



# Neutrosophic Assessment of Human Rights and Social Justice

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**Abstract.** In a world characterized by cultural diversity, global interconnection, and growing awareness of the fundamental rights of each individual, the theme of Human Rights and Social Justice stands as a significant pillar in the quest for societies more equitable, inclusive, and respectful of human dignity. This intersection transcends geographical boundaries and encompasses a variety of crucial issues affecting local, national, and international communities. Respect for the dignity of human beings involves the recognition, fulfillment, and exercise of their rights, assumed as a primary obligation of the States under a comprehensive understanding that considers the criteria of diversity, equity, and justice. The purpose of this study is to analyze and evaluate human rights and social justice, through neutrosophic statistics, to contribute to the strengthening of more just and inclusive societies. The study concluded that the participation of citizens in activities against violations of constitutional rights is a challenge that must be met to overcome the remaining obstacles and achieve a more just and inclusive society.

**Keywords:** cultural diversity, fundamental rights, equality, neutrosophy.

## 1 Introduction

Human rights, recognized in international documents such as the United Nations Universal Declaration of Human Rights, represent the fundamental principles that guarantee the equality, freedom, and dignity of all people, regardless of their origin, gender, religion, or social status. Meanwhile, social justice focuses on the equitable distribution of resources, opportunities, and benefits in a society, to reduce economic and social inequalities that may hinder access to these fundamental rights.

The International Bill of Human Rights, consisting of the Declaration of Human Rights; the International Covenant on Civil and Political Rights; the International Covenant on Economic, Social and Cultural Rights; and the Optional Protocols to the International Covenant on Civil and Political Rights, is the main body of laws that regulate the fulfillment of the ideals under which a type of society based on freedom, respect, non-discrimination and life in peace for every person in modern societies is articulated.[1]

Ecuador, being a country subscribed to the legal commitments related to International Human Rights Law, has assumed the responsibility to ensure compliance with these norms and ensure their management in defense of the guarantees of all citizens who are under the inalienable protection of these protocols. The recognition of a right is of no use if there are not sufficient conditions to demand its respect, exercise, or reparation in case of violation.

Ecuador, as a nation located in the Andean region of South America, has undergone a significant transformation in recent decades in terms of human rights and social justice. The interaction between these two key elements has been a central theme in the process of building a more equitable society that respects human dignity in the country.

Article 10 of the 2008 Constitution of the Republic of Ecuador establishes individuals, communities, peoples, nationalities, and collectives as rights holders, and nature as the subject of constitutionally recognized rights. In this sense, the defense of rights in Ecuador takes place in two fields: those traditionally known as human rights, related to individuals and groups of people, and the rights of nature.[2]

In terms of human rights, the 2008 Constitution has been a key milestone. It recognizes a wide range of rights, from economic and social to civil and political. The Constitution guarantees fundamental aspects such as free and quality education, medical care, social security, and access to decent dwellings. It also stands out for its recognition of the rights of indigenous peoples and nature and is the first in the world to grant rights to nature itself.[2]

On one hand, in relation to the defense of human rights, the category of human rights defenders includes a broad universe of people and associations, whose common point is the peaceful protection and promotion of Human Rights.

It is the doctrine that has prevailed in the world and that has served to legally organize the social and democratic State of law or the constitutional State of rights and justice. This means that the human being who lives in the Ecuadorian State is the holder of the constitutionally guaranteed rights and that the State is created to respect them, make them respected, and create the conditions for the human being to effectively enjoy these rights, the same as the communities, peoples and nationalities that it constitutes for this purpose.

The Ombudsman's Office understands that human rights defenders are any person, community, people, nationality, or groups that promote and protect human rights, which in the country refer to the rights of a good living, rights of protection, rights of freedom, rights of participation, through peaceful mechanisms, whether institutional or disruptive, at the national or international level.

Since the adoption of its 2008 Constitution, Ecuador has taken important steps in the promotion and protection of human rights. This Magna Carta recognizes a wide range of rights, from economic and social to civil and political rights [3]. Among the notable advances are:

- **Social and Economic Rights:** guarantees rights such as free and quality education, medical care, social security, and access to decent dwellings. These are fundamental aspects of achieving greater social justice by providing more equitable opportunities to all citizens.
- **Rights of Indigenous Peoples:** recognizes and protects the rights of indigenous peoples, promoting their participation in decision-making and the recognition of their ancestral territories.
- **Rights of Nature:** The Ecuadorian Constitution was the first in the world to grant rights to nature, recognizing its intrinsic value and its right to exist, persist, and regenerate. This has led to important debates about environmental justice.

#### Challenges in the Promotion of Human Rights:

Despite these advances, Ecuador faces challenges in the full realization of human rights. Some of the problems and obstacles include:

1. **Economic Inequality:** Despite efforts to reduce poverty and inequality, Ecuador still faces significant economic gaps between different population groups.
2. **Gender Violence:** Gender violence is still a worrying problem in Ecuador and although measures have been implemented to fight it, there are challenges to guaranteeing gender equality and the safety of women.
3. **Minority Rights:** Despite progress in protecting the rights of indigenous peoples, tensions and conflicts related to the exploitation of natural resources in their territories persist.

#### The Intersection with Social Justice:

Social justice in Ecuador is closely related to the promotion of human rights. Seeking a more equitable distribution of wealth, including marginalized groups, and ensuring that all citizens have access to meaningful opportunities are key aspects of social justice in the country. The relationship between human rights and social justice is evident in areas such as education, health, and housing, where government policies seek to improve the living conditions of citizens and reduce inequalities.[4]

Human rights in Ecuador and their vindication have to do with the generalized perception of those rights and the idiosyncrasy of society. The violation of human rights does not only come from the State but also concerns citizens. Thus, Ecuador's political and social culture has been permeated by clientelism, a system that has generated relations of dependence and domination that confirm power in one sector, impede the development of citizenship, and make the democratization of power impossible.[5]

Legality is on the margins of political and social life, which allows minimum rules such as human rights to be ignored and society does not consider their vindication. The political and social culture is fundamental to understanding the skepticism and compliance with rules of conduct contrary to the exercise of citizenship and ultimately to the consolidation of dignity.[6]

Historically in Ecuador, the understanding of human rights as norms valid for all humanity has been approached from the formal legal aspect for the establishment of processes that guarantee human dignity.[7]

This approach by the Ecuadorian State has achieved the creation of subjectivities within the institutions of power themselves, which strive to regulate the construction of subjects capable of articulating demands for the

surveillance and expansion of rights in the political arena, but disregarding sectors that are discarded in the processes of construction of guarantees that also include them.

Ecuador has an additional peculiarity, related to the constitutional regulations in force since 2008. In its current constitution, Ecuador defines itself as a constitutional State of rights, and Article 11, explicitly establishes the direct and immediate validity of human rights, even in the absence or ignorance of legal regulations. The Constitution itself is also explicit about the inalienability of these rights. The supremacy of human rights in the country is comparable to the Constitution itself, according to Article 426.[2]

On the other hand, it is necessary to point out that the international systems for the promotion and protection of human rights, both universal and inter-American, have paid close attention to the situation of human rights defenders and, therefore, have developed norms and mechanisms for protection and monitoring the fulfillment of their role within the States. One of their recurring concerns is related to the use of domestic laws as mechanisms to deter and threaten the work of human rights defenders.

In the social rule of law, participatory and pluralistic democracy based on respect for dignity and solidarity, indicate that the role of authorities is not limited to formally recognizing people's rights. These are obliged to act effectively to provide them with the necessary conditions so that they can overcome their shortcomings, access the real satisfaction of their needs, eliminate any form of discrimination, and fully enjoy the legal, spiritual, and material goods required for their full fulfillment. realization as individual and social beings.

The intersection between human rights and social justice is manifested in government policies aimed at improving the quality of life of Ecuadorian citizens. The pursuit of a more equitable distribution of wealth and the inclusion of marginalized groups, such as indigenous peoples, are examples of how the promotion of human rights and social justice are intrinsically linked. This relationship demonstrates the importance of addressing both aspects comprehensively to achieve a more equitable society that respects human dignity.

Human rights violations denote the lack of guarantees that still exist for the effective exercise of constitutional rights. Violations of people's rights must be investigated exhaustively and diligently.

Although Ecuador has a favorable legal framework regarding human rights, public policies, plans and government programs must be reviewed periodically, since human rights continue to be violated, while effective and timely actions are awaited. by the authorities.

This study embarks on a multidisciplinary journey aimed at conducting an evaluation of human rights and social justice in various contexts and situations. In addition, examines how the promotion of human rights can be a key driver for building more just societies and how the absence of social justice can constitute a significant barrier to the effective realization of those rights.[8]

For the analysis of the factors for the evaluation of human rights and social justice, the following objectives are defined:

General Objective: Analyze and evaluate human rights and social justice, to contribute to the strengthening of more just and inclusive societies.

Specific objectives:

- ✓ Investigate and explore the deep connections between human rights principles and the achievement of effective social justice.
- ✓ Evaluate challenges and barriers to the implementation of human rights and social justice.
- ✓ Develop strategies and recommendations for the promotion of human rights and social justice, which can be applied to improve the promotion and protection of human rights and social justice.

## 2 Materials and methods

### 2.1 Neutrosophic Statistics

Neutrosophic probabilities and statistics are a generalization of classical and imprecise probabilities and statistics. The Neutrosophic Probability of an event E is the probability that event E will occur [9], the probability that event E does not occur, and the probability of indeterminacy (not knowing whether event E occurs or not). In classical probability  $n_{sup} \leq 1$ , while in neutrosophic probability  $n_{sup} \leq 3+$ .

The function that models the neutrosophic probability of a random variable x is called the neutrosophic distribution:

$$NP(x) = (T(x), I(x), F(x)), \quad (1)$$

Where T(x) represents the probability that the value x occurs, F(x) represents the probability that the value x does not occur, and I(x) represents the indeterminate or unknown probability of the value x.

Neutrosophic Statistics is the analysis of neutrosophic events and deals with neutrosophic numbers, neutrosophic probability distribution, neutrosophic estimation, neutrosophic regression, etc. It refers to a set of data, which is made up totally or partially of data with some degree of indeterminacy, and to the methods to analyze them.[10]

Neutrosophic statistical methods allow you to interpret and organize neutrosophic data (data that may be ambiguous, vague, imprecise, incomplete, or even unknown) to reveal underlying patterns.[11, 12-13-14-15].

In short, Neutrosophic Logic, Neutrosophic Sets, and Neutrosophic Probabilities and Statistics have a wide application in various research fields and constitute a new study reference in full development.

Neutrosophic Descriptive Statistics comprises all techniques for summarizing and describing the characteristics of neutrosophic numerical data.

Neutrosophic Numbers are numbers of the form where  $a$  and  $b$  are real or complex numbers, while "I" is the indeterminacy part of the neutrosophic number  $N$ .

$$N = a + bI.$$

The study of neutrosophic statistics refers to a neutrosophic random variable where  $X_l$  and  $X_u I_N$  represents the correspondingly lower and higher level that the studied variable can reach, in an indeterminate interval  $[I_l, I_u]$ . Following the neutrosophic mean of the variable ( $\bar{x}_N$ ) when formulating:

$$X_N = X_l + X_u I_N; I_N \in [I_l, I_u] \quad (2)$$

$$\text{Where } \bar{x}_a = \frac{1}{n_N} \sum_{i=1}^{n_N} X_{il} \quad \bar{x}_b = \frac{1}{n_N} \sum_{i=1}^{n_N} X_{iu} \quad n_N \in [n_l, n_u],$$

is a neutrosophic random sample. However, for the calculation of neutral squares (NNS), the following formula is used:

$$\sum_{i=1}^n N(X_i - \bar{X}_{iN})^2 = \sum_{i=1}^n N \left[ \begin{array}{l} \min \left( (a_i + b_i I_L)(\bar{a} + \bar{b} I_L), (a_i + b_i I_L)(\bar{a} + \bar{b} I_U) \right) \\ (a_i + b_i I_U)(\bar{a} + \bar{b} I_L), (a_i + b_i I_U)(\bar{a} + \bar{b} I_U) \\ \max \left( (a_i + b_i I_L)(\bar{a} + \bar{b} I_L), (a_i + b_i I_L)(\bar{a} + \bar{b} I_U) \right) \\ (a_i + b_i I_U)(\bar{a} + \bar{b} I_L), (a_i + b_i I_U)(\bar{a} + \bar{b} I_U) \end{array} \right], I \in [I_L, I_U] \quad (3)$$

Where  $a_i = X_l$ ,  $b_i = X_u$ . The variance of the neutrosophic sample can be calculated by

$$S_N^2 = \frac{\sum_{i=1}^{n_N} (X_i - \bar{X}_{iN})^2}{n_N}; S_N^2 \in [S_L^2, S_U^2] \quad (4)$$

The neutrosophic coefficient (NCV) measures the consistency of the variable. The lower the NCV value, the more consistent the factor's performance is if compared to the other factors. The NCV can be calculated as follows.

$$CV_N = \frac{\sqrt{S_N^2}}{\bar{X}_N} \times 100; CV_N \in [CV_L, CV_U] \quad (5)$$

### 3 Results

In evaluating human rights and social justice in Ecuador, several determining factors play a crucial role in understanding the situation and progress in these areas. Here are five essential factors:

1. **Legal and Constitutional Framework:** The existence of a solid legal and constitutional framework is a fundamental factor in the evaluation of human rights and social justice. The 2008 Ecuadorian Constitution, which recognizes a wide range of rights and establishes key principles of social justice, provides a solid foundation for the protection and promotion of these rights.
2. **Citizen Participation:** The active participation of civil society in decision-making and oversight of public policies is essential to evaluate human rights and social justice.
3. **Social and Economic Indicators:** The measurement of social and economic indicators, such as the poverty rate, access to education and health care, income inequality, and other relevant factors, provides objective data to evaluate the human rights situation and social justice. These indicators allow us to identify areas for improvement and monitor progress.
4. **Government Policies:** Government policies, especially in areas such as education, health, and resource distribution, are critical to the assessment of social justice. The effective implementation of policies that seek to reduce inequalities and guarantee access to basic services is a key factor in the evaluation.

5. Continuous Monitoring and Evaluation: The existence of continuous monitoring and evaluation mechanisms, both nationally and internationally, is essential to evaluate progress and challenges in terms of human rights and social justice. Reports from human rights organizations, government agencies, and international organizations offer a critical and data-based view of the situation in the country.

From the theoretical study, it is observed that multiple factors can influence the evaluation of human rights and social justice. It is proposed to apply neutrosophic statistics to determine how the promotion of human rights can be a key driver for the construction of more just societies. To do this, it was first decided to code the factors to make the results viable (Table 1). There is a sample of n=120 for each factor (f).

**Table 1:** Determining factors in the evaluation of human rights and social justice.

Code	Initials	Determining factors
A	LCF	Legal and Constitutional Framework
B	CP	Citizen Participation
C	SEI	Social and Economic Indicators
D	GP	Government Policies
E	CME	Continuous Monitoring and Evaluation

For the statistical study, the neutrosophic frequencies of the determining factors in the evaluation of human rights and social justice are analyzed. For each factor, an analysis is made of the incidences that make up the set of affectations so that human rights and social justice in Ecuador are fully respected and become a reality for all its inhabitants.

**Table 2:** Neutrosophic frequencies of the factors.

Days	Neutrosophic frequencies				
	LCF	CP	SEI	GP	CME
1	[2, 5]	[2, 2]	[4, 4]	[0, 0]	[1, 2]
2	[1, 2]	[1, 3]	[23]	[2, 4]	[1, 3]
3	[2, 5]	[2, 4]	[5, 8]	[0, 2]	[1, 2]
4	[1, 1]	[3, 5]	[2, 2]	[1, 3]	[2, 3]
5	[1, 4]	[3, 4]	[5, 10]	[1, 3]	[2, 5]
6	[0, 0]	[2, 3]	[0, 2]	[3, 3]	[1, 1]
7	[2, 4]	[0, 2]	[5, 6]	[1, 1]	[0, 3]
8	[1, 2]	[4, 5]	[1, 5]	[3, 6]	[3, 3]
9	[2, 5]	[1, 3]	[1, 1]	[23]	[2, 2]
10	[1, 3]	[2, 2]	[4, 8]	[1, 2]	[2, 3]
11	[3, 3]	[1, 1]	[0, 5]	[2, 2]	[0, 1]
12	[1, 3]	[3, 4]	[1, 6]	[3, 5]	[23]
13	[3, 5]	[4, 7]	[3, 6]	[1, 2]	[2, 4]
14	[2, 2]	[3, 3]	[4, 4]	[0, 2]	[0, 1]
15	[0, 3]	[2, 5]	[2, 4]	[0, 2]	[2, 5]
16	[0, 0]	[1, 5]	[5, 9]	[0, 0]	[1, 4]
17	[1, 4]	[1, 1]	[1, 3]	[2, 4]	[2, 5]
18	[2, 3]	[2, 4]	[3, 3]	[1, 2]	[0, 0]
19	[1, 3]	[0, 4]	[4, 9]	[2, 4]	[0, 1]
20	[0, 0]	[3, 4]	[1, 4]	[0, 0]	[0, 3]
0-110	[160, 339]	[222, 428]	[277, 551]	[181, 339]	[155, 330]

Table 2 analyzed the neutrosophic frequency of occurrence of the determining factors, for 110 days, with an occurrence level of  $[0; 10]$  for each factor per day with a level of total indeterminacy of  $a=179$ ,  $b=206$ ,  $c=274$ ,  $d=158$ ,  $e=175$ , and a level of representativeness of  $[46.61\%; 53.03\%]$ , on the days when 10 impacts per factor are registered, with an incidence of 53% in terms of Continuous Monitoring and Evaluation.

From the data on the effects that affect the search for equity and justice (Table 3), it will be possible to understand which factor implies a representative average,  $\bar{x} \in [\bar{x}_L; \bar{x}_U]$ , the values of the neutrosophic means are calculated and to study the variations of the effects, the values of the neutrosophic standard deviation  $S_N \in [S_L; S_U]$ ,  $S$  and the values  $CV_N \in [CV_L; CV_U]$  are calculated to determine which condition requires a greater incidence.

**Table 3:** Neutrosophic statistical analysis of incidents.

Factors	$\bar{x}_N$	$S_N$	$CV_N$
LCF	[1,455; 3,08]	[0.673; 2,301]	[0.463; 0.747]
CP	[2,018; 3,891]	[1,146; 2,578]	[0.568; 0.663]
SEI	[2,518; 5,009]	[1,733; 3,547]	[0.688; 0.708]
GP	[1,645; 3,082]	[0.713; 2,079]	[0.433; 0.675]
CME	[1,409; 3,000]	[0.691; 2,206]	[0.49; 0.735]

It was determined that the factors, government policies, and citizen participation, have higher average values that affect the other factors. This means that these factors are, on average, the ones that have the most impact on the construction of a more equitable society that respects human dignity in the country; however, the value of  $CV_{Nb}$  for citizen participation is lower than the rest. This means that the result of this factor has a more consistent, coherent, and precise impact when evaluating indeterminacy than the other factors.

A comparative analysis is carried out to calculate the measure of referent indeterminacy associated with  $\bar{x} \in [\bar{x}_L; \bar{x}_U]$ ,  $S_N \in [S_L; S_U]$  and  $CV_N \in [CV_L; CV_U]$  to the form of neutrosophic numbers (Table 5), in the results, it is observed that for the  $CV_N$  values range from  $0.568 + 0.663$ , with the indeterminacy measure 14.3, which generates a negative impact on citizen participation.

**Table 4:** Neutrosophic forms with their corresponding measure of indeterminacy.

Factors	$\bar{x}_N$	$S_N$	$CV_N$
LCF	$1,455 + 3,082 \text{ I;I} \in [0; 52,8]$	$0.673 + 2.301 \text{ I;I} \in [0; 70,8]$	$0.463 + 0.747 \text{ I;I} \in [0; 38,0]$
CP	$2,018 + 3,891 \text{ I;I} \in [0; 48,1]$	$1.146 + 2.578 \text{ I;I} \in [0; 55,5]$	$0.568 + 0.663 \text{ I;I} \in [0; 14,3]$
SEI	$2,518 + 5,009 \text{ I;I} \in [0; 49,7]$	$1.733 + 3.547 \text{ I;I} \in [0; 51,1]$	$0.688 + 0.708 \text{ I;I} \in [0; 2,8]$
GP	$1.645 + 3.082 \text{ I;I} \in [0; 46,6]$	$0.713 + 2.079 \text{ I;I} \in [0; 65,7]$	$0.433 + 0.675 \text{ I;I} \in [0; 35,9]$
CME	$1,409 + 3 \text{ I;I} \in [0; 53,0]$	$0.691 + 2.206 \text{ I;I} \in [0; 68,7]$	$0.49 + 0.735 \text{ I;I} \in [0; 33,3]$

With the present study, it was determined that one of the main priorities is to provide a solid foundation for a research program or an academic course that addresses the topic of human rights and social justice, from an academic and practical perspective.

Faced with this role, people or organizations that promote the defense of human rights must enjoy the rights: to study and debate whether human rights are guaranteed or not, as well as to form an opinion on the matter and disseminate it; to denounce the policies and actions of state officials and bodies that violate constitutional rights; and to participate in peaceful activities against violations of constitutional rights.

The exercise of these rights in many cases questions ministerial provisions, so the vague definition of this cause would allow State officials to interpret the norm subjectively and order the closure of these organizations for the fulfillment of tasks inherent to their essence.

The ability of citizens to express their concerns, demands, and needs contributes to accountability and the strengthening of democracy. Therefore, it is recommended:

- Educate in the culture of peace and peaceful conflict resolution.
- Enable efficient communication channels that contribute to institutional support, exchange of experiences, and material and intellectual resources for the full social inclusion of people.
- Provide more exhaustive information that contributes to the conduct of future research, the design of more inclusive social policies, and innovative development processes with an equity focus.
- Establish more direct, effective, and productive dialogues between researchers on inequalities and equity policies and decision-makers.

## Conclusion

Ecuador has made notable progress in the promotion and protection of human rights, having established a solid foundation through its 2008 Constitution. However, significant challenges remain, such as economic inequality, gender-based violence, and conflicts related to minority rights. These challenges require continued attention and renewed efforts to achieve full human rights realization in the country.

The analysis of the neutrosophic statistics showed that citizen participation reached a level of indeterminacy of 14.3%. This had an inversely proportional influence with respect to the other factors so that if this factor decreases, the other factors increase and limit the identification of problems and obstacles that can contribute to the construction of a more egalitarian world that respects the dignity of all human beings.

Progress in the promotion of human rights and social justice in Ecuador requires a constant commitment on the part of society, government, and international organizations, continuous reflection, monitoring of progress, and implementation of evidence-based policies are essential to overcome the remaining obstacles and achieve a more just and inclusive society. In addition, dialogue between government actors and civil society plays a crucial role in identifying challenges and formulating effective solutions, such as training, workshops, and other government-led initiatives that fully involve citizens. Respecting the dignity of individuals and groups and achieving respectful coexistence, or at least moving in that direction, is essential and much depends on what is done as a society and on what the State does to pave the way.

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