

PROXIMITY TOWARDS THE  
SUSTAINABILITY OF INHABITANTS  
FROM TUXTLA GUTIÉRREZ,  
CHIAPAS, MÉXICO

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— Abstract—

This work aims to assess the proximity to the sustainability of the inhabitants of an urban community through the measurement of actions, attitudes and dispositions that, from a socio-environmental perspective, contribute to this field. The variables measured are: austerity, altruism, ecological behavior, equity and spirituality. The work, which follows an exploratory character, exposes the results obtained from a non-probabilistic sample of 653 inhabitants of Tuxtla Gutiérrez, Chiapas, a city with high levels of inequality and poverty in southern of Mexico. The results obtained suggest that the inhabitants of this city are not close to sustainability, with equity and austerity being the fields with the best valuation, while altruism and pro-environmental behavior are the most distant to it. The implications of these results are analyzed and discussed and research lines are projected towards the incorporation of sustainability as the axis of development in urban centers.

### Keywords

*Urban sustainability; urban development; ecological behavior; equity; austerity.*

The concept of sustainability, according to Borden (2017), has a specific history rooted in economic development, global initiatives, environmental conservation, human health and individual well-being. From this diversity of origin, sustainability is a polysemic concept that has been the subject of debate in recent years. However, there is a general consensus that sustainability can be considered as a new field in which there is room for all those proposals aimed at making viable the freedoms of present and future generations. According to McKeown (2002; cited in Cortés & Peña, 2015, p. 7), sustainability can be understood as a paradigm for thinking about a future in which environmental, social and economic considerations achieve a balance in the search for development and a better quality of life.

In what refers to the social scope, Rivera-Hernández and others (2017), indicate that sustainability is only possible through the conscious participation of the social actors in a fight for justice, respect to human rights, cultural diversity and respect to the environment, concrete actions that allow to introduce changes in the social life (Giddens, 1987; quoted in Ortiz, 1999, p.62). In this sense, Borden (2017) emphasizes the importance of a change in attitude and behavior for the future viability of the species through psychological self-awareness and ecological knowledge as principles of sustainability. According to Horlings (2015), because life on this planet has become unsustainable, a transformation is required that is anchored in a change in the values of the different social actors, the internal dimension of sustainability, that is, change from the inside out, from the individual to the collective.

This transformation in the social dimension implies the modification of attitudes, beliefs and behaviors towards a lifestyle of the actors that corresponds to the precepts of sustainability, that is, equity, justice, common good, respect for the environment, moderation and even spirituality (Ben-Heli, 2015; Moller, 2010). From this perspective, Corral (2008) refers as psychological dimensions of sustainability to all those behaviors and dispositions that, when combined, generate an orientation towards sustainability, that is, a sustainable lifestyle. Among these dimensions, altruism, austerity, equity, pro-environmental behavior and a sense of transcendence stand out.

When dealing with attitudes, beliefs and behaviors, this work has clear theoretical references to the disciplinary field of psychology and, specifically, to social and positive psychology. From these references, Tapia-Fonllem *et al.* (2013), explain that austerity or frugality, refers to the deliberate action of avoiding excessive consumption of resources and services not essential for survival, in contrast to hoarding and waste. Bouckaert *et al.* (2008) point out that austerity is an ideal of life that implies a low consumption of materials and resources to open the mind to spiritual goods such as inner freedom, social peace and justice or even the search for God. On the other hand,

altruism is a social and interpersonal construction related to various types of pro-social behavior that is conceptualized as a motivational state that a person possesses with the aim of increasing the welfare of another person (Filkowski *et al.*, 2016). Altruism is opposed to selfishness, as it is assumed to be the conviction of seeking the benefit of others without the interest of obtaining something for oneself (Batson, 1991; cited in Corral-Verdugo *et al.*, 2013, p. 365). Equity is associated with respect for differences among social actors, fair distribution of resources and non-discrimination by physical, biological, cultural or demographic conditions (Corral-Verdugo, 2012), framed in the notion of *communality*, which is opposed to individualism exacerbated by capitalism and, instead, promotes participatory processes in daily practice towards social change having as a guiding principle the collective interest (Source, 2012). In that sense, spirituality, linked to the construction of a *common house* (Arboleda and Gutiérrez, 2017) as a metaphorical way to describe the planet and the way in which man is inscribed in it, refers to the sense of transcendence, the human condition through which social actors believe and feel part of something bigger, even sacred, which moderates the conduct and the way in which they relate to the environment and their fellows (Barrera-Hernández *et al.*, 2016). In relation to the environment, Cerda and others (2007, cited in Heyl *et al.*, 2013, p.488) point out that the solution to environmental problems must be sought through a change in people's behavior and the way in which this is perceived and signified, because the more value is associated with *something*, the greater the care and interest developed towards it.

Pro-ecological behaviors are those that involve a deliberate action for the benefit and care of the environment (Morales *et al.*, 2017). Consistent with the above, people who act ecologically often tend to sacrifice their individual interests in exchange for public or social interests (Yang *et al.*, 2018). In this sense, this work assumes that if social actors are austere, altruistic, equitable, spiritual and pro-environmental, they are close to sustainability.

Cities are the main centers of population where most of the human activities and decisions that take place in the world are concentrated. Despite occupying a small percentage of the earth's surface, urban centers consume a large part of the planet's available resources (Rogers and Gumudjian, 1998; cited in Voula, 2010). The modern city has allowed the development of productive forces and the growth of economic wealth at the same time that it has paid to an increasing proliferation of problems typical of the urban environment, such as the deterioration of the natural environment, poverty, unhealthy lifestyles, loss of the sense of community and disintegration of emotional ties, to name a few (Mohamad & HjAyob, 2013; Prezza & Schruijer, 2001). In contrast to this state of crisis, the sustainability of cities denotes a desirable state in which society strives to achieve a balance

between environmental protection and integration, economic development and regeneration, and between equity and social justice (Elias & Krogstieb, 2017).

The city is a complex system, with multiple and dynamic relationships between different factors and elements that coincide in a relatively limited space. People, social actors in such a chaotic scenario, contribute the indeterminism inherent to human behavior, which comes from a historical process mediated by experience and learning in a social arrangement that exalts individualism and dilutes the community. In this framework, the objective of this work is to value the proximity to sustainability of an urban community from the measurement of actions, attitudes and dispositions that, from a socio-environmental perspective, have correspondence with sustainability. The variables measured are austerity, altruism, ecological behavior, equity and spirituality.

Tuxtla Gutiérrez, Chiapas, is considered a suitable city for study, because it has various urban and coexistence problems, such as high levels of pollution, environmental deterioration, deficient urban services and social inequality. In this way, this work starts from the assumption that its inhabitants are not austere, altruistic, do not carry out actions favorable to the environment, do not have a sense of equity and the consideration of spirituality is limited, therefore, it is not close to sustainability. The results constitute a knowledge base to guide the formulation of public policies and other possible lines of intervention.

## STUDY CITY CONTEXT

Tuxtla Gutiérrez, capital of the State of Chiapas, is an intermediate city in the southeast of Mexico (Álvarez de la Torre, 2011) with a great ethnic-cultural heritage that, in recent years, has reached high levels of social backwardness and poverty (Zambrano, 2018). Since this city was declared the seat of public authorities of the state of Chiapas in 1892, its transformation has been constant. This process of change has been driven mainly by the growing number of inhabitants who demand housing, urban infrastructure, services and employment. Thus, life in this city is part of a changing and complex environment, which requires understanding in order to guide its transformation process under a perspective of sustainability. In this sense, it becomes relevant to address urban issues from a knowledge base generated from its inhabitants.

## METHOD

### *Type of study*

This is an exploratory study, quantitative in nature, with a transversal, non-experimental design. It is exploratory since it addresses the sustainability of a city from an alternative perspective, is carried out in a particular context and aims to generate a knowledge base for future research. It has a quantitative focus since it analyses an objective reality of a problem based on numerical measurements and statistical analysis. It follows a non-experimental, cross-sectional design, since this research does not contemplate the deliberate manipulation of any variable and data collection was carried out at a single time (Hernández-Sampieri *et al.*, 2014).

### *Subjects*

A conventional non-probabilistic sample of 653 inhabitants of the city of Tuxtla Gutiérrez, Chiapas, Mexico, all of whom were of legal age, was used. Although the sampling was non-probabilistic, the number of participants was obtained by applying the formula for determining the sample size for finite populations (Spiegel & Stephens, 2009), considering a population of 600,000 inhabitants of the city and a 95% confidence level. Participants were approached at well-known public sites such as parks, public transportation sites, and shopping malls located in different parts of the city. For this purpose, the city was divided into 5 zones, center, north-west, north-east, south-west and south-east, in order to ensure the representativeness of the whole city. The application of the surveys was carried out between March and April 2017 and each one lasted approximately 20 minutes.

### *Instruments*

To carry out this research, a data collection instrument with five scales related to the construct proposed by Corral-Verdugo (2010) was set up to measure orientation towards sustainability. These scales are: General Ecological Behavior scale (Kaiser, 1998) of 16 items, Austerity scale (Corral *et al.*, 2008) of 10 items, Altruistic Actions scale (Corral & Pinheiro, 2004) of 10 items and Equity scale (Osuna *et al.* 2008) of 7 items; additionally, to measure Spirituality, the Scale of Spiritual Transcendence (Piotrowski, Skrzypinska and Zemojtel-Piotrowska, 2013) of 16 items was applied. The response options of the scales are presented in a 5-level Likert format, which measures the level of agreement-disagreement on the items that pose an affirmation (e.g. "Treat all my classmates as my equals, regardless of their

social background.") and the level of frequency, from never to always, for the items that pose the performance of an action (e.g. "I collaborate with classmates or coworkers to explain and help them with tasks they do not understand"). In the instrument, the items from the different scales were randomly ordered to reduce the effect of association bias. As part of the procedure, socio-demographic variables of interest were retrieved, which are shown in the results section.

### *Procedure*

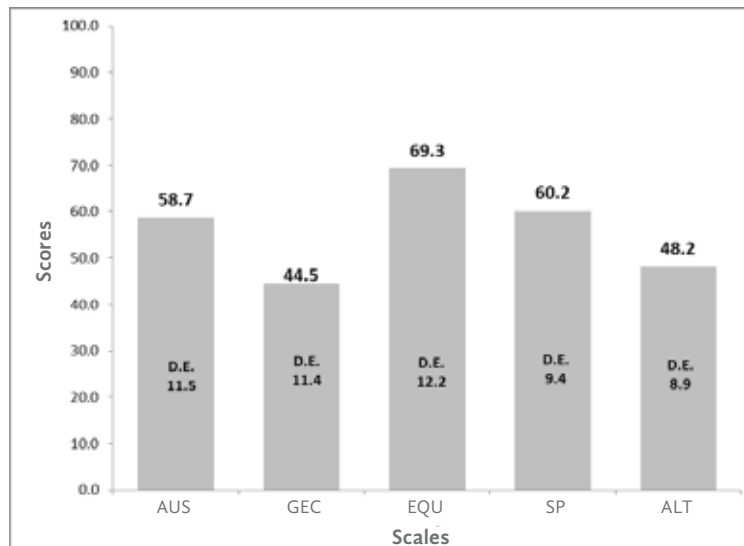
Once the instrument was applied, with the informed consent of the participants, they were captured in an SPSS version 21 file for analysis. For each participant, the scores obtained in the five scales applied were calculated by means of the simple sum of each of the items that make up the scale. To allow comparison between scales, and because each scale has a different number of items, the summed score was transformed into an indexed score from 0 to 100, considering the minimum and maximum possible scores. The verification of the assumption of normality was done by means of Q-Q graphs, evidencing a good fit. Subsequently, descriptive statistics, mean and standard deviation, were calculated for each of the scales. To evaluate the relationship between the scales applied, the Pearson correlation coefficient was obtained. For the socio-demographic variables of interest, frequency distribution tables were prepared and the results highlighted were recovered. This procedure was reviewed and approved by the academic council of the Faculty of Human and Social Sciences of the Universidad de Ciencias y Artes de Chiapas by means of the minutes of the council session with numeral CA-FCHYS-002/18 and was endorsed by the Direction of Research and Graduate Studies of the same institution. The treatment of the data followed the guidelines established in the Declaration of Helsinki, preserving at all times the confidentiality of the participants by virtue of the fact that the names were not recovered and the informed consent of each one of them was obtained before the application of the instruments.

## RESULTS

Of the 653 subjects included in the sample, 56.4% are women and 43.6% men. The average age is 35.8 years with a standard deviation of 15.6 years. In relation to marital status, the distribution is 41.5% of single people and 40.4% of the participants are married, the rest (18.1%) declared a marital status different from these. Of the total, the majority (56.4%) have children. In reference to religion, 67.1% are Catholic, 11.5% mentioned being a believer without religion, and 10.5% stated being an evangelical Christian; the rest

were distributed among Jehovah's Witnesses (3.1%), Adventists (2.4%), atheists (2.4%), Mormons (1.7%), and other religious practices (1.4%). It is worth noting that 69.7% of the population uses public transportation to get around the city. Regarding occupation, most of them are employees (25%), followed by those who work at home (21.4%) and those who are still students (18.1%), the rest are distributed among professionals (15%), merchants (7.2%) and those who perform a trade (3.1%). The majority of the subjects have a medium-high level education (37.7%) or a bachelor's degree (30.2%), the rest have only basic level education (27.7%), or none (4.4%). Regarding origin, 52.1% are native to the city while the rest (47.9%) were born elsewhere. Finally, it should be noted that 75.7% of the participants have more than 10 years living in the city, 14.5% from 3 to 10 years and 9.8% less than three years.

Graph 1 shows the scores of each of the scales applied. It can be seen that the highest average scores are obtained for equity (EQU), followed by spirituality (SP) and austerity (AUS). This suggests that the sense of equity, the respect for differences, and the consideration about everyone having the same opportunities without conditions of any kind, is the field where inhabitants are closest to sustainability. After equity, the second highest scores are for spirituality. The sense of transcendence, through the spiritual, can propitiate better ways of relating with the environment and with other social actors, this is, through respect to the ways of life, the re-valuation of ethics and the recovery of fraternal bonds, as a way of approaching sustainable schemes of coexistence.



Graph 1. Descriptive statistics of the scales applied



The last scale with values above the 50 point average is the Austerity Scale (aus). This suggests that the inhabitants of Tuxtla Gutiérrez denote a certain level of consciousness so as not to consume in a reckless and unnecessary manner. Avoiding waste and ensuring proper management of resources is the basis of a more just society. In contrast, below the arithmetic average are the values that correspond to the dimensions of General Ecological Conduct (gec) and altruism (alt). This is an indication that citizens find it difficult to harmonize community life with a sense of responsibility for the environment and reduced consideration for others. These two fields represent the areas of opportunity on which society's efforts should be focused for the transformation process to be promoted in each city inhabitant, so that the precepts of sustainability are adopted in the urban space they share.

In terms of correlations, positive and significant coefficients are observed for all pairs of the scales applied. The highest correlation is in general ecological behavior and altruism, i.e. at higher scores on the Altruism scale participants also score high on General Ecological Behavior. The same situation occurs between Spirituality and Equity. In general, the magnitudes of Pearson's coefficients are low to moderate, suggesting that the association between the scales applied may be non-linear or correspond to a different theoretical construct. In either case, it is outlined as future work to replicate the study with a larger sample and incorporate other scales into the analysis.

**Table 1**  
*Correlations between the scales applied*

	AUS	GEC	EQU	SP	ALT
AUS	1	.191**	.328**	.331**	.190**
GEC		1	.165**	.259**	.561**
EQU			1	.414**	.149**
SP				1	.239**
ALT					1

Note: \*\*Significant to .01 AUS=Austerity, GEC=General ecologic conduct, EQU=Equity, SP=Spirituality, ALT= Altruism.

## CONCLUSIONS

This paper addresses sustainability by assessing the attitudes, actions and dispositions of actors in an urban context, a scenario that is assumed *a priori* to be unsustainable. In this sense, the scales proposed by Corral-Verdugo (2010) to assess proximity to sustainability from a socio-environmental perspective are useful and applicable in an urban context. The results obtained indicate that the participants in this study, inhabitants of the city

of Tuxtla Gutiérrez, are closer to sustainability in terms of their sense of equity and spirituality and further away from it in terms of ecological and altruistic behavior. These results suggest that, from the notion of equity, social changes in Tuxtla Gutiérrez could be propitiated based on the respect to differences, such as those of religious creed or ethnic origin, the consideration towards those who present a condition of vulnerability, for example elderly people, people with low income or migrant population in transit; as well as through the moderation and regulation of conduct through spirituality, from which the values and ethical principles of social coexistence are promoted, since they are the dimensions that were better valued by the participants. In contrast, the results warn that the inhabitants of Tuxtla Gutiérrez do not often carry out actions in favor of the environment and have a low sense of disinterested support for other people.

In this scenario, the need to undertake strategic lines of action to enable the inhabitants of Tuxtla Gutiérrez to be close to sustainable schemes and, thus, promote the development of the city with criteria related to sustainability becomes evident. From the different institutional orders and structures, such as the State, the school and the family; empathy and the sense of the other must be promoted through strategies that aim at social cohesion and participation, for example, facilitating community organization in the neighborhoods or opening permanent channels of communication between peers. As regards caring for the environment, it is appropriate to encourage changes in consumption habits, to motivate the different social actors towards a culture of saving and foresight, as well as the proper management of resources.

Particularly in urban areas, it is imperative to preserve a healthy urban landscape, based on the environmental awareness of its inhabitants. As Sofeska (2016) points out, cities are complex, multi-layered systems whose dynamics are clearly unsustainable. Therefore, it is necessary that authorities, planners and the inhabitants of urban centers themselves, adopt a perspective of sustainability in order to promote the development of cities in the long term.

On the other hand, the knowledge and learning recovered in this exploratory work invite to recognize the need to advance in the construction of statistical models and methodologies that provide more formality to the research on urban sustainability that includes the intangible dimensions in the measurement of the proximity to it. As future work, it is proposed, on the one hand, to increase the number of participants in order to have greater representativeness in the sample. On the other hand, it is suggested that similar studies be carried out in other urban centers in order to be able to make comparisons between the results obtained in different cities.

Finally, the results obtained in this work allow us to identify the need to strengthen the construction of knowledge to achieve urban sustainability and to call for a permanent reflection on the modern model of city to imagine it differently, with horizons close to sustainability.

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