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# Application of the AHP method for the classification of sustainable transport development alternatives in Algiers

# تطبيق طريقة AHP لتصنيف بدائل التنمية المستدامة للنقل في الجزائر العاصمة

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**Abstract:**
Algeria's budget constraints following the collapse of oil barrel prices require a multi-criteria decision-making process in all sectors, particularly in terms of transport.
In this context, the AHP(Analytic Hierarchy Process) often used in Croatia, Taiwan and Russia offers valuable assistance to avoid uni-criteria decisions that have long been taken in Algeria. The study introduce notions of sustainability in the transportation field for ranking priorities and announces that the aggravation of the scourge of own vehicle ownership is the first priority before air pollution and other economic and social aspects, effective measures such as "progressive taxes" should relieve the capital and reconnect with the challenges of sustainable transport.
**Keywords:**multi-criteria analysis; transport; sustainability; ranking

**Résumé :**
Les contraintes budgétaires que connaît l'Algérie suite à l'effondrement des prix des barils de pétrole imposent un processus décisionnel multicritère dans toutes les branches et notamment en matière de transport.
Dans ce cadre, l'AHP (Analytic Hierarchy Process) souvent employé en Croatie, Taiwan et Russie propose une aide précieuse afin d'éviter les décisions uni-critère longtemps prise en Algérie. L'étude fait intervenir les notions de la durabilité dans le champs du transport pour le classement des priorités et annonce que l'aggravation du fléau de la possession du véhicule propre se positionne en premier rang des priorités devant la pollution atmosphérique et d'autres aspects économiques et sociaux, des mesures efficaces du type « impôts progressifs » devront soulager la capitale et renouer avec les défis du transport durable.
**Mots-clés :**analyse multicritère ;transport **;** durabilité ;classement.

**ملخص**:
فرضتقيودالميزانيةالتيتواجههاالجزائربعدانهيارأسعاربرميلالنفطالتوجه الى اتخاذ قراراتمتعددةالمعاييرفيجميعالفروعوخاصةفيمايتعلقبالنقل

فيهذاالسياق،قدمت الـ AHP مساعدةقيمةفيكرواتياوتايوانوروسيامنأجلتجنبالقرارات الانفرادية.تضعالدراسة الحاليةمفاهيمالاستدامةفيمجالالنقل ضمن أولوياتهالترتيب خيارات تحسين الوضعفي الجزائر العاصمة وتعلنأنتفاقمآفةامتلاكالسيارةالخاصة هيالخيار الأول من أجل نقل أكثر استدامة, و ذلكقبلخيار تلوثالهواءو جوانباقصادية و اجتماعيةأخرى. إنالتدابيرالفعالةمثل "فرض الضرائبالتصاعدية" ستخففمنحدة الظاهرةوتحققالنقلالمستدام.

**الكلمات المفتاحية:** تحليل متعدد المعايير؛ النقل؛ استدامة؛ التصنيف.

## I- Introduction :

Various disciplines have approached the theme of the evaluation of transport as a system, we are mainly talking about urban planning and the economy, yet there are many efforts to evaluate it from the point of view of sustainability, this subject is very complex because it involves studying interactions and flows between individuals, territory and natural resources.

Transport contributes significantly to the emission of greenhouse gases, according to studies from the OECD International Forum on Transport (ITF), the emission of carbon dioxide (CO2) caused by the transport sector, represent 23% of global emissions and 30% of emissions from member countries of the Organization for Economic Co-operation and Development (OECD). The sector accounts for around 15% of global greenhouse gas emissions (GHG)[1].

In this sense, Algiers is having trouble in his transport system; these are obstacles to mobility, accessibility, efficiency, generating additional costs for management, hitherto provided by the administrative services of the wilaya of Algiers (DTW)[2] .

Based on a scientific approach, this study establishes an evaluation of transport as an open system (especially on environmental aspects), using a multi-criteria methodology, through which strategies can be proposed.

These strategies allow inter alia the integration of the principles of sustainability in the ministerial policies or on a smaller scale of the wilaya of Algiers or the Algiers people's communal assemblies (PCA). The question we asked is: what strategies should we implement to integrate the principles of sustainability into the transport system in Algiers?

### I.1. General Framework:

[1] - Global CO2 emissions from transport increased by 45% between 1990 and 2007.
[2] Wilaya transport direction.

It is estimated that, the total population of Algiers is 7.8 million inhabitants, there is a large fleet of vehicles of the order of 1.2 million recorded in 2019[1], public transport represents around 10,697 buses, more than 50% are over 10 years old, the number of road accidents exceeds 3000 in 2018[2].

The growth of the urban area causes more congestion and more distances traveled between workplaces and places of residence, especially following the inauguration of the AADL cities located in SIDI-ABDELLAH, OULED FAYET, DOUIRA west of capital, and from REGHAIA, MEFTAH (Blida) and ROUIBA to the east, the cost of travel has become high (time and money) regardless of whether the journey is by car or public transport.

Algiers is the city with the highest air pollution in the country, with a significant number of deaths linked to the effects of air pollution, respiratory and cardiovascular diseases, even more than there is no infrastructure. Mechanized, as bicycle paths or lanes reserved for pedestrians in urban areas[3].
Population growth on the rise in Algiers since 1970 inevitably increases the number of trips by citizens and transport infrastructure, which affects environmental conditions (soil, changes and degradations of air and water quality ...)
From a chemical point of view, gases such as carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFC), perforated hydrocarbons (PFC) and sulfur hexafluoride (SF6) are the direct results of greenhouse gases from the combustion of fossil fuels (CO2), land use and agricultural activities (CO2, CH4 and N2O) and industrial activities (HFC, PFC and SF6).
In addition to this, we should add that various authors include carbon monoxide (CO), sulfur dioxide (SO2), nitrogen oxides (NOX) and volatile organic methane (NMVOC), as indirect causes GHG.

Sustainable transport has been defined in several ways; one of the most cited and recognized is that of the report of the BRUNDTLAND commission: "… which meets the needs of the present in terms of transport and mobility, without compromising the rights of future generations»

On the same wave, the Canadian Sustainable Transportation Center defines sustainable transportation as "a system that allows individuals and societies to meet their main needs for access to places of activity, in complete safety and compatible with the health of people and ecosystems, with equity between the different generations. It is a system that will have reasonable costs, that will

[1] National Center for Road Safety and Prevention (NCRSP), annual bulletin, 2019.
[2] (NCRSP).
[3] Ministry of land planning and the environment, 5th National Report On the implementation of the Convention on Biological Diversity at the national level, December 2014, p53.

operate efficiently and that will offer the choice between different transport alternatives for all populations"[1].

**Table 01:** Objectives of sustainable transport

| Social | Economic | Environmental |
|---|---|---|
| accessibility | Efficient mobility | Reduction of noise and air pollution |
| Safety and health | Local economic development | Preserving green spaces |
| Social equity | Operational efficiency | Conservation of resources for future generations |
| Community cohesion | | |

**Source:** Synthesis by the author from the collection "Towards viable communities", living in cities, Quebec, 2018, p23

Transport is in itself a basic human need, especially in urban areas, and as the population increases, demand for transport will also increase, so the sustainability of transport systems can greatly contribute to sustainable development.

Urban mobility is one of the main challenges facing the wilaya of Algiers, it is important to improve the quality of life of its inhabitants and attract more investment; Algiers must create mobility networks facilitating the transfer of people and even goods.

The strong motorization in Algiers is not only due to the degree of development of trade, but also to the development of large cities on the border with the wilaya of:

- BOUMERDES (Boudouaou, Khemis El Khechna…),
- TIPAZA (Kolea, Bousmail, Douaouda…),
- BLIDA (Meftah, Larbaa...).
- Other nearby wilayas: Médéa, Tizi-ouzou...

The control of this scourge is not done by installing infrastructure such as the construction of new roads, highways or bridges, but a transport policy must be taken into account.

Demand management projects could be one of the possible solutions to solve the congestion problem that hampers urban and interurban mobility, and provides air pollution that decreases the quality of life we enjoy today.

[1] Available at: http://fr.forumviesmobiles.org/video/2013/02/12/mobilite-durable-definitions-concepts-et-inditeurs-621

Therefore, these options must be evaluated while adequately meeting economic, environmental or social objectives. Multicriteria Analysis attempts to meet this requirement, including the full set of project effects, whether or not they are quantifiable.

This form of analysis may seem more subjective and difficult to present succinctly, even if it offers an important advantage: to make decisions based on a complete set of tests.

## II– Methods and Materials:

The multi-criteria methodology implemented in several countries of the world (Croatia, Taiwan and Russia) as a strategy is an alternative to the traditional evaluation process, which often takes into account quantitative criteria whereas the multi-criteria approach implies both criteria qualitative and quantitative.

The study uses the hierarchical analytical process (AHP) which is a multi-criteria analysis methodology developed in the late seventies (1980) by the doctor of mathematics Thomas L. SAATY. It is a method of decomposing complex structures, and of ordering alternatives in a hierarchical structure, where the scale developed by the latter is used to perform pairwise comparisons, which are then synthesized to obtain the final priorities of the alternatives, and determine which alternative to the highest priority.

The subjective comparisons provided by a group of individuals encompassing the different key services and the actors involved in the urban[1] transport system provide additional strength for the prioritization of potential transport options, the weighted arithmetic[2] average method was used in this study for the aggregation of individual preferences[3].

### II.1. Axes of the AHP:

The approach consists of six alternatives that provide the lowest level of AHP, with criteria as an intermediate level, and a goal at the higher level.

**Table n ° 02:** Tree of hierarchies

| Goal | criteria | Alternatives |
|---|---|---|

[1] Les experts et décideurs en transport, les experts en environnement, les utilisateurs.

[2]Yedla, S. (2001). ISEE / RC'2001.

[3]L'étude de YEDLA a constaté que cette méthode réalisait une meilleure agrégation de groupe.

| | | |
|---|---|---|
| Developing sustainable transport in the city of Algiers | ❖ **C1 :** congestion<br>❖ **C2 :** mobility<br>❖ **C3 :** Air pollution<br>❖ **C4 :**energy consumption<br>❖ **C5 :** accidents<br>❖ **C6 :** accessibility | A1. Encourage non-motorized transport<br>A2. Reduce energy consumption<br>A3.Improve air quality[1] (reduce emissions)<br>A4. Congestion charge<br>A5. Reduce the use of private vehicles<br>A6.Construction of segregated-lane public transport projects. |

**Source:** developed by the author following the literature review

## II.2. Preferences scale:

The scale established by Thomas L. SAATY is the product of a whole experimental study, he confirmed that a scale of nine (9) levels is reasonable and fairly reflects the different degrees or levels at which a person can discriminate the intensity of the relationship between the elements of a given set, the technique conforms to the principle of homogenization of the measurement theory, especially when working with factors or variables of great variety and diversity. The table below gives an overview of the scale adopted during the study.

1 -Through the subsidization of CNG (Compressed Natural Gas) kits, control over old vehicles, the conversion of diesel buses into CNG buses, etc.

**Table 03:** Comparison scale[1]

| Numerical evaluation | Verbal judgment | Explanation |
|---|---|---|
| 1 | Equal importance | Two activities contribute equally to the objective |
| 3 | Moderate importance of one over another | Experience and judgment slightly favor one alternative over the other |
| 5 | Essential or strong importance | Experience and judgment strongly favor one alternative over the other. |
| 7 | Very strong importance | An activity is strongly favored and its dominance demonstrated in practice |
| 9 | Extreme importance | The evidence favoring one activity over another is of the highest possible order of affirmation |
| 2, 4, 6, 8 | Intermediate values between the two adjac-ent judgment | |

**Source:** Scale after SAATY, 1984

By way of observation, all the pairwise comparisons gathered in this article are carried out by the managers of the land and urban transport department at the level of the Ministry of Transport and Public Work.

### II.3.Weight allocation:

The weights are measures of relative importance associated with the criteria, a weighting vector is assigned as follows:

$$w = \{w_1, w_2, ..., w_n\} \quad \text{n:is the number of criteria.}^{2}$$

The direct attribution method, for which the decision maker directly assigns values, they can be assigned in different ways: by simple sorting or by successive comparisons, consists in asking the decision maker to evaluate each pair of criteria on a certain scale.

**1**- Same scale for reverse comparisons

**2-** Guesdon, G. (2011). Methods and tools for multi-criteria decision support - Saaty's comparison. 5th, Environmental Impact Assessment Course (EIA). Faculty of Science and Engineering, Laval University.

## III- Results :

**Table n ° 04:** Comparison matrix of the criteria compared to the objectif

| | Criterion 01 | Criterion 02 | Criterion 03 | Criterion 04 | Criterion 05 | Criterion 06 |
|---|---|---|---|---|---|---|
| Criterion 01 | 1 | 1 | 1/2 | 1 | 1/2 | 1 |
| Criterion 02 | 1 | 1 | 1 | 1 | 2 | 1/2 |
| Criterion 03 | 2 | 1 | 1 | 3 | 1/2 | 2 |
| Criterion 04 | 1 | 2 | 1/3 | 1 | 1 | 1 |
| Criterion 05 | 2 | 1/3 | 1 | 1 | 2 | 1/2 |
| Criterion 06 | 1 | 2 | 1/2 | 1 | 1/2 | 2 |
| $\sum$ | 8 | 7.33 | 4.33 | 8 | 6.50 | 7 |

**Source:** Results obtained

The determination of the priorities of the elements of each matrix is done by the resolution of the problem with the eigen vectors, once the comparisons accomplished, the eigen vector of the matrix is established, representing the relative importance of the criteria compared in each matrix

$$A * w = \lambda * w$$

where :

A = Reverse matrix of peer comparisons (judgments of importance / preference of one criterion over another)

w = Clean vector representing the classification or the order of priority.
$\lambda$ = maximum eigenvalue which represents a measure of the consistency of judgments.

In this way, the order of priority or the weighting of the criteria was established, as follows:

**Table 05:** the weighting for each of the criteria

| Criteria | weighting |
|---|---|
| **C1 :** congestion | 0.12 |
| **C2 :** mobility | 0.17 |
| **C3 :** Air pollution | 0.23 |
| **C4 :** energy consumption | 0.15 |
| **C5 :** accidents | 0.17 |
| **C6 :**accessibility | 0.17 |

**Source:** Results obtained

**Principle of consistency of judgments:**

SAATY has defined an index proposing the calculation of the consistency ratio (RC):

$$\lambda_{Max} = V * B$$

$\lambda_{Max}$ : is the maximum value of the pairwise comparison matrix.

V : is the eigenvector obtained from the comparison matrix.

B : is a line vector, corresponding to the sum of the elements of each

column of the pairwise comparison matrix. It is an array of mx1, where m is the number of columns in the comparison matrix.

With this result, it is possible to calculate the consistency index:

$$IC = (\lambda_{Max} - n) / (n-1) = (6,587-6) / 5 = \mathbf{0,11}$$

It is necessary to have the random index. For this there is a table prepared by SAATY which shows the consistency indices for a series of random matrices.

**Table n ° 06**: the calculation of the random index (IR)

| **Matrix size** | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| **Random indices (By matrix size)** | 0 | 0.58 | 0.9 | 1.12 | 1.24 | 1.32 | 1.41 | 1.45 | 1.49 |

**Source:** Saaty, TL (1997). Decision support system for managers. A Wiley-Interscien publication.

Given the size of the matrix, the randomized index (IR) is obtained using a table developed by Thomas SAATY, the red circle indicates that the IR is of the order of 1.24, in this sense the logical consistency (consistency ratio) is calculated as follows:

$$RC = IC / IR = \quad 0{,}11 / 1{,}24 \quad = \mathbf{\underline{0{,}09}}$$

Elements of interpretation:

- if RC = 0, the matrix R is coherent.
- if RC ≤ 0,10, the matrix R has an admissible inconsistency.
- if RC > 0,10, the matrix R has an intolerable inconsistency.

In the next step, the alternative comparison matrices will be constructed according to each criterion and are presented in the appendices (1-6).

**Table n ° 7:** Matrix of comparison of the alternatives according to the congestion criterion

| congestion | Alternat 01 | Alternat 02 | Alternat 03 | Alternat 04 | Alternat 05 | Alternat 06 | Weightings (priorities) |
|---|---|---|---|---|---|---|---|
| Alternat 01 | 1 | 9 | 5 | 1 | 1 | 2 | 0,26 |
| Alternat 02 | 1/9 | 1 | 7 | 1 | 2 | 1 | 0,14 |
| Alternat 03 | 1/5 | 1/7 | 1 | 3 | 3 | 1 | 0,13 |
| Alternat 04 | 1 | 1 | 1/3 | 1 | 1 | 1 | 0,10 |
| Alternat 05 | 1 | 1/2 | 7 | 7 | 1 | 9 | 0,31 |
| Alternat 06 | 1/2 | 1 | 1 | 1 | 1/9 | 1 | 0,07 |
| **RC= 0.095** | | | | | | | |

**Source**: AHP result

A priority vector is derived for each of the alternatives. In the table above, the priorities of the alternatives according to the "congestion" criterion as a demonstration appear in the last column, also the consistency ratio.

The set of priorities calculated in relation to all the criteria are summarized in the table below :

**Table n ° 07:** presentation of the local priorities of the alternatives in relation to all the criteria

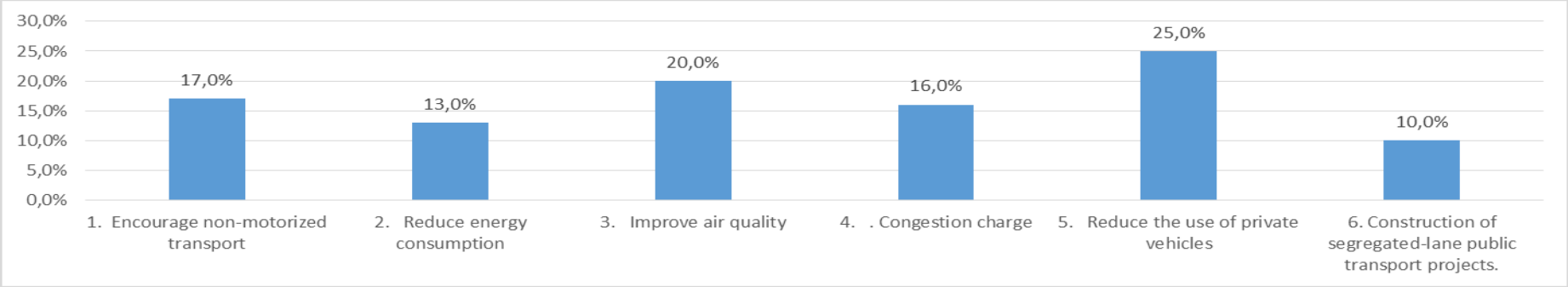
| | Accessibility (0.17) | Accidents (0.17) | Energy consumption (0.15) | pollution (0.23) | Mobility (0.17) | Congestion (0.12) | Overall priorities |
|---|---|---|---|---|---|---|---|
| Alternative (1) | 0,08 | 0,16 | 0,04 | 0,20 | 0,24 | 0,26 | **0.17** |
| Alternative (2) | 0,05 | 0,13 | 0,35 | 0,08 | 0,10 | 0,14 | **0.13** |
| Alternative (3) | 0,12 | 0,15 | 0,17 | 0,38 | 0,13 | 0,13 | **0.20** |
| Alternative (4) | 0,18 | 0,21 | 0,16 | 0,17 | 0,12 | 0,10 | **0.16** |
| Alternative (5) | 0,39 | 0,27 | 0,14 | 0,08 | 0,34 | 0,31 | **0.25** |
| Alternative (6) | 0,17 | 0,08 | 0,14 | 0,09 | 0,07 | 0,07 | **0.10** |

**Source:** Developed by the author following the results of the AHP

The aggregation of priorities is done by applying the principle of the weighted arithmetic mean. They summarize the importance of alternatives based on all the criteria.

**Figure 01:** Percentages of alternatives

**Source :**developped by the author after reading the results of AHP



## IV. discussion :

The results obtained are valid, the Ratio of coherence of the matrix is of the order of 0.09, which is acceptable and allows to pass to the results dedicated to the analysis of criteria and alternatives.

According to the AHP implemented in this study, reducing the use of the private car obtains the highest percentage, as a strategy contributing to the improvement of the city's transport system.

According to the principles of sustainability, the best positioned option would not exclude the rest of the alternatives, a large-scale strategy will take into account a certain number of elements in sub-strategies to achieve the overall objective.

It should be pointed out that a certain number of recommendations have been drawn, there is talk of increasing the costs associated with the registration of private vehicles through progressive taxes, in order to discourage the acquisition of private cars, that is to say, an individual with two vehicles will have more taxes to pay than another with a single vehicle.

In addition, the (PCA) must contribute to the strengthening of the transport system, the proper functioning and planning will be done upstream by the municipalities before going to a higher scale (wilaya, ministry) their level of intervention can go up " the creation of non-motorized infrastructure such as cycle paths and walkways allowing migration to a less polluting transport system in the near future.

This will be done in addition to the services of the wilaya, which should have a more enterprising role and create routes allowing more agile access for public transport especially during peak hours, but also encourage citizens to adopt " other means of travel such as carpooling, very little used in Algeria.

The competent services must also think of a more efficient and more integrated transport, like the BRT (Bus Rapid Transport), and take care of the development of the zones being on the periphery, producing dust contaminants.

University transportation is a burden on the state and a source of pollution, which can be eliminated by including "student fares" in existing public transportation.

The new strategy must give priority to transport in the planning of new residential areas and commercial areas, to facilitate accessibility, and create pedestrian zones, in the Casbah and in the center of Algiers.

## V-Conclusion:

The comfort of the private vehicle quickly loses value when there are other alternatives that can be just as practical and much cheaper. For the citizen in

Algiers, it is now more important than ever to have attractive alternatives which replace the private vehicle.

It is equally crucial to separate mobility from the use of the private vehicle. We agree with all the experts who say that the future of urban transport will be shaped by a wide variety of alternatives in which the foundation will continue to be public transport, which will be supplemented by bicycles, services such as 'UBER, taxi and other mobility solutions.

## VI- Appendices:

**Annex n°01** : Comparison matrix of alternatives for the criterion of mobility

| mobility | Alternat 01 | Alternat 02 | Alternat 03 | Alternat 04 | Alternat 05 | Alternat 06 | priorities |
|---|---|---|---|---|---|---|---|
| Alternat 01 | 1 | 5 | 7 | 1 | 1/3 | 3 | 0,24 |
| Alternat 02 | 1/5 | 1 | 2 | 1 | 1/5 | 2 | 0,10 |
| Alternat 03 | 1/7 | 1/2 | 1 | 4 | 1/6 | 2 | 0,13 |
| Alternat 04 | 1 | 1 | 1/4 | 1 | 1/2 | 2 | 0,12 |
| Alternat 05 | 3 | 5 | 6 | 2 | 1 | 2 | 0,34 |
| Alternat 06 | 1/3 | 1/2 | 1/2 | 1/2 | 1/2 | 1 | 0,07 |

**Annex n°02** : Comparison matrix of alternatives for the pollution criterion

| pollution | Alternat 01 | Alternat 02 | Alternat 03 | Alternat 04 | Alternat 05 | Alternat 06 | priorities |
|---|---|---|---|---|---|---|---|
| Alternat 01 | 1 | 5 | 1 | 3 | 1 | 1/5 | 0,20 |
| Alternat 02 | 1/5 | 1 | 1/3 | 1 | ½ | 2 | 0,08 |
| Alternat 03 | 1 | 3 | 1 | 5 | 7 | 9 | 0,38 |
| Alternat 04 | 5 | 1 | 1/5 | 1 | 2 | 3 | 0,17 |
| Alternat 05 | 1 | 2 | 1/7 | ½ | 1 | 1 | 0,08 |
| Alternat 06 | 3 | 1/2 | 1/9 | 1/3 | 1 | 1 | 0,09 |

**Annex n°03** : Comparison matrix of alternatives for the criterion of energy consumption.

| consumption. | Alternat 01 | Alternat 02 | Alternat 03 | Alternat 04 | Alternat 05 | Alternat 06 | priorities |
|---|---|---|---|---|---|---|---|
| Alternat 01 | 1 | 1/5 | 1/2 | 1/5 | 1/3 | 1/4 | 0,04 |
| Alternat 02 | 4 | 1 | 3 | 5 | 5 | 7 | 0,35 |
| Alternat 03 | 2 | 1/3 | 1 | 1/5 | 4 | 6 | 0,17 |
| Alternat 04 | 5 | 1/5 | 5 | 1 | 1/2 | 1/7 | 0,16 |
| Alternat 05 | 3 | 1/5 | 1/4 | 2 | 1 | 7 | 0,14 |
| Alternat 06 | 4 | 1/7 | 1/6 | 7 | 1/7 | 1 | 0,14 |

**Annex n°04** :Comparison matrix of alternatives for the accident criterion

| Accident | Alternat 01 | Alternat 02 | Alternat 03 | Alternat 04 | Alternat 05 | Alternat 06 | priorities |
|---|---|---|---|---|---|---|---|
| Alternat 01 | 1 | 4 | 3 | 1/2 | 1/4 | 1 | 0,16 |
| Alternat 02 | 1/4 | 1 | 5 | 1/3 | 1/3 | 1 | 0,13 |
| Alternat 03 | 1/3 | 1/5 | 1 | 2 | 1/2 | 3 | 0,15 |
| Alternat 04 | 2 | 3 | 1/2 | 1 | 1 | 3 | 0,21 |
| Alternat 05 | 4 | 3 | 2 | 1 | 1 | 3 | 0,27 |
| Alternat 06 | 1 | 1 | 1/3 | 1/3 | 1/3 | 1 | 0,08 |

**Annex n°05**: Comparison matrix of alternatives for the accessibility criterion

| Accessibilité | Alternat 01 | Alternat 02 | Alternat 03 | Alternat 04 | Alternat 05 | Alternat 06 | priorities |
|---|---|---|---|---|---|---|---|
| Alternat 01 | 1 | 2 | 1/4 | 1 | 1/5 | 1/2 | 0,08 |
| Alternat 02 | 1/2 | 1 | 1/3 | 1/2 | 1/4 | 1/6 | 0,05 |
| Alternat 03 | 4 | 3 | 1 | 1/5 | 1/3 | 1/4 | 0,12 |
| Alternat 04 | 1 | 2 | 5 | 1 | 1/4 | 3 | 0,18 |
| Alternat 05 | 5 | 4 | 3 | 4 | 1 | 5 | 0,39 |
| Alternat 06 | 2 | 6 | 4 | 1/3 | 1/5 | 1 | 0,17 |

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