INTRODUCTION

One of the primary characteristics of the ‘industrial revolution’ was the rapid increase in industrial and economic sectors. Over time, industrial and economic developments took place at the cost of other livelihood aspects and led to major problems. Environmental and social issues like the utilization of non-renewable natural resources, excessive land consumption, air pollution, and man-made diseases greatly affected human life. These problems changed the position of policy makers then and the new concept named ‘sustainable development’ was introduced by the Brundtland Commission. ‘Development that meets the demands of the present generation without compromising the ability of future generations to satisfy their own needs’ and reflected

ISSUES AND PROBLEMS ARISE ON TRANSPORTATION MANAGEMENT

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Abstract

Transportation systems play a vital role in urbanisation, mobility, and economic growth of societies, regions, nations, and even continents. Transportation of people and goods from one location to another is necessary. No country will thrive if it lacks adequate, well

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Maintained and managed transportation facilities. As such, provision of efficient, environmentally friendly and sustainable transportation system/facilities are considered as the index of social, economic and commercial development. However, with the growing population in major cities of the world, there is also an increase in traffic congestion, traffic accidents, and environmental pollutions. These problems have generated so much concern among the key players in the transportation sector. Therefore, it has become imperative to manage transportation facilities right from the planning stages to the expected service live of the facilities and also maintain the existing ones.

Sustainable transportation as a derivative concept of sustainable development, with considering environmental, societal and economic impacts of transportation, has a major contribution in achieving urban sustainable development. A transportation system will be entitled 'sustainable' when it would be able to provide economic development and meet the transportation needs of the society in a manner consistent with natural rules and human rights (Mohammad, 2018).

Transportation is important in the sense that it allows people to take part in human activities. With an increasing population, the need for transportation is too increasing. More and more traffics are on roads, which in turn creates more and more mobility-related problems such as congestion, air pollution, noise pollution, and accidents; especially in city centers where the level of human activities is high. Regimes need to plan transportation networks properly and control urban traffic movements to insure mobility and mitigate mobility related problems simultaneously. A higher population also contributes to more expensive land, particularly in city centers and therefore more people living in new towns or suburban areas, thereby calling for new transportation infrastructures for serving new towns or improving existing transportation structures to cope with the increasing population in the suburban areas. These planning, design and management issues are traditionally addressed in Urban Transportation Network Design Problem (UTNDP). This problem (UTNDP) can actually admit the design problems in suburban areas in addition to those in urban arenas, because the methodology involved is fundamentally the same.
Moreover, this problem can involve transit networks in addition to road networks, since transportation includes both public and individual transport. UTNDP has been continuously studied during the last five decades, and the number of related publications has risen over time, probably because the problem is extremely complicated, theoretically interesting, practically important, and multidisciplinary (Reza et al, 2013).

Thus, this paper discussed the issues and problems faced in the provision, maintenance and managing transportation facilities, as well as the contributions of various stake holders in the provision of efficient, environmentally friendly and sustainable transportation facilities that will satisfy the demands of the society.

**Issues and Problems**

Transportation and transit systems play a critical role in urban development, mobility, and economic growth of societies, regions, nations, and even continents. There are a variety of transportation and transit systems, including land transportation (road, rail, and maglev), aviation (airplanes, rockets), maritime (ferries, ships, ports), and pipeline (tunneling, risers, hyperloop). These complex sociotechnical systems are interlinked, and undoubtedly, the behind-the-scenes catalyst is essential for building new capabilities and innovation as well as improving the efficacy and strength of other occupations and industry sectors, such as resources logistics, agriculture, real estate, manufacturing, and tourism. Unfortunately, not all original and novel transportation discoveries, strategies, and policies are automatically adopted in industry standards, real-world practices, or Frontline products. The pathway to successful acceptance and translation of research and innovation depends largely on long course records of experiments, failures, trials and errors, redesigns, optimizations, verifications, and technological practicality (Kaewunruen, 2016).

Transportation and transit systems face significant challenges at the intersection of societal, technical, and economic systems, altogether with their adaptability and sustainable integration to natural and built environments. To meet the economic and environmental mobility needs of today and tomorrow, mega development, improvement, redevelopment, and renewal of mixed modes of client-centric transportation and transit organizations have been rapidly initiated around the globe. This explosive urban growth can sometimes outpace essential systems planning and practice; thus, ignoring intermodal connectivity, resources and energy consumption, wastes, emissions, and other environmental impacts. The interface between newly built and deteriorated assets will also
require robust establishment of system compatibility, safety assurance, reliability-based maintenance, uncertainty monitoring, and hazard management. Consequently, it is important to develop the following generation of technologists and scientists needed to match the challenges of providing sustainable, chic and resilient transportation systems (Kaewunruen, 2016).

Role of Policy Makers in Transportation Management
Construction of transportation facilities involves substantial investment and as such, proper maintenance and management of these assets is paramount importance (Chopra, 2017). Federal, state, and local agencies play a particularly significant part in the evolution of transit projects. Many of those agencies have a statutory duty to review environmental documents or issue permits for transit projects. Federal Highway Administration (FHA) promotes the state Department of Transportations to aggressively pursue improved communication and collaboration with all the collaborators involved in decision making, starting early in the transportation planning process, to identify and address their concerns (FHA, 2016).

Uncertainty of outcome is widely acknowledged as a concern facing decision-shapers and their advisers. In a number of spheres of policy, it appears uncertainty has intensified in the facial expression of globalization, economic instability, mood change, technological innovation and shifting consumer tastes. How can planners and policy makers plan for an uncertain future? In that respect is growing interest in, and utilization of, techniques that can help decision making processes where deep uncertainty is involved (Glenn and Cody, 2016).

Glenn and Cody (2016) concluded their report by laying out two different policy making pathways which they believed may help in decision making. The differentiation between a policymaking pathway (a procedure for inducing a policy) and a policy path (policy actions to be used up, and when to ask them) should be observed. The two policy making pathways are depicted in Fig. 1 and intended to capture, in simplified form, the key considerations. The first of these they referred to as the regime-compliant pathway. This pathway is characterized by an (implicit) reliance on the direction of the creation as we have experienced it, in relation to transport, continuing (described as the regime of automobility). Motorized mobility has been promoted, and the motor car in particular has come to prevail with both functional and symbolic meaning. The second pathway is the regime-testing pathway. This pathway was characterized by embracing uncertainty and indeed deep uncertainty, i.e. it is plausible that the incumbent
regime is significantly softened and that signs of regime transition are going forth. Such plausibility does not prevent a continuation of the incumbent government. Nevertheless, it guards against both a reliance upon this regime and against policy failure. The second pathway also brought forth a proactive position in terms of not only responding to uncertainty but treating it as an opportunity to influence the future.

Role of Public in Transportation Management
Public participation is integral to good transportation planning. Without meaningful public participation, there is a danger of making poor conclusions, or decisions that have unintended negative effects. With it, it is possible to make a lasting contribution to an area’s quality of life. Public engagement is more than
an agency requirement and more than a means of satisfying a statutory obligation. Meaningful public participation is central to sound decision making. The fundamental purpose of public involvement programs is to ensure that the business establishments and issues of everyone with a stake in transportation decisions are identified and directed in the development of the policies, programs, and projects being proposed in their residential areas (FHA, 2016). The public includes anyone who resides, has an interest in, or does business in a given area potentially affected by transportation decisions. This lets in both people and organized groups. It is likewise important to offer opportunities for the participation of all private and public providers of transportation services, including, but not restricted to, the trucking and rail freight industries, rail passenger industry, taxicab operators, and all transportation and paratransit service operators. Lastly, those persons traditionally underserved by existing transportation systems, such as low-income or minority households and the elderly, should be committed to participate in the transportation decision making procedure.

A well-informed public can contribute meaningful input to transportation decisions through a full array of involvement opportunities at all levels of decision making. Useful elements in preparation for effective public involvement are (FHA, 2016):

- Clearly defined purpose and objectives for starting a public dialogue on transit matters;
- Specific designation of the affected public and other stakeholder groups with respect to the plans and programs under development;
- Identification of techniques for engaging the public in the process;
- Notification procedures that effectively target affected groups;
- Methods and measures for evaluating the effectiveness of the public involvement program;
- Education and assistance techniques, which result in an accurate and full public understanding of transportation issues;
- Follow-through by the Metropolitan Planning Organization demonstrating that decision makers seriously considered public input; and
- Solicitation of feedback from the public and stakeholders on the strength of the public participation process.

**Performance standards**

What performance measures should be tested? Performance measures demonstrate how well the transportation organization is doing its job of meeting
public goals and expectations of the conveyance network. Some methods used to measure performance include tracking average speeds and crash rates. Many provinces and metropolitan areas monitor how close they are to achieving specific ends, such as accessibility to key regional population, employment, cultural, and recreational centers, the mobility of disadvantaged populations, levels of air quality, and the health of the economic system, by applying performance measures. Measuring performance is a way to estimate the impacts of the decision making process on the transit system. Performance measures aim to resolve inquiries around whether the operation of the transportation arrangement (our economy, air quality, and so forth) is getting better or worse over time; and whether transportation investments are correlated or linked to stated goals and results.

Examples of performance measures include (FHA, 2016):

- **Accessibility:** Percent population within “x” minutes of “y” percent of employment situations; whether special populations such as the elderly are capable to use transportation; whether transportation services provide access for underserved populations to work sites; also, whether services are ADA compliant.
- **Mobility:** Average travel time from inception to destination; change in ordinary travel time for specific origin-destination points; average trip length; percentage of trips per mode (known as mode split); time lost to congestion; transfer time between modes; percent on-time transit performance.
- **Economic development:** Jobs created and new housing starts in an area as a consequence of new transit facilities; new businesses opening along major routes; percent of region’s unemployed who cite lack of conveyance as the principal roadblock to employment; economic cost of time lost to congestion.
- **Quality of life:** Environmental and resource consumption; tons of pollution generated; fuel use per vehicle mile traveled; decrease in wetlands; changes in aviation quality, land usage, and so on
- **Safety:** Number of crash incidents or economic costs of crashes.

**Maintenance and Operations of Transportation Facilities**

The importance of maintenance is increasingly recognized as we remain in the 21st C. With the Interstate highway system essentially in place, the focus of transportation programs is shifting from capital investment to maintenance and operation (Transportation Research Circular, 2006).
The major styles that affect maintenance include the following (Transportation Research Circular, 2006):

- Infrastructure development is slackening, so the maintenance, conservation, and rehabilitation of existing infrastructure are getting progressively more significant. As public support shifts from construction to maintenance, maintenance organizations become more accountable to administrators, politicians, and the public for a safe, commodious, and accessible transportation system. This switch in emphasis brings new governance and institutional matters.
- The nation’s aging infrastructure is challenging maintenance managers, who must respond with more effective business practices. Innovations in management systems, resources, materials, engineering, equipment, and work methods help improve maintenance effectiveness and efficiency of the network and activity points.
- Engineering science is altering the kinds of data and infrastructures that must be preserved. Advanced applied science is increasingly being integrated into the transportation infrastructure, and as a consequence, new maintenance procedures and a very different set of skills for maintenance managers as well as maintenance workers are being taken.
- Engineering science is affecting how maintenance is performed. Information technology, particularly improvements in integrated information systems, removes institutional and organizational barriers throughout the initiative. Other tremendous advances are taking place in areas such as data collection, diagnostics, analytical techniques, material science, and maintenance equipment.
- The political climate that calls for smaller government is establishing its mark on the institutional and cultural facets of maintenance organizations. Fewer maintenance staff in state department of transportation’s means increased use of private contractors and alliances with local agencies to provide the resources to enhance overall transportation services to the customer.
- State department of transportations are implementing private-sector best practices in customer service and performance management. Public perception and expectations for better service change the way maintenance managers define and respond to customer needs. Demand for government accountability brings about new ways to measure maintenance performance. Emerging trends include outcome-based planning, budgeting, and measuring results.
• Recruiting and retaining a skilled department of transportation workforce are becoming more difficult. The private sector tends to pay higher salaries for technology jobs, thus attracting many potential recruits away from highway maintenance careers.
• Environmental concerns continue to have a significant effect on maintenance. New regulations are anticipated, and the trend is toward stronger enforcement of existing regulations.

Conclusion
With the rapid increase in world population, most of our existing facilities are over stretched, therefore, management of transportation facilities must start from the planning stage to the expected service life of the facilities. Policy/decision makers at all level must come together and come up with policies that will ensure the productive and efficient use of the existing facilities. This will eliminate or reduce the amount of resources that are used in constructing new facilities, and also reduce congestion, environmental pollution, accident rates etc.

References