset to be used over a period calculated in the project.

Depreciation fund is part of the original cost of the asset, which is treated as an expense in the consecutive income statement. The depreciation fund, moreover, is the measure of the potential loss of a service to an asset, as long as this asset is necessary for reinvested.

The purpose of depreciation is to know the net cost of a fixed asset over time. The basis for depreciation varies from country to country, because even within a country, there are differences. Dias items are depreciated in the condition in which they are found, from greater use of the latter and do not perform the service within the time that the life for which they were designed, others will be used in the course of their expected age, because they do not use or a low number of moving vehicles. Depreciation curve is in some cases a straight line (for traffic signane) or parabolic for (bridges) on the economic life of the building such as:

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Table 1. Known method of depreciation for use of assets (Autostradas' 2016).

Roads Bridges	Wooden	Traffic Signage	Bridges Sustainable Structures
Basic conditions, considering four categories of roads. Asphalt road management system for calculating depreciation as a cost value that replaces almost new conditions asafaltiti in one year. For types of bridges	Wooden bridge 20 years Reinforced concrete beam bridge in a 50 year old T-shape. Historic bridge 200 years Stone Bridge 40 years	Traffic signs, pedestrians and other components are considered lifelong 3-10 years.	The concrete walls with a life span of 11-20 years. Stone walls cut with 10-15 years longevity Stone walls cut with 10-15 years longevity. Pipelines with a length of less than 10 m for a life of 10-15 years

According to international standards "it specifies that the amortization entities responsible for ARRSH and LGUs for projects managed by the ADF should:

a. Application of the depreciation method, which reflects the model of future economic benefits from this asset.
b. Valuate the depreciation of assets in a systematic way throughout life
c. Valuation of the life cycle of amortized savings through consumable exploitation, aging, and activity restrictions and through legal or other use.
d. Depreciation rate and comments on methods at least once a year.

In reality, the depreciation of infrastructure so far to create a sustainable and comprehensive strategy has been done superficially through inspection. Depreciation of fixed assets should be applied only in those parts of the infrastructure that are subject to consumption. Depreciation funds is an indicator of the replacement cost in the future for road network activities considering the current situation if they are in the new state. For accumulation of depreciation from a reliable tool for managing such assets, a possible depreciation model is essential. Some (arc) assets can be rebuilt in new conditions through physical treatment, but it is not economic rebuilding for all assets. For example, asphalt generally represents a non-linear model of depreciation due to traffic loads, age and quality of asphalt building elements. Engineer must be able to determine the depreciation model.

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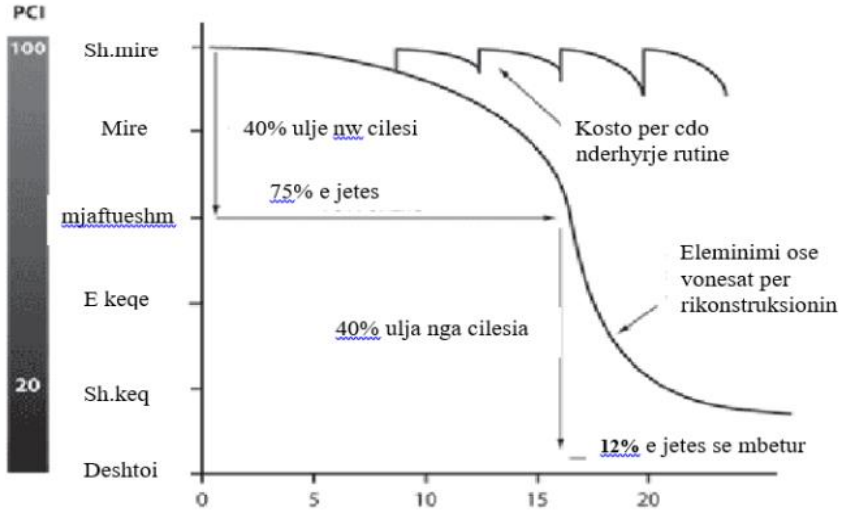

Fig: 3 Illustration of the presentation of the scale of the average annual conditions from the rains against the life cycle project, (Autostradas', 2016)

3. The possibility of evaluation in Albania.

The international literature for the calculation of the asset management value of the infrastructure maintenance times it is possible for the financial accounting reporting IAS 16. By reference, it also takes their danger or it is possible through the replacement cost depreciation method, depreciation calculations while they can be based on various methods that meet international standards. For the pilot projects in their evaluation, we are working and we will show you the continuous adoption of this method in terms of road network in Albania.

The research focused on key personnel shortfalls in street management infrastructures, financial personnel, as well as the evaluation of investments made, practices and follow the policies. The indicators show that standards must be used.

In Albania there is no general agreement on how to set the time period in the infrastructure assessment dealing with life span. International literature shows that the "standard" economic life for each activity is not recommended, as long as the economic life of each path is the product of maintenance in the past and in the future, strategies, climate, topography, construction standards, as well as from traffic. The recommended strategy is that the infrastructure of analyses economic offers for life of their assets and depreciation in respected upload to be able to explain the changes and long loading times and show how the economic life has changed. Changes in economic life need to continue to be reviewed as street activities are a major financial responsibility for infrastructure service providers such as ARA is.

Albania does not have a basic asset valuation, to reflect large construction program after 2010, at which time it started and dumping the database based building blocks

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road. Applications for funding in the future can grow over the next 10 years. In areas where there is a greater percentage of the road network, the method of use for the valuation of the asset must be that of depreciation which calculates the residual life of the assets, taking into account such as climate change, traffic conditions and the level by maintenance. Some factors that should be considered are:

- ✓ The new concept of deterioration valuation in infrastructure assets. Financial management and strategic planning according to the best international experience, while Albania is in upper the transition phase.
- ✓ ARA has adequate resources and skills to carry out the asset management business, but need to ensure proper updated inventory and relevant valuations for prioritization of investments.
- ✓ New technologies need to be applied actually for effectiveness of asset management for road agencies.

4. Discussion and conclusion.

Cost effectiveness assessment is a method of economic assessment. It includes the comparison of what is sacrificed (ie cost) versus what is gained (effectiveness) in order to alternatives are evaluated. Measuring cost-effectiveness can be done over a short-term period or long term. Between long-term and short-term evaluation, the concept of cost-effectiveness can considered more suitable for long-term evaluation. From an economic point of view, the assessment of effectiveness can be carried out in two ways: first, to achieve maximum benefits from a level determined investment (maximum benefit approach) and secondly, to determine the minimum cost for effective problem solving (least cost approach). The first method is used very often in decision-making for capital investments, while the second method is more suitable for maintenance cost estimation.

Efficiency in road maintenance in terms of general is organization, planning, budgeting, time frame, performance evaluation, road maintenance management system (RMMS) control and reporting. Road maintenance management system should follow steps below in order to perform effectively:

- ✓ The need for maintenance after road asset management is done.
- ✓ Identifies resources to meet these needs
- ✓ Defines the standards required to meet the expectations and set of priorities.
- ✓ Monitors performance.
- ✓ Schedules the plan, budget and controls expenses

There are a lot projects being implemented in Albania to study the further effectiveness in the future to judges the high expectancy of asset road management.

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