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A change for road safety management in Algeria?

Changer le management de la sécurité routière en Algérie ?

Yasmine Haddad, Laurent Carnis

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Abstract Road insecurity in the world does not spare Algeria. To address this crucial issue, the Algerian government has implemented a wide range of measures. However, Algeria did not achieved any significant progress. In an attempt to understand the origin of the problem, this paper proposes an analysis of the road safety management system in Algeria based on the model of Bliss and Breen. This analysis suggests the current situation is partly due to an inadequate road safety management system and the absence of an operational framework. These defects reflect difficulties in implementing the road safety management functions, which make good performance possible. Future progress would be sustainable and possible if Algeria establishes a real institutional apparatus dedicated to the implementation of a public road safety policy.

Keywords road safety, Bliss and Breen, safe system, management, Algeria.

Résumé L'insécurité routière dans le monde n'épargne pas l'Algérie. Pour faire face à ce problème crucial, le gouvernement algérien a mis en œuvre un large éventail de mesures. Cependant, l'Algérie n'a pas réalisé de progrès significatifs. Pour tenter de comprendre l'origine du problème, cet article propose une analyse du système de management de la sécurité routière en Algérie basée

sur le modèle de Bliss et Breen. Cette analyse suggère que la situation actuelle est en partie due à un système de management de la sécurité routière inadéquat et à l'absence d'un cadre opérationnel. Ces défauts reflètent les difficultés à mettre en œuvre les fonctions de management et de pilotage de la sécurité routière, qui rendent possible une bonne performance. Les progrès futurs seraient durables et possibles si l'Algérie met en place un véritable appareil institutionnel dédié à la mise en œuvre d'une politique publique de sécurité routière.

Mots-clés sécurité routière, Bliss et Breen, système sûr, management, Algérie.

1. Introduction

Road safety is an economic, social, and public health issue [1, 2]. According to the World Health Organization (WHO) [2], road crashes result in nearly 1.35 million deaths and 20 to 50 million injuries worldwide each year. According to the same source, 93% of road fatalities occur in low and middle-income countries, while these countries represent only 60% of vehicles in circulation. To address this global scourge, the United Nations General Assembly adopted in March 2010, resolution A/RES/64/2551, by which it proclaimed the decade 2011-2020, decade of action for road safety [3]. The resolution calls on member states to carry out activities in support of the five pillars of road safety, namely road safety management, road infrastructure, vehicle safety, road user behavior, and care of road crash victims.

Road insecurity in the world does not spare Algeria. According to the National Delegation for Road Safety (NDRS) in Algeria, the accident report for the year 2020

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shows 18,949 traffic accidents, 25,836 injuries and 2,844 fatalities. To fix this catastrophic situation, the Algerian government has implemented a wide range of measures without significant progress being made. Road safety figures have shown progress concerning fatalities and injuries since 2014. However, this improvement occurs quite lately, while the global performance remains far from the European standards. How can this relative backwardness be explained? One possible explanation lies in the limitations related to the Road Safety Management System (RSMS), which have resulted in difficulties in implementing the essential management functions necessary to implement effective countermeasures to decrease road injuries.

Little research has been done on the managerial dimension of road safety [4, 5]. To the best of our knowledge, there is no contribution from this field of research for the Algerian case. This contribution contributes to fill this gap. The first section presents the main characteristics of road insecurity in Algeria and its evolution. The second section recalls what the concept of RSMS covers. The last two sections deal with an evaluation of the RSMS in Algeria and then propose some recommendations for improving the situation in this country.

2. Road safety in Algeria

2.1. General perspective

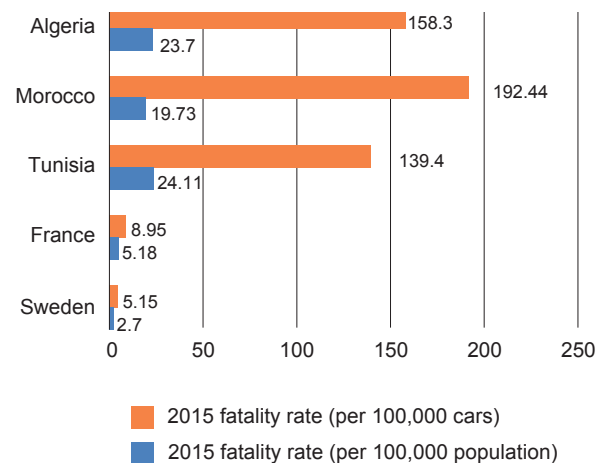
Algeria is facing an alarming situation for road safety. Indeed, the country is experiencing a heavy social burden, which causes an average of 3,000 fatalities per year and more than 25,000 traffic accidents. The country is ranked 22nd in Africa and 70th in the world for its road safety performance [1].

The death rate per capita is 10 times higher than in Sweden and more than 4 times higher than in France. As for the fatality rate per number of vehicles, it is more than 30 times higher than in Sweden and nearly 20 times higher than in France. Compared to Morocco and Tunisia, other Maghreb countries, the picture is mixed, depending on whether the number of fatalities per inhabitants or per cars is considered (Fig. 1).

In economic terms, road insecurity represents a heavy burden for Algeria. Studies related to the costs of road insecurity in Algeria are limited in number [6, 7, 8]. The most recent estimates of the economic cost of road insecurity for the year 2020¹ amount to more than 54 billion DZD² for the Algerian society, a decrease by half compared to previous years³ [6, 8]. According to the same sources, the average cost of a traffic accident victim for the year 2013 is estimated at “more than

11 million DZD for a fatality, more than 2 million DZD for a permanently injured and roughly 460,000 DZD for a temporarily injured. The current estimates of the social cost of road crashes are based on updated values.

Figure 1. Algeria road safety performance



Source: WHO, 2015

2.2. Evolution of the car fleet and resident population in Algeria between 2000 and 2018

Over the period 2000-2018, the demographics and the vehicle fleet have undergone significant changes in Algeria. There is a strong correlation between the two developments (Fig. 3). In addition to demographic changes, the improvement in living standards, the liberalization of foreign trade, and the improvement of road infrastructure are factors that have contributed to the significant growth in mobility and the increase in the number of vehicles.

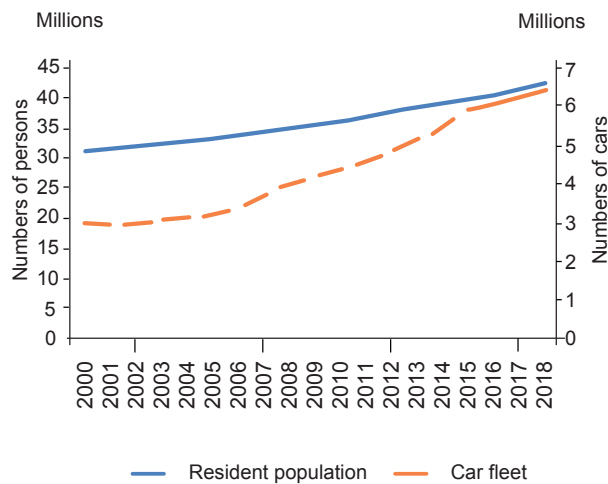
The evolution of the resident population in Algeria between 2000 and 2018 shows an increase of 11 million inhabitants from 31.2 million in 2000 to nearly 42.2 in 2018, an average annual growth rate of about 1.7%. During the same period, the car fleet in Algeria has almost doubled. It has increased from about 2.9 million in 2000 to more than 6.4 million registered vehicles in 2018, an average annual increase of 4.5 percent. This increase in the number of vehicles can be explained by various factors: the enrichment of the Algerian population, the introduction of vehicle credit purchase options and a deficient public transport provision [9]. Ultimately, it can be noted that this increase in the number of cars (motorization) has been associated with the number of traffic accidents, injuries and fatalities in the country [10]. This impact of motorization has to be considered as a general trend for the investigated period.

1. <https://www.youtube.com/watch?v=5Pl3Oq8qy-8>

2. In 2020, 1 DZD = 0.0061 euro

3. <https://www.youtube.com/watch?v=e6KiwF1V79M>

Figure 2. Evolution of the car fleet and resident population in Algeria between 2000 and 2018

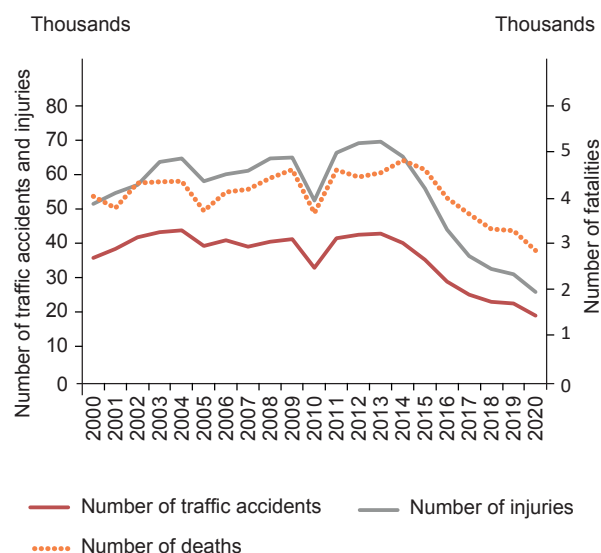


Source: NSO, 2019

2.3. Evolution of the road safety in Algeria between 2000 and 2020

Statistics on road collisions, injuries and fatalities in Algeria are provided by NDRS⁴. Figure 2 shows the evolution of the number of road collisions, fatalities and injuries in Algeria from 2000 to 2020. Beyond general accident statistics, statistical information remains limited and sparse in Algeria, making detailed analysis somewhat difficult and modeling hazardous.

Figure 3. Evolution of the number of traffic accidents, injuries and fatalities in Algeria from 2000 to 2020



Source: NDRS, 2021

The general evolution of the number of traffic accidents, injuries and fatalities in Algeria between 2000 and 2020 can be split in two main periods. The period 2000-2013 is marked by an upward trend in the number of traffic accidents, injuries and fatalities with respectively an average annual rate of 1.9%, 2.8% and 1.6%. This increase is simultaneous with the improvement in the country's socioeconomic situation [11, 12], which has resulted in increased mobility and access to individual motorized mobility.

This period is characterized exceptionally by temporary decreases in the number of traffic accidents, injuries and fatalities. In 2001, the number of fatalities decreased by 6.4%. The number of fatalities decreased from 4,025 in 2000 to 3,768 in 2001. At the institutional level, this year saw the revision of the legislative framework that has not evolved for more than 14 years. Law 01-14 of August 19, 2001 on the organization, security and police of road safety was introduced. It brings four major changes: the increase of penalties, the prohibition of the use of cell phones while driving, the obligation of the technical control of the vehicles and the decrease of the alcohol level tolerated in the car from 0.8 g/l to 0.1 g/l.

In 2005, the number of traffic accidents, injuries and fatalities recorded a decrease of -10.4%, -10.2% and -14.8% respectively. This huge drop in the number of injuries occurred while a new regulatory device of Law 04-16 of November 10, 2004, on the organization, safety and police of road traffic is enforced [6, 9]. Finally, the decrease recorded in 2010 in the number of traffic accidents (-20.26%), injuries (-19.3%) and fatalities (-20.56%), could be the consequence of the implementation of Ordinance 09-03 of July 22, 2009 [13, 14]. This ordinance includes a revision of the conditions for issuing a driver's license, the classification of traffic violations into 4 categories with prison sentences, but also once again a tightening of sanctions. It could be noted that the legislative strengthening is associated with a positive evolution of road safety figures.

From 2013 to 2020⁵, the number of traffic accidents, injuries and fatalities shows a downward trend from 42,846 traffic accidents, 69,263 injuries and 4,540 fatalities in 2013 to 18,949 accidents, 25,836 injuries and 2,844 fatalities in 2020. Over the period, Algeria knows a favorable socioeconomic situation [12, 15]. At the institutional level, the adoption in 2017 of Law 17-05 of February 16, 2017 amends and supplements the Law of 01-14 of August 19, 2001. It is characterized by more and more repressive measures, a hardening of the sanctions, and a new hierarchy for the offenses and the adoption of the driver's point license. Moreover, the socioeconomic situation in Algeria has been unfavorable since 2014 with the decline in oil prices (summer 2014),

4. Formerly, the National Center for Road Safety and Prevention (NCRSP).

5. It is important to note that the year 2020 is particular because of the health crisis of Covid-19 and the curfew measures put in place by the Algerian government. This has led to a decrease in road traffic and therefore road risk.

which contributed probably to the improvement of the road safety situation. Given the alarming situation of road safety in Algeria, the authorities have decided a broad set of measures and laws. This could be interpreted as a strong political willingness to improve the situation. It also constitutes an institutional response to the road

safety situation. Table 1 compares the evolution of road accidents in Algeria with that of the legislative framework put in place at the institutional level.

Table 1. Evolution of the accident rate according to the legislative framework in Algeria between 2000 and 2020

Period	Accidents	Injuries	Fatalities	Changes in legislation and economic development
[2000-2013]	+ 1.9%	+ 2.9%	+ 1.6%	Evolution of the legislative framework with the adoption of a new Law in 2001 Obligation of technical control of vehicles in 2003
[2005]	- 10.4%	- 10.2%	- 14.8%	Evolution of the legislative framework with the adoption of the 2004 Law announcing a repressive system to face the road insecurity
[2010]	- 20.26%	- 19.3%	- 20.56%	Adoption of the Ordinance announcing a huge repression in 2009 modifying and completing the Law of 2001 Improvement of the socioeconomic situation, especially at the end of the civil war in the early 2000s
[2013-2020]	- 9.4%	- 11.3%	- 5.2%	Vote of the 2017 Act to amend and supplement the 2001 Act
[2014]	- 6.4%	- 6.2%	+ 6%	An unfavorable socioeconomic situation

To sum up, the socioeconomic situation has a notable influence on the evolution of injuries in Algeria [11, 12, 15]. Indeed, the increase in road insecurity recorded over the first period is the consequence of an improvement in the socioeconomic situation, which has allowed in particular the modernization of the vehicle fleet. The second period is characterized by a favorable socioeconomic situation [14] and improved law enforcement, which probably contributed to an enhancement of the road safety record. More broadly, it appears that the road safety performance depends on a system with links to demography, economy, legal organization and calls for investigating the management of public policies.

3. A systemic approach to road safety

While economic, demographic and organization factors are at play for explaining the road safety performance of a country, it is then considered that management functions are essential to improve the situation as it was showed by Bliss and Breen [16]. Since the late 1990s, Sweden (Vision Zero) and the Netherlands (Sustainable Safety) have developed successful strategies for improving road safety [17, 18], which have been followed by several other countries such as Norway, Finland, Australia, the United States, and the United Kingdom to name a few. These approaches called “Safe System Approach” aim to decrease and eliminate road fatalities and serious injuries by considering the vulnerability and fallibility of the human body. The body has physiological limitations.

Thus, road safety policies must reduce the consequences related to the release of energy during the impact that occurs with a traffic accident [19]. The road system must be able to present the necessary countermeasures to avoid the occurrence of damaging consequences for users. Then it must be designed and managed to follow safe system recommendations and best practices. This requires that the road system be framed to anticipate and account for human error in its design and management. Furthermore, to achieve the goal of zero road deaths and serious injuries, the OECD states that the way forward is through a “safe system” approach and the implementation of a RSMS [20]. Consequently, management has to be considered as an important dimension for reaching a good performance.

3.1. What is a road safety management system?

According to the International Organization for Standardization: “A management system is the set of processes by which an organization manages the interrelated or interacting elements of its activities to achieve its objectives. These objectives may be for different outcomes to be achieved, including product or service quality, operational efficiency, environmental performance, occupational health and safety and many other areas. The level of complexity of the system will depend on the specific context of each organization”⁶.

Thus, RSMS can be interpreted as a system that describes the set of procedures to be implemented at the level of an

6. <https://www.iso.org/fr/management-system-standards.html> (Accessed 20/10/2021).

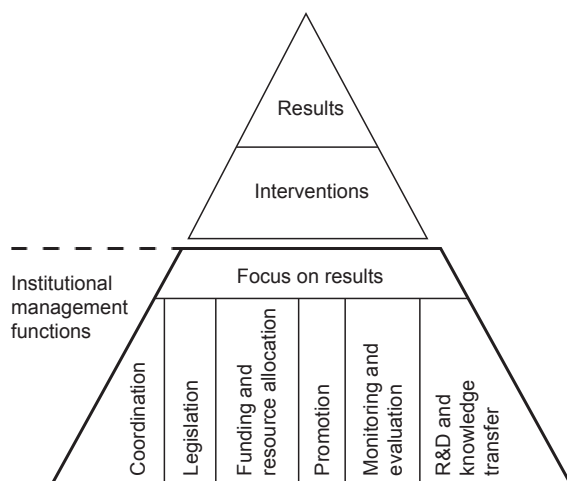
organization in order to eliminate the number of deaths and serious injuries on the roads. In some ways, road safety can be viewed as a product or service resulting from a market creation process [21] involving the mobilization of costly resources to achieve an output.

Some expert reports have been published adopting this analytical framework [22, 23, 24, 25, 26, 27, 28, 29]. Gradually, this has led to the development of a guide for practitioners to implement and diagnose RSMS [16, 25].

The operational implementation of RSMS is strongly conditioned by the political history of the country, its legislative and regulatory framework and its culture. There is thus a certain contingency that must be grasped when it comes to understanding the RSMS model implemented. At this point, it must be recognized that the RSMS proposed by Bliss and Breen model is characterized by the absence of such a consideration, as well as the social, cultural and economic disparities in the different countries. In this respect, this model suggests that an implementation of the approach without regard to cultural and socioeconomic constraints remains possible. Contingency is therefore not considered and the generic model can be applied everywhere, regardless of the country.

The management system rests upon the concept of “production” of road safety. Thus, the notion of “safety” appears as the result of a 3-level process: institutional management functions, interventions and results (Fig 4).

Figure 4. Road safety management system



Source: Developed by the authors based on Bliss and Breen diagram

According to this model [16], institutional management functions are essential because they set the organizational conditions for interventions, which in turn produce

results. In other words, the reduction of road mortality and morbidity depends on the ability of institutional management functions to deliver effective interventions.

3.2. The RSMS analysis framework

There are two levels associated with the implementation of RSMS. The first level defines the role of the lead organization and the investigation strategy by assigning start-up projects. It is imperative to carry out a diagnostic work before its implementation. This will provide an overview of the existing administrative capacity and road safety policy.

In addition, this diagnostic activity requires a good knowledge of the constraints of road safety work [25]. This can be assessed with detailed and structured checklist techniques [16, 25]. These checklists allow for reporting on system-level results, interventions, institutional management functions, and the role of the lead organization.

The lead organization⁷ plays a central role in performing all institutional management functions, including steering, support, and guidance. The lead agency is to some extent responsible for seven primary missions [30]. In addition, it is responsible for assisting and participating in the formulation of the country's national road safety strategy and defining its objectives.

The second level is related to the development and implementation of various measures that are part of the broader system building process. These measures relate to the identification of capacity-building activities, the targeting of danger areas and black spots and the revision and reformulation of road safety policy. Ultimately, the policies or measures should be evaluated to improve performance and correct any deviations. In short, the introduction of a RSMS consists of the implementation of tools for steering and managing road safety policy.

4. Administrative capacities and road safety policy in Algeria

In the next following sections, the assessment of the RSMS in Algeria is proposed to grasp the potential source of improvement, while some important measures have been taken but with some interrogations concerning their implementation through an effective management system.

7. A lead organization does not necessarily mean an organization in its own right. A department or unit whose primary mission is the production of road safety is considered as a lead organization.

4.1. Method

We applied the Bliss and Breen analysis framework to assess the quality of the RSMS in Algeria. Such a framework studies the major functions of institutional management.

Data were collected from documentary research, legal, legislative and scientific documents. The documents dealing with road safety in Algeria are difficult to access and quite limited in number. Some were provided by some persons in charge of road safety: former NCPRS officials, law enforcement officers and gendarmerie in charge of road traffic, emergency doctors in 3 university hospitals (Algiers, Constantine, Oran) and academics. The objective of the approach is not to conduct a questionnaire with a representative sample of actors, but to obtain information on specific issues from some actors. For instance, the aim is not to know if a leading agency operates efficiently according to a point of view, but to establish the existence of a leading agency. Obtaining such answer does not require a representative sample of answers. Then this information was analyzed and assessed.

This diagnostic work was based on a set of two checklists, related to the result-based approach and the role of the lead organization in the exercise of its seven institutional management functions. The diagnostic work followed the checklists proposed by Bliss and Breen.

4.2. Results: The role of the lead organization in performing institutional management functions: the diagnostic stage

Table 2. Results focus at system level

Questions	Assessment
Are estimates of the social costs of crashes available?	<i>Partial</i>
Are data on road deaths and injuries readily available?	<i>Yes</i>
Have the risks faced by road users been identified?	<i>Partial</i>
Has a national vision for improved road safety performance in the longer term been officially set?	<i>No</i>
Have national and regional targets been set for improved safety performance?	<i>No</i>
Have all agencies responsible for improved safety performance been identified and are they formally held to account for their performance required to achieve the desired focus on results?	<i>Partial</i>
Have industry, community and business responsibilities for improved roads safety performance been clearly defined to achieve the desired focus on results?	<i>No</i>
Are regular performance reviews conducted to assess progress and make improvements to achieve the desired focus on results?	<i>No</i>
Has a lead agency been formally established to direct the national road safety effort to achieve the desired focus on results?	<i>Yes</i>
Is the lead agency role defined in legislation and/or policy documents and annual performance agreements to achieve the desired focus on results?	<i>Yes</i>

The answers to the questions of the checklists follow to a 4-level coding:

- 1. Yes:** If the institutional management function is fully provided by the lead organization;
- 2. Partial:** If the institutional management function is partially performed by the lead organization;
- 3. In progress:** If there is a law that provides for the institutional management function to be performed by the lead organization;
- 4. No:** If the institutional management function is not performed by the lead organization

Finally, the scale developed by Bliss and Breen [16] were applied to assess the capacity of the lead organization to carry out its assigned missions. It includes three levels according to the nature of the answers given to the checklists:

- **Low capacity:** Items in the outcomes approach and the lead organization's role ["no," "in progress," or "partial"]
- **Core capacity:** Items of the outcome approach ["yes," "yes and no"] and Items for the lead organization's role ["ongoing or partial"]
- **Advanced capability:** Items of the outcome approach ["yes" and essentially "yes"] and for the lead organization's role ["partial"].

The results of the analysis for the RSMS in Algeria show an unsatisfactory outcome. At the institutional level, there is a political will to improve the situation of road insecurity in the country. This is reflected in the establishment of a road safety regulatory and legislative framework and the creation of a lead organization. The lead agency function is performed by the NDRS, which is a public administrative institution with legal personality and financial autonomy. It was established in November 2019 by the Executive Decree 19-303 of November 10, 2019 setting the nature, missions, organization and operation of the national delegation for road safety. It is placed under the supervision of the Ministry of the Interior and Local Authorities and operates as an external service of the central administration. The lead organization holds information on the road safety situation in the country through the publication of an annual report and the production of road safety data.

However, the system's capacity to act is limited. These implementation difficulties are reflected in poorly developed administrative accountability mechanisms and imperfect knowledge of the risks incurred by users and the associated costs [6, 7]. In Algeria, the activity of collecting data on a road collision is under the responsibility of two organizations: the national gendarmerie for rural areas and the national police for urban areas. Thus, in the case of a road crash, a report is drafted and finalized following a 30-day follow-up of the hospitalized victims. Afterwards, each report is the subject of a statistical form that will be used to feed the accident files of the Road Safety Units (RSU) for the national gendarmerie and the Road Traffic Departments (RTD) of the national police. For its part, the NCRSP collects its own data in order to process and disseminate

the annual accident reports. In practice, the system for collecting and processing data on road collisions has significant shortcomings [31]. For Carnis and Himouri (Ibid), its shortcomings take the form of significant delays in data processing and a considerable lack of information on the conditions in which the collision occurred. Consequently, this makes it difficult to define intermediate and final objectives (lack of an appropriate outcome or target) and undermines the effectiveness of the policy. The poor quality and the limited number of data are concerned also with the absence of detailed information about road crashes and partial information about the social burden of road accident consequences for the victims and the Algerian society that makes appropriate decision difficult.

The limited capabilities for intervening due to restricted information have some consequences for the definition of strategy. Indeed, without any clear view of road safety issues, the definition of targets and measures of performance become impossible. It would explain the absence of evaluation process for road safety intervention. This would also justify the absence of a vision and objectives to guide public action, able to enroll different actors in road safety policy formulation. Moreover, the lack of a unified and coordinated operational framework results in strategic difficulties.

The analysis of the RSMS concludes that the formal structure is insufficient for effective action. Indeed, the lack of a long-term strategy and vision and the absence of objectives to guide road safety action in the country are the source of implementation difficulties, in addition to a significant administrative slowness and a lack of means and scientific support to guide public action.

Table 3. Lead agency role and institutional management functions

Questions	Assessment
Does the lead agency (or de facto lead agency/agencies) effectively contribute to the results focus management function?	Partial
Does the lead agency (or de facto lead agency/agencies) effectively contribute to the coordination management function?	Partial
Does the lead agency (or de facto lead agency/agencies) effectively contribute to the legislation management function?	Partial
Does the lead agency (or de facto lead agency/agencies) effectively contribute to the funding and resource allocation management function?	Partial
Does the lead agency (or de facto lead agency/agencies) effectively contribute to the promotion management function?	Partial
Does the lead agency (or de facto lead agency/agencies) effectively contribute to the monitoring and evaluation management function?	Partial
Does the lead agency (or de facto lead agency/agencies) effectively contribute to the research and development and knowledge transfer management function?	Partial

Currently, the leading function is performed by the NDRS. The NDRS is responsible for the implementation of the national road safety and prevention policy in its operational part. These functions cover a broad range of activities: to carry out all road safety actions in consultation with all other relevant actors, planning and coordination, communication and cooperation, management of road safety information systems, and training and driving tests. The legislative framework attributes formally all the functions of institutional management, which makes the leading agency functions aligned with the expected management standards.

However, a careful analysis of the role of the lead agency in carrying out the assigned institutional management functions reveals the extent of the implementation difficulties in Algeria. The lack of means and prerogatives attests to a partial implementation of institutional management functions. For example, the NCRSP with a limited budget of 600,000 DZD provided by the Ministry of the Interior for communication activities has to promote the cooperation and partnership agreements with large groups⁸ established in Algeria (NCRSP-Renault in January 2019, NCRSP-National School of Informatics in October 2018, and, NCRSP-Peugeot in June 2017). They provide the NDRS an important support in terms of logistical and financial support for the various awareness campaigns. While such organizations provide support and assistance, they are not clearly involved in road safety interventions.

In addition, the authorities have limited capabilities from scientific support and expertise. While there are scientific research organizations providing useful expertise for the country, such as the laboratory Management - Transport - Logistics and the laboratory Psychology of the Road User of the University of Batna 1, the laboratory Construction, Transport and Environmental Protection of the University of Mostaganem, the Laboratory of Medical Informatics of the University of Béjaia and the laboratory City, Urbanism and Sustainable Development of the Polytechnic School of Architecture and Urban Planning of Algiers, needs are huge and require more resources for this field. These bodies are in charge of training, expertise and scientific dissemination activities. Although these academic laboratories provide some research outputs, such outputs are quite limited compared with the importance of the road safety issues in Algeria.

From this analysis, it could be shown that the NDRS holds the basic capabilities to perform institutional management functions and is the true leading agency for promoting a road safety policy. However, it faces many constraints in terms of available budget, human capabilities, and it has to deal with limited information. The absence of a clear vision and strategy, a lack of coordination and commitment from some actors makes

an effective road safety policy difficult. Road safety management in Algeria at the institutional level suffers from the absence of a unified and coordinated operational framework. This could take shape with the designation of a lead organization to carry out all institutional management functions, a role that the NDRS plays in an unsatisfactory manner.

5. Actions that could be taken for improving the RSMS in Algeria

After assessing the administrative capabilities and the institutional management system, some recommendations can be considered for improving the present situation and for reducing the number of fatalities and injuries.

At the operational level, it is essential to make the creation of the national road safety delegation and the intersectoral consultation council effective as soon as possible, that requires appropriate resources and human capabilities and trained staff. Then the leading organization could be able to carry out the 7 institutional management functions. That recommendation suggests there is a true difference between the formal creation of institutional organization and an effective and operational action.

With regard to the results-based approach, the road safety situation reports prepared by the NCRSP could be employed usefully to develop a national strategy and formulate public policy in line with needs and involving all stakeholders. The collection of new data and a better utilization of information could probably in defining the most urgent road safety issues to fix.

In terms of coordination, the road safety delegation should ensure that the various interventions undertaken by the many stakeholders are consistent with the desired objectives at the local, regional and national levels. In addition, it will be necessary to work on increasing the number of partnerships and agreements, particularly with research centers, universities and companies. This will provide significant scientific support for the development of public road safety actions. Such recommendation highlights the importance that the different actors steer the action toward the same directions, the necessity of building some bridges between different actors and sectors. It suggests also the importance of having a deliberative approach between road safety actors.

It is important to ensure funding of the road safety system and its sustainability. Allocation of the proceeds from speeding fines and traffic light violations is one possibility, but it would not be probably enough to fix the different problems. In addition, the mobilization of new resources could take the form of a contribution from the insurance sector, or financing based on the proceeds

8. Some of the multinational groups established in Algeria are Renault, Peugeot and Total.

of taxes from the sale of vehicles or fuel. While different sources of funding are possible, the general budget of the State remains the most appropriate way for insuring a sustainable system.

Another issue raised by the analysis concerns the collaborations with universities to foster research that would help the decision-maker. Working to build national databases and making them available to the academic community would help in a better understanding of the road safety issues. The academic community could also be usefully mobilized to train experts and specialists in road safety issues to advise and assist both national authorities and local decision-makers in municipalities and wilayas (counties). Indeed, the implementation of a public road safety policy requires trained staff capable of operational activities in the field.

6. Conclusion

The institutional dimension of public road safety policies is an important component of the safe systems approach. The implementation of institutional functions to achieve ambitious targets and significant performance in terms of road safety improvement requires an effective road safety management system [32].

Algeria's road safety management is not satisfactory. Road safety indicators remain unfavorable when compared to those of high-income countries. They are also unfavorable to some extent in relation to other African countries. Although the present situation shows some improvement, it is not a satisfying one.

The analysis of the institutional structure and the management shows that there is a definite failure in this respect. It is true that Algeria has implemented some road safety measures, but the performance remains relative probably due to a lack of an effective management framework for carrying out an appropriate strategy and efficient measures.

Indeed, the implementation of a real RSMS is necessary to have sustainable results. It is therefore important to set up a real organization to ensure institutional missions. In this respect, the creation of an effective lead organization and an inter-sectoral council appears to be essential to work on the construction of RSMS, but also to ensure a significant improvement in road safety. In short, future progress would only be sustainable and possible if Algeria establishes a real institutional apparatus dedicated to the implementation of a public road safety policy.

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