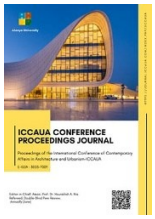

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Road Traffic Noise in Algeria: State Decisions Comprehensive Review

* [1] Assoc. Prof. Dr. **Boulemaredj Ali** , [2] **Meribai Amine Mehdi**
[1] Department of Architecture, Faculty Of Earth Science, Badji Mokhtar University Annaba, Laboratory of Urban & Environmental Analysis, Algeria
[2] Department of Architecture, Faculty Of Science & Technology, 8 Mai 1945 Guelma University, Algeria
[1] E-mail: ali.boulemaredj@univ-annaba.dz , [2] E-mail: meribai.amine@univ-guelma.dz

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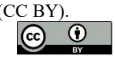

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A b s t r a c t

Urban transportation system offers a major standard for measuring general operational efficiency of a city and its compliance with traffic laws. This research supports the latest Algerian government instructions, which focuses on the legislative aspect of road noise control mechanisms via a thorough analysis of the recently adopted State Decisions. Setif and Annaba, as well as Algiers and Blida cities, are enforcing the restriction of the presence of extremely noisy sports cars and motorcycles within urban and residential zones at night. This specific project is part of a more comprehensive set of preventative and repressive measures that have been deliberately designed to lower noise pollution and maintain public tranquillity. This research aims to support the enforcement of national noise control rules as well provide suggestions that are both financially feasible and helping to improve the management of noise problems connected to urban mobility.

K e y w o r d s : Urban transportation; Road traffic noise; Algerian noise regulation; State decisions.

1. Introduction

1.1. Briefing background & scope of the study

The cyclical trend of urban expansion, with increasing population density and emphasis on economic development, has turned into an inherent trait of contemporary existence (Amen, Afara, and Nia 2023; Aziz Amen 2022; Amen and Nia 2020). Although it encourages economic advancement and societal development, this change also generates a multitude of urban problems. Cities, as hubs of human activity, are increasingly vulnerable to social and economic issues, cultural transformation, and unprecedented environmental deterioration (Besma & Bougdah, 2023). The typical environmental issue of urban development is pollution, including air pollution and the frequently undervalued impact of noise. This latter, mainly due to surface transportation system, worsens the quality of the natural and artificial environment and has a detrimental effect on the health and lifestyle of the city residents as well, despite the fact that the role of the transportation industry in the development of cities is undeniable, impacting everyday life in both rich and poor nations, linking people to the vital aspects of life (Belkhiri et al., 2022; Saidi, 2020).

The current research focuses on the topic of noise and noise pollution, which is seen as a sign of significant human activity yet an invisible environmental threat to urban areas worldwide. It is only surpassed by air quality in terms of how much it harms both public health and animal health (WHO, 2011). Transportation means are identified as the primary cause of noise pollution in cities, creating a lasting issue and a serious worry for governments and decision-makers who are working to combat environmental noise, especially the noise from roads.

The prevalence of elevated levels of environmental noise is a serious public health issue, exhibiting strongly documented correlations with a broad array of negative health effects. International studies have consistently found associations between long-term exposure to noise and elevated cardiovascular disease risk (Münzel et al., 2018), cognitive decline, especially among children (Clark & Paunovic, 2018), and sleep disruption that can cause a variety of downstream health problems (Basner et al., 2014). For example, studies in European cities have quantified the environmental noise burden of disease, emphasizing its significant contribution to the loss of healthy life years (WHO, 2011).

Although in-depth epidemiological research into the particular health effects of noise pollution in various areas within Algeria is still ongoing, anecdotal evidence and localized grievances, particularly in urban cities such as Algiers and Guelma, reveal the same trends of sleep disturbance and annoyance as a result of traffic and urban activities. Preventing

noise pollution using evidence-based interventions is therefore a key imperative in safeguarding public health across the world, including in the Algerian urban setting.

1.2 Problem Statement and Research Gap

The problem of noise pollution has become very important today due to rapid urban growth and the rising need for environmentally friendly development practices. Controlling noise in urban environments is crucial not only to protect the health and well-being of city residents but also to maintain the surroundings and improve the overall quality of life for those living in urban centers (Daroń, 2025). Therefore, creating and putting into action strong and effective plans to manage noise pollution is necessary for ensuring environmental safety and promoting sustainable urban development, which is increasingly seen as essential particularly in the developing countries (Schwela, 2021a, 2021b, 2023) and (Ibili et al., 2023; K & Deswal, 2023).

The pervasive issue of road traffic noise pollution in African countries has emerged as a significant environmental and public health challenge, necessitating a thorough examination of existing control regulations. In Algeria, regrettably, there is a shortage of accessible documents or considerable statistical data related to the impact of noise on public health, along with a regulatory framework. However, like other developing nations, it also has to deal with the problem of environmental noise in urban regions, which is an outcome of high ineffective urbanization, and increased vehicular mobility coupled with a burgeoning automobile population, whereas it has been reported that about twenty percent (1/5) of Algeria's population suffers from hearing loss, mainly due to noise generated by road traffic (Rebah, 2018, 2022).

Therefore, this scholarly article seeks to provide a comprehensive review aimed at elucidating the national regulatory framework, with a particular focus on the specific challenges posed by road noise. Emphasis will be placed on the recent state decisions No.1123, enacted in April 2023 and No 2485/2486 of October 2023, also No.1497 of April 2024, which has been implemented by the governmental administration responsible for maintaining order and public tranquility within urban locales, specifically in the cities of Algiers, Blida, Annaba and Setif, respectively. This new policy aims to impose restrictions on the circulation of sports cars and motorcycles during night-time hours. Consequently, this raises an important question:

Are the measures proposed in this new decision initiated by the walis really effective to genuinely mitigate road noise in urban settings?

The added value of this study by answering the research question is expected to become a helpful example for a wide range of audiences including scholars in diverse law-related fields, legislative bodies, enforcement agencies, local organizations, investors, consultants and relevant stakeholders in the Algerian context. Likewise, it should fill the knowledge gap in the literature related to noise control and mitigation strategies in Algeria.

1.3 Objectives and Hypothesis

It is widely acknowledged within the academic community that, in order to effectively combat noise pollution in its entirety, and particularly the specific challenges posed by traffic-related noise, it is imperative to establish a framework that relies primarily on the diverse array of regulatory texts that guide such efforts. With this critical understanding, the current study aims not only to bolster the implementation of national regulations aimed at combating road noise but also to propose innovative and cost-effective recommendations that possess the potential to enhance the management of noise-related issues associated with urban transportation and mobility. Furthermore, there is a strong emphasis on the necessity of generalizing the application of successful noise mitigation mechanisms to other cities across the nation, thereby fostering a more harmonious and tranquil living environment for all Algerians.

This document is organized into four parts; The first chapter of the general introduction reviews the scope of the present study and why it is important to be conducted. The second explores the Materials and Methods used in the study. The third and fourth chapters consider the results of the research in order to comprehend and criticize the content and discuss the main contributions of this paper in the form of several recommendations.

2. Material and Methods

The next sections discuss the studied area characteristics, and how this comprehensive review study was designed, in order to give an extensive answer on the aforementioned question research and respond to the objectives set behind this study.

2.1. Studied areas characteristics

Four Algerian cities; Algiers (in yellow), Blida (in red), Annaba (in brown) and Setif (in blue) as shown in Figure 1, were selected for this study as they were the first to initiate and implement the state decision which is the object of the present research. In the next sub-sections, the characteristics of these cities (location, area, population density and traffic volume and cultural-socio economy) were showcased briefly.

a- Algiers city

Algiers recognized as the capital and the most densely populated city of Algeria, functions as the political and economic epicenter of the nation, exerting a profound impact on its socio-economic framework. Geographically, the city spans an area of 363 km², whereas its extensive metropolitan expanse covers over 1,190 km². This urban agglomeration demonstrates a pronounced level of demographic concentration, as indicated by a population density of 12,424 individuals per km² within the city limits and 7,012 individuals per km² throughout the metropolitan region, housing an estimated urban populace of 1,977,663 and a metropolitan populace of 4,510,000 projected for the year 2024. The resultant elevated vehicular traffic volume necessitates considerable investment in public transportation infrastructure,

including the Algiers Metro and tramway systems, to alleviate urban congestion and enhance mobility in light of ongoing urban expansion. Culturally, Algiers epitomizes a convergence of historical influences, with Berber, Arab, Ottoman, and French legacies profoundly shaping its distinctive identity, as illustrated by the UNESCO World Heritage site of the Casbah. Socio-economically, Algiers operates as the principal engine of Algeria's economy, accommodating critical industries that encompass petroleum, natural gas, light manufacturing, mining, electrical, petrochemical, and food processing sectors, thereby representing a substantial portion of the nation's economic output.

b- Blida city

The city of Blida, located close to the capital, covers a geographical area of 1482.8 km². In 2019, the wilaya had an average population density of 912.12 inhabitants per km², with marked regional variations, including particularly high concentrations in areas such as Ouled Yaich (9,798.6 inhabitants per km²) and the wilaya capital itself (3,493.8 inhabitants per km²). While specific data on annual vehicular traffic was not readily available in the search results provided, Blida's strategic location and economic ties to Algiers likely contribute to significant inter-urban and intra-urban vehicular movement. Culturally, Blida is characterized by its fertile agricultural hinterland, the Mitidja plain, which shapes aspects of its identity, along with a cultural tapestry influenced by both traditional Algerian customs and its proximity to the cosmopolitan center of Algiers. Socio-economically, Blida maintains a significant agricultural sector, with a strong focus on agribusiness and food processing activities that are closely integrated with the economic dynamics of Algiers. Moreover, Blida is recognized as the 8th most important industrial metropolis in Algeria, indicating a notable presence of manufacturing and related activities.

c- Annaba city

According to (Statistics, 2023) Annaba is an industrial and coastal metropolis encompassing nearly 1450km², situated in the far eastern region of Algeria, approximately 536km from the capital, Algiers, and merely 106km from the Tunisian frontier. The city exhibits a considerable population density dispatched on five dairas (districts) with twelve municipalities; although the precise limits of the urban area are somewhat fluid, the expansive metropolitan populace, estimated at around 369,000 in 2023, contributes to a marked population density, particularly in its central and coastal zones. This density, also observable in the adjacent urban locality of El Bouni, serves as a significant catalyst for elevated traffic volumes, driven by the essential activities of the port, industrial endeavours linked to establishments such as ArcelorMittal, and its role as a regional commercial nucleus. The socio-economic landscape of Annaba is distinguished by a robust industrial base, largely centered on steel production and port activities, coupled with a broad commercial sector and an emerging service industry.

d- Setif city

The city of Setif, located in the Hauts Plateaux region of Algeria, occupies a considerable area of 6,504 km². Demographic data from 2008 indicated a population density of 229 inhabitants per km² for the Wilaya, with the city of Setif exhibiting a density of 2,266 inhabitants per km² based on its population of approximately 300,000. Specific data regarding annual vehicular traffic volume was not found within the provided search results. Culturally, Setif's identity is rooted in its location, reflecting a blend of Arab and Berber traditions, and the city possesses notable cultural sites, including a national archaeology museum. Socio-economically, Setif has undergone significant industrial development in recent decades, particularly in sectors such as plastic transformation and construction materials. Agriculture also remains a relevant component of the regional economy, contributing to the overall socio-economic structure of the Wilaya and the city.

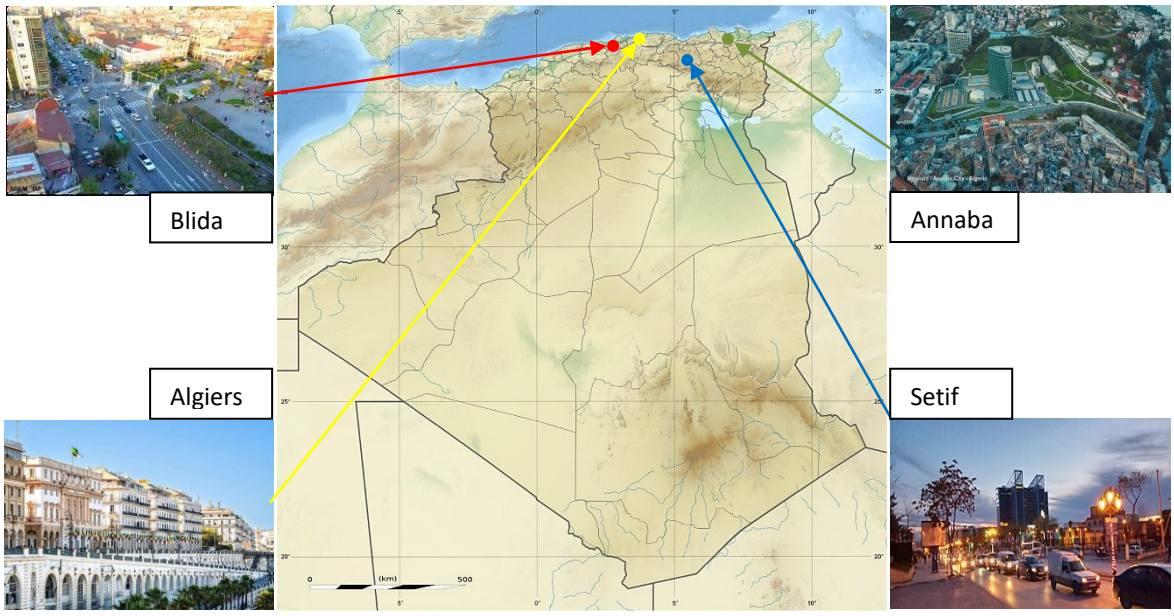

Figure 1. Geographical locations of the four Algerian cities (Developed by the authors).

2.2. Study design

The qualitative content-analysis method was used in study to systematically gather, evaluate and interpret the content of various forms of communication, such as texts and images. As it is shown in Figure 2, it dives deeper into the meanings and implications of the content. It involves interpreting the context, understanding underlying messages, and exploring the nuances of how information is presented. To this end, the present study focuses on the recently initiated state decisions in four cities in Algeria (Algiers & Blida, Annaba & Setif). Scientific papers published in academic database (Scopus, Google scholar, ASJP) between 2009 and 2025 discussing the issue of road traffic noise and its control mechanisms, particularly in Algeria, were read. Google searches were carried out in three languages (French, Arabic and English) based on keywords like noise, noise pollution in Algeria, Algerian noise regulation, state decision, road traffic noise, motorcycle noise. Technical manuals, social-media platforms like Facebook Algerian pages, official governmental (GSG: General Secretariat of the Government) and local news outlets and web sites were consulted. All this enabled us to gather the information we needed to inspire from foreign experiences, learn about the study object and to draw up final conclusions.

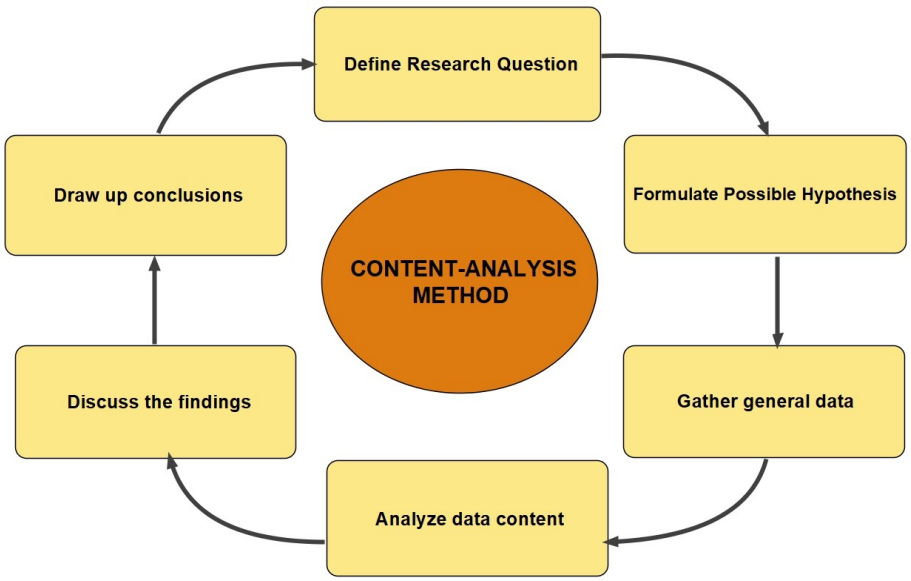

Figure 2. Explanation of the Study's Flow chart approach (Developed by the authors).

3. Results

The result sections below of this scientific article present the key findings of the study.

In the purpose of extracting data on the Algerian national regulation related to noise and road traffic noise, several resources like papers and reports were consulted, despite that limited research and surveys have been conducted to quantify and assess noise levels, particularly from transportation means in some cities across the country, in accordance to existing noise legislation. (Hamou et al., 2014) conducted a quantitative study in Oran city, where the measurements were carried out in the city center, and the results confirmed the presence of high noise nuisance levels from road traffic compared only to the thresholds found in the executive decree No.93-184 of July 1993. As for the city of Algiers, it was claimed in (Gramez, 2010) that there was only two laws (No.83-03 of February 1983 and No.03-10 of July 2003), one decree No.93-184 of July 1993 and a technical regulatory document (DTR C3.1.1) representing the fundamentals of the Algerian national acoustic regulation. From Skikda (Bourekba et al., 2023) also worked in his study on hospitals with the aforementioned decree. In Annaba and Guelma (Boulemaredj, 2024), (Boulemaredj et al., 2022, 2023; Boulemaredj & Haridi, 2022; Boulemaredj & Saifi, 2023), the author worked on his measurement studies using another executive decree No.03-410 of November 2003 which specifies maximum noise levels emissioned from motorized vehicles and he referred to other regulatory texts as indicated in Table 1 below. Additionally, other national research works have addressed the problem of noise from a legal point of view such as (Bakel, 2022; Kohil, 2021) and (Lecheheb Sache & Boussebaa, 2020) and (Medjadji, 2020).

As for the Algerian legislative system, it has evolved over time through the categorization of regulatory and para-regulatory texts (Figure 3) according to the importance of the document launched, ranging following a hierarchy system from the law at the top to the technical notices in the bottom, which indicate the specificities to be respected in practice. Concerning the acoustic/ noise regulations, they were initially implemented to address the issue of noise pollution by the promulgation of the decree of February 25, 1964, which specifically emphasized the importance of combating excessive noise. Articles 1 and 2 of this decree explicitly state that any manifestation of noise nuisance likely to disturb public peace and the moral well-being of residents, in particular persistent noise emanating from automobiles equipped with modified mufflers and exhaust systems, is prohibited.

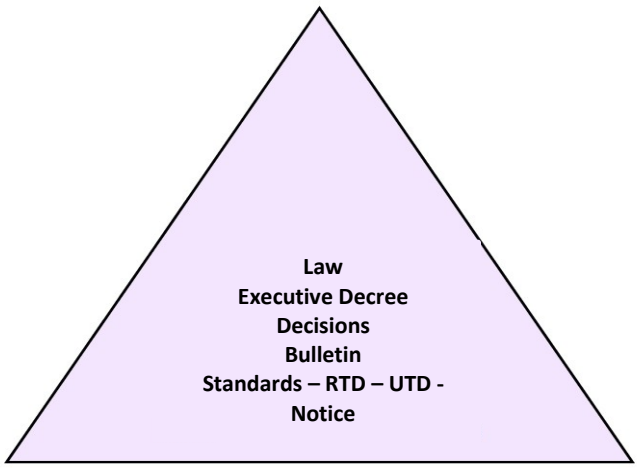

Figure 3. Hierarchy of regulatory texts in Algeria (Drawn by the authors).

The subsequent act, commonly referred to as the decree of 4 April 1972, includes a series of thresholds delimiting the upper limits of sound levels, called Lmax, relating specifically to the operation of an engine in motion, depending on the classification assigned to the respective vehicle. This particular legislation concerns exclusively the quantification of auditory emissions generated solely by motor vehicles, with particular emphasis on the obligations imposed on the use of soundproofing mechanisms and devices.

Ten years later, it is important to note that under the provisions of Article 442 of the Inaugural Law No. 82-04 on personal contraventions, promulgated in February 1982, persons who disturb the tranquillity and serenity of the inhabitants of a given locality by generating excessive noise levels, causing disturbances, organizing night gatherings, using audio equipment in an intrusive manner, etc., may be fined the monetary value of which may vary from 100 to 1000 da, as may those who engage in minor disputes, physical altercations or acts of aggression of a relatively insignificant nature, as well as those who deliberately throw solid objects or waste at another individual (Algerian Penal Code, 2005). It is widely noted that in order to maintain the public peace of individuals, the Algerian legislator has directly opted for a repressive angle, which consists of implementing measures adopting a deterrence strategy. However, the content of this law lacks the type of noise nuisance produced, at what sound level (in dB) these prescriptions are to be addressed and other details relating to the investigation protocol. In addition, the introduction of the following regulations has made it possible to address in a succinct and in-depth manner the issue of noise reduction and the promotion of acoustic comfort indoors and outdoors, whether in metropolitan areas, in residential premises or in the workplace. Eight Laws were implemented through seven executive decrees and six orders, since 1982, until 2018 (Boulemaredj, 2023), which is the subject of the health protection law, represent the regulatory arsenal for combating generally the issue of noise pollution in Algeria. Moreover, there is the new state decision (order) which was recently published in 2023 and 2024.

In the table below, all of the Algerian national regulation whose articles stipulate texts that can be found against road traffic noise have been chronologically illustrated.

Table 1. Overview on Algerian road traffic noise regulation.

Regulation title	Source	Date
Law No. 83-03 on environmental protection	JORA, No. 06	February 1983
Law No. 85-05, amended and supplemented by Law No. 08-13 of July 20, 2008, relating to the protection and promotion of health	JORA, No. 08	February 1985
Executive Decree No. 91-175 corresponding to the general rules of development, town planning and construction.	JORA, No. 26	promulgated in May 1991
Executive Decree No. 93-184 relating to noise emission thresholds	JORA, No. 50	published in July 1993
Law No. 01-14 concordant with the organization, security and policing of road traffic	JORA, No. 46	published in August 2001
Law No. 03-10 relating to environmental protection within the framework of sustainable development	JORA, No. 43	promulgated in July 2003
Executive Decree No. 03-410 setting out the thresholds for emissions of smoke, toxic gases and noise from motor vehicles	JORA, No. 68	published in 2003
Executive Decree No. 04-381 on road traffic rules	JORA, No. 76	published in November 2004
Law No. 17-05 amending and supplementing Law No. 01-14 of August 2001, corresponding to the organization, security and policing of road traffic	JORA, No. 12	promulgated in February 2017
Law No. 18-11 on health	JORA, No. 46	published in July 2018
State Decision No 1123	The Wali of Algiers	Published in 23th April 2023
State Decision No 2485	The Wali of Blida	Published in 23th April 2023
State Decision No 2586	The Wali of Annaba	Published in 23th April 2023
State Decision No 1497	The Wali of Setif	Published in 20th April 2024

The walis (governors) of the cities of Algiers and Blida recently initiated, on the third day of the Eid festival (Ennahar TV, 2023) and (Saada, 2023), a new decree, in the form of a state decision No.1123 of April 24, 2023, on fines relating to vehicles; noisy sports cars and motorcycles, supplementing the regulatory texts previously published on this issue, in response to complaints and indignation from residents of these wilayas.

The decree undoubtedly has a direct interest in encouraging the fight against noise pollution and reducing road noise to the thresholds admitted in international standards and national regulations in force. It clearly targeted drivers of vehicles and motorcycles with an engine with a volume greater than 125 cm3, emitting intense noise, by adopting a repressive angle, in the form of a penalty, which condemns them to impoundment for eight (08) days or fifteen (15) days in the event of a rebound, to put an end to the noise pollution they produce, because of the modifications introduced on the exhaust system of the vehicle, or its removal, or even modifications to the engine, with the aim of increasing its power (Figure 4).

The same content has also been published in a state decision No.2485 and No.2486 by the Wali of Annaba city in October 2023 (Mohamed, 2023). Similarly, the Wali of Setif in April 2024 enforced through a decision No.1497 to mainly target noisy motor-cycles and to prevent them to circulate in the vicinity of residential urban areas at night time, otherwise it will be a penalty of (10) days placement in the municipality camp (Medjahed, 2023). Furthermore, the same initiative was generalized and applied in other cities across Algeria as Ghilizane, Laghouat, Guelma and Constantine.


People's Democratic Republic of Algeria
Province of Blida

State Decision No. 1123 dated April 24, 2023

Providing for the placement in the municipal camp for a period of (08) days and in case of recurrence (15) days, all cars and motorcycles causing noise and nuisance that are the subject of a violation report by qualified security officers when caught during the period from 22:00 hours at night until 06:00 hours in the morning one of the following offenses:

- Making noise from a muffler.
- Traveling without a muffler tube.
- Modifications made to its engine without the authorization of the mining engineer, with the aim of increasing the engine power and making noise.

الجمهورية الجزائرية الديمقراطية الشعبية
ولاية البليدة

القرار الولائي رقم 1123 المؤرخ في 24 أفريل 2023

المتضمن وضع بالمحشر البلدي لمدة (08) أيام وفي حالة العود (15) يوم، كل السيارات والدراجات النارية المعدلة للضجيج والإزعاج الصوتي التي تكون محل تحرير محضر المخالفة من طرف أعوان الأمن المؤهلين عند ضبطها خلال التوقيت الممتد من الساعة العاشرة ليلا (22:00 سا) الى غاية الساعة السادسة صباحا (06:00 سا) بإحدى المخالفات التالية:

- إحداث ضجيج صادر عن كاتم الصوت.
- تسـيير بدون انبوب كاتم الصوت.
- أجريت عليها تعديلات على محركها دون الترخيص من مهندس المناجم، بهدف الزيادة في قوة المحرك وإحداث الضجيج.

الجمهورية الجزائرية الديمقراطية الشعبية
ولاية عنابة
الديوان

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Figure 4. The state decision texts applied by the four cities (from left to right: the English translated and Arabic version of state decision No.1123 of Algiers and Blida. State decision No.2485/2486 of Annaba. State decision No.1497 of Setif).

4. Discussions

All of the aforementioned regulatory texts established by the Algerian legislator to control noise pollution, particularly traffic noise, are generally focused on reducing all types of noise to acceptable thresholds for human hearing, without impacting the relaxation and quality of life of residents, as well as punishing in return the actors responsible for the genesis of this pollutant and violators of the law, with fixed fines, imprisonment, and other sanctions, even in the case of using a high volume of post-radio music in the motor vehicle (Mezhoud, 2023). Furthermore, to counteract road noise emitted by noisy two- or four-wheeled vehicles with a large engine capacity, a recent attempt was established and implemented by the responsible authorities in the form of a state decision.

This later, which has created a point of controversy in the Algerian community between sympathizers and antagonists, was initiated in opposition to the uncivil behaviour of a category of drivers of these vehicles on public roads, and who tend to accelerate suddenly and honk, which consequently causes inconvenience, stress and anger, whether among road users or in households residing nearby. This logically pushed those governors to react against this social scourge for security and urban tranquillity preservation.

Although the decision to ban the night running of noisy motorcycles and sports cars within Algerian cities, as instructed through government decisions, is a positive move to mitigate noise pollution, yet there are a number of dimensions and possible details that may be missed:

1. Delimitation and Conceptualization:

• Ambiguity in "Noisy": "Noisy" is subjectively definable. The determinations may lack specific decibel (dB) levels or objective criteria, leading to variable application and potential disputes.

• Focus only on Nocturnal: Noise pollution is an issue that lasts for 24 hours, even if its impacts typically occur more at night. The strategy can overlook daytime noise interruptions brought by such vehicles.

• Narrow Vehicle Types: Consideration only for sports cars and motorcycles can miss other major sources of noise, like heavy trucks with insufficient mufflers, altered standard vehicles, or even excessively loud car audio systems.

2. Enforcement Issues:

• Resource Allocation: Effective enforcement requires adequate personnel and resources (patrols, noise monitoring equipment), which can be in limited supply.

• Identification Challenges: It is difficult to identify and halt noisy cars, particularly motorcycles, especially at night.

• Circumvention: Others will come up with ways to bypass the restrictions (e.g., using side roads, temporarily altering vehicles).
• Consistency: Enforcement may differ from one district or municipality to another within the Wilaya.

3. Socio-Economic Impacts:

• Impact on Legitimate Users: The measures could inadvertently affect those who use motorbikes or sports cars for legitimate purposes (e.g., daily commute, work) if the restrictions are too broad.
• Economic Activity: Companies that depend on night-time deliveries or services that utilize the same vehicles may be adversely affected.
• Social Equity: The way enforcement is carried out and the perception of it by the target population may create a sense of inequity or unfairness in some populations.

4. Dealing with the Root Causes:

• Vehicle Modifications: The plan does not tackle directly the problem of illegal modifications to exhausts that amplify noise emissions.
• Inadequate Public Awareness and Education: Mere prohibition of circulation can be ineffective in informing the public of the effects of noise pollution and promoting responsible attitudes.
• Urban Planning and Infrastructure: The choices made do not consider the wider urban planning problems that exacerbate noise pollution, including inadequate road design, absence of proper noise barriers, and the closeness of residential zones to high-traffic zones.

5. Monitoring and Evaluation:

• Insufficient Systematic Data Collection: There may be a shortage of systematic data regarding the efficacy of these decisions in actually lessening noise levels.
• No Feedback Mechanisms: Possibly no official processes exist through which residents can give feedback on the effects of the initiatives or provide recommendations for change.

Ultimately, despite the existence of previous research findings, which have undoubtedly contributed to our understanding of the subject, there is still a gap in relation to road noise exposure and its diagnosis, which subsequently encourages the continued expansion of this body of knowledge. In accordance with the above, it was crucial to examine the situation of traffic noise regulations as they currently exist, particularly in Algeria. By conducting a thorough review of the existing regulatory framework, we hope to shed light on the efficiency and adequacy of these established measures, thus contributing to the design of more solid policies, based on scientific and professional arguments, related to the field of road noise control.

Furthermore, although this study can be considered complementary work and a guideline for national studies, it draws on many previous studies worldwide on this topic. Research limitations include the acquisition of direct access to regulatory documents and the limited number of national noise studies conducted. Comparing national road noise reduction legislation with those of European countries can seem daunting due to the complexity of the regulations, their implementation, and their timeliness. The fact that this topic is underrepresented in the national scientific literature and that there is a critical research deficit does not preclude new research opportunities.

In order to achieve a positive result in mitigating the annoying problem of road noise, it is imperative to act on several significant factors, which include adhering to the currently applicable acoustic regulations, carrying out a comprehensive sociological analysis of the driving patterns and habits of Algerian motorists, examining the characteristics and composition of the road surface, delving into the complex aspects of the city's urban configuration and mobility system as studied in (Meribai & Lazri, 2024), and finally, improving public understanding and awareness regarding the adverse consequences associated with prolonged exposure to high levels of road noise in particular.

It is possible to draw on the broader scholarly literature on urban planning, environmental policy, and noise pollution research in examining the potential constraints of local state decisions, such as Wali-level bans on loud vehicles in Algeria. The early environmental justice research by Robert Bullard demonstrates how local policy can inadvertently perpetuate or ignore structural environmental injustices and transportation inequity (Bullard, 2020). Likewise, Susan Fainstein's definition of the "just city" prioritizes equitable and inclusive city policies, including noise regulations that take into account all citizens' varying needs and implications (Fainstein, 2010). From a sustainable urbanism point of view, Timothy Beatley supports integrated solutions to environmental issues, recommending that single bans may not adequately promote genuinely sustainable urban soundscapes (Beatley, 2010).

In the field of noise pollution research, Brigitte Schulte-Fortkamp's soundscape approach also suggests that effective noise reduction entails consideration of the complete acoustic environment and public opinion, perhaps missing the nuance in top-down prohibition (Schulte-Fortkamp & Fiebig, 2017; Schulte-Fortkamp & Jordan, 2023).

Finally, the assessments made by Mark Brink on the effectiveness of various noise reduction measures in Zurich, Switzerland provide a comparative ground, indicating that single vehicle bans can be less effective compared to integrated approaches combining urban planning and infrastructural design (Brink et al., 2022, 2023).

The various academic viewpoints presented herein collectively imply that although Wali decisions are a starting point, a more holistic, equitable, and evidence-driven framework for controlling urban noise in Algeria, which addresses wider socio-economic drivers and embraces a range of mitigation strategies, may be required for achieving sustainable and equitable solutions.

5. Conclusions

This study showcases an attempt to clarify within a scientific framework, a critical examination of the strategy adopted in the Algerian acoustic regulations to combat noise pollution and road noise, particularly with regard to the new decision, initiated by the walis of the city of Algiers and Blida, Annaba and Setif.

The entire Algerian national regulation related to noise pollution has a main objective which is focused on the preservation of public and domestic tranquility, by reducing noise to acceptable levels, however, the content of the regulatory and para-regulatory texts seems to be on the one hand, inapplicable in reality given the noise pollution that the city suffers on a daily basis, on the other hand, there seems to be insufficient details concerning the revision and updating of texts, guidelines on how to tackle this issue, the measuring instruments to be used, technical guidance to follow when measuring and the types of noise to be controlled (road noise, industrial noise, neighborhood noise, nighttime noise, noise at work, etc.).

Furthermore, according to the comprehensive review of this new decision, its general aspect represents a commendable initiative that targets the mitigation of noise levels in urban environments, however the stipulated content appears to lack some details to be added in order to be a complete model to follow, where we subsequently recommend a rereading or reformulation of its regulatory text, touching on the following points:

The change in the type of fine to fixed fines instead of municipal impoundment.

Adding technical specifications on vehicles that may be noisy or produce unpleasant sounds.

The adding of a permitted sound threshold that must not be exceeded by the vehicle, whether moving or stopped.

The need to use the measuring instrument (sound level meters) by the police officers during an in-situ investigation operation.

The obligation to acquire a technical scanner sheet issued by the periodic vehicle inspection points, indicating that the engine is equipped with an exhaust system in good condition.

Also, it can very beneficial if Alternative Solutions and Other Strategies were adopted such as:

• Noise Monitoring and Hotspot Identification: Proactive monitoring to identify specific areas with high levels of noise may lead to more targeted interventions.

• Public Awareness Campaigns: Public education regarding the health impacts of noise and promoting quieter driving.

• Increased Regulations Relating to Vehicle Modifications and Emissions: Institution and implementation of stricter regulations for vehicular noise emissions and unauthorized vehicle modifications.

• Traffic Calming Measures: Making physical alterations to roads in order to decrease speeds and noise of vehicles.

• Incentives for Reduced Noise from Transport: Promoting the usage of electric automobiles or other low-noise transportation forms.

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Conflict of Interests

The Author(s) declare(s) that there is no conflict of interest.

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