

## **Sustainable Cities: Guarapuava - Paraná Case**

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### **1. Introduction**

Cities are the main form chosen by the human being to live in society, where there are more than half of the human population and by 2050 there will be 70% (UN, 2019). In cities are built the most miscellaneous economic and social relationship, demonstrating the importance cities hold for modern world. Cities end up adopting a predatory position in the environment once they consume resources from the environment and they end up presenting a deficit with the environment because of the pollution and degradation.

The researched problems are analyzed in different aspects including cities sustainability or not. The indicators start with a review of the most diverse aspects of sustainability that impact cities, dealing with a challenge measure and analyze them. In this sense, the Sustainable Development Goals (SDG) from UN 2030 Agenda bring in its 11th goal the sustainable cities and communities with 11 goals and various indicators. Another perspective is evaluation of sustainable cities through ABNT ISO 37:120:2017 that brings 100 indicators, divided into 16 themes, cover topics such as Economy, Energy, Health, Education, Governance, Public Security, Solid Waste among others. The city of Porto (PT) has already got the certification and other important cities such as London (ENG), Barcelona (SPA), Paris (FRA), Rotterdam (NED) and Milan (ITA) (Intedya, 2021).

Added to cities importance and sustainability importance for society there is a whole set of interests towards cities transformation, being these interests recognized as stakeholders, or yet, public and private agents, and their citizens. The evolution from regular city to a sustainable city is a necessity, notice the large group of agents and interests that these changes may bring.

The UN SDG's are the result of more than three years of research and negotiation including three items from sustainable development, and the ISO 37120 is related to sustainability pillars: environmental, social and economic. The SDG 11th brings goals and indicators aiming the sustainability and life quality. Whereas the ISO introduces indicators (not goals) related to cities sustainability (indicators for urban services and life quality) (Ribeiro, 2019).

It is possible to notice a lack of research about the ISO 37120 in Brazil's cities, because in the sistematic review made by Stefani and Viante (2020) in periodicals from Capes, Spell, Scielo and Google Scholar from 2015 to 2019 there were identified 417 full articles in portuguese and english about sustainable cities, but only 23 about ISO 37120 in their various indicators and aspects of sustainable cities, presenting as an opportunity of empirical and analyse research.

Thus, the research question: What are the stakeholders assessments in relation to ABNT NBR ISO 37120:2017?

To answer such question the main goal was chosen: analysing the ABNT NBR ISO 37120:2017 indicators in a city located in the interior of Paraná state in the light of Stakeholders Theory. Next, presenting the theory review, research methodology, results analysis and conclusions.

The research justifications focus on the application of indicators in any city, the transformation of urban environments and the importance of sustainability for the future of cities (ABNT, 2017; Souza e Albino, 2018; Kobayashi, Kniess, Serra, Ferraz e Ruiz, 2017).

## 2. Literature review

### 2.1 Sustainable Cities

Human beings relation with the nature is directly linked to the way how our society interacts with the environment. When the topic turns to life in community, the cities represent one way chosen by human beings to live in society (Kniess, Oliveira e Aguiar, Conti & Philipi, 2019; Machado Junior, Ribeiro, Pereira & Bazanni, 2018). The cities are ruled by expansion and population grow matter, presenting as large resource consumers, Bichueti, Gomes, Kneipp, Motke e Costa (2017) bring three important factors about cities concern: the large energy consumption, the large waste of production and the depletion of water resources. For Junior and Duenhas (2020) cities concentrate large part of world level population, richness and productive activities therefore being are responsible for environmental and social problems.

The urban environments are marked by complexity, Bencke e Perez (2018) assert how cities are dynamic systems which planning needs methods able to formulate, understand, mold and predict future strategies. To understand the urban environment and its relation to nature it is required to recognize the fast urban growth along with century demands: infrastructure, service and economy (Saraiva, Camara, Ribeiro & Silva, 2018).

However, it is noted the distance between sustainable development and cities, Souza e Albino (2018) point that problems as illegal occupation, social exclusion, lack of green areas, soil waterproofing and accessibility can remove cities from sustainability. Kobayashi, Kniess, Serra, Ferraz e Ruiz (2017) claim that cities seeking to be reinvented must give attention to social inclusion, green technology use, factors that, along with a smart urban region management are capable of providing the urban sustainable development.

Therefore, the concept of a sustainable city is provided by Bibri and Krogstie (2017) who affirm that a sustainable city can be understood as a set of approaches that make use of urban sustainable knowledge and technology to their planning and design. It is worth mentioning the confusion of themes linked to sustainable cities and smart cities, Kobayashi *et al.* (2017) affirm that que concepts of sustainable cities and smart cities were developed in parallel, until converging to a common concept. Thus, Ahvenniemi, Huovila, Pinto-Seppa and Airaksinen (2017) declare the existence of countless definitions of smart cities, although not linked to sustainability. Lastly, it is worth highlighting that a city can be smart without being sustainable, at the same time, it can be sustainable without making use of technology (Junior & Duenhas, 2020; Kobayashi *et al.* 2017).

### 2.2 Sustainable Cities Indicators

The sustainable development is a complex and embracing theme, although when combined with the urban growth it becomes even more complex (Coutinho, Abilio, Vasconcellos & Netto, 2019). One question that influences the resources about sustainability are the methods used to measure the cities sustainability. For Bencke and Perez (2018) the indicators are a great tool of sustainability control by public managers, but must be followed by citizens, entrepreneurs and the community.

For Coutinho, Abilio, Vasconcellos and Netto (2019) the models and sets of indicators established to measure the smart and sustainable cities are several. In this point, the Sustainable Development Goals (SDG) from UN 2030 Agenda brings in its 11th goal sustainable cities and communities with 11 goals and several indicators. Another perspective is assessment of sustainable cities through ABNT ISO 37:120:2017 that brings 100 indicators, divided into 16 themes, which cover topics such as Economy, Energy, Health, Education, Governance, Public Security, Solid Waste among others. According to the document, it stands out its importance as a report that may establish a

normative reference about the theme (ABNT, 2017). The Norm divides the indicators into two groups: essential indicators and support indicators. The essential indicators are defined as those that must be followed strictly to the application of the Norm, while the support indicators give the foundation for its application (ABNT, 2017).

### 2.3 Stakeholders Theory

The stakeholders theory introduce several concepts of who the stakeholders are, the term stakeholders has a large meaning to several people, it elucidated praise and criticism from researchs and students (Phillips, Freeman & Wicks, 2003). Stakeholders can be recognized as being any individual or group, that is affected directly ou indirectly, by the organization goals that are linked to them (Freeman & McVea, 2001).

The bigger the complexity associated with the stakeholders concept, bigger the difficulty for the researchers (Orts & Strudler, 2009). According to Jones, Harrison and Felps (2018) the stakeholder theory ends up being used as a generic term for theories that seek to understand the relationship between companies and their stakeholders and also their relationship performance.

The stakeholders understaning has a key role for the organization strategies, where strategy is about the best possible organizational performance, neutralizing weaknesses and exploring strenghts (Bulgacov, Souza, Prohmann, Coser & Baraniuk, 2007). Stakeholders theory is based on management and ethics, therefore Freeman (2001) points out a necessary question: in benefit of whom and for whom the organization must be managed?

To the sucess of the stakeholder approach it is necessary its identification, classification and management of the relationships, to this actions the organization has methods to equalize satisfaction, interests and conflicts inside the interested group (Machado Junior & Lopes, 2019).

## 3. Research methodology

This research fits in a single case study, with qualitative methodology, making use of a quantitative support tool, by having a descriptive character to the fulfillment of the main purpose and to answer the research question. It is a case study, because this research is connected to three conditions for the use of case study presented by Yin (2015) that are: the research question, researcher control under behavioral events and focus ond contemporaneos events.

The review unity from this research is the city of Guarapuava, located in center south region of Paraná State, according to the last census taken in 2010, the city presented a population of a 167.328 inhabitants (IBGE, 2020). The city was chosen for being an economic, commercial, educational and service regional center for more than five hundred thousand inhabitants. The city economy is based on the timber and agricultural segment, with emphasis to grain production, specially corn. Moreover, also it is installed in the city territory the greatest brewery malt of Latin América (Guarapuava, 2020).

Due to the uniqueness of the case under study, we define our case study as instrumental (Stake, 1998), since it is a particular case that was examined to provide insights. We choose a typical case of a Guarapuava City that excels when regional hub of cities in the state of Paraná, Brazil, so it is possible to understand the resultant complexities of municipal management practices. Stake (1998) emphasizes that unique (or single) cases allow us to understand their deepest complexities. The author also explains that even when performing quantitative studies there is relevance and contribution that can be extracted from the deviant or illustrative case. While there is limited external validity in terms of statistical generalization of the findings, single case studies that focus on a valued particular are also relevant, since they may represent a step

for theory building as also confirmed by Yin (2015). Single case studies are of valuable interest in regard to refining theory, evoking complexities that can subsidize future research and contribute to setting the boundaries of generalizations.

Thus, the documental research takes an important space inside the research, once with this technique it was collected data from primary sources for the ABNT NBR ISO 37120 indicators. Another technique used was direct observation, which occurs with the physical presence of the observer before the study phenomenon (Cooper & Schindler, 2010). With this technique it was possible to collect data related to identified stakeholders and their indicators relationship. The collected data by direct observation was transcribed in a field journal.

The interview is one basic technique to collect qualitative data (Cooper & Schindler, 2010). In this research, it was used the half structured interview and it can be considered as the main source of qualitative data about stakeholders, the perception of participants regarding the main study theme is capable of influencing the results from research in a subtle or drastic way (Cooper & Schindler, 2010).

The interview scripts were made under the concept review about ISO 37120 indicators, in addition to the constructs in the stakeholders theory containing 42 aspects and validated by 4 specialist doctors. It was interviewed ten stakeholders identified as primary and secondary stakeholders according to the model proposed by Clarkson (1995).

A research protocol was elaborated where the concepts of sustainable cities, sustainable city indicators and stakeholder theory were aligned with data collection and analysis techniques.

As a quantitative technique to data collected it was adapted a questionnaire application of indicators Norm to the citizens, recognized as primary stakeholders in this study, with 65 items taken from ISO in the Likert scale of five points, from: totally disagree, to: totally agree and seven more questions about economic and social profile. This instrument was validated by 4 specialist doctors. For Creswell (2010) the survey process can use a non-probability random sampling. The survey application happened from November 30th to December 24th. It was collected 345 questionnaire answers and validated, treated as a random sample, not probabilistic by convenience. The questionnaire was available through Google Forms® and shared in social media, e-mails and groups of instant messaging. The quantitative data was made through the Spearman correlation test (Field, 2009) with the software SPSS® (v. 21).

The qualitative data was analyzed by the content analysis from the record interview, being a set of techniques to communication analyzed, making use of sistematic processes and goals in the description from the message content (Bardin, 1994).

#### 4. Analysis of results

Following the proposed objective of this research, the aim was to do the agents classification related to the researched city according to the theoretical model proposed by Clarkson (1995). The Table 1, below, demonstrates the relation establishment between primary and secondary stakeholders with the Norm indicators inside Guarapuava:

**Table 1** – Stakeholders identified by the search

<b>ISO Indicator</b>	<b>Primary Stakeholders</b>	<b>Secondary Stakeholders</b>
<b>Economia</b>	Economic Development and Innovation Secretary	Entrepreneurs
<b>Educação</b>	Education Secretary	Education Principals and employees
<b>Energia</b>	Energisa Manager	

<b>Meio Ambiente / Resíduos Sólidos</b>	Environment Secretary	PMGIRS Manager, RECICLASOL Director, Environmental Engineer and Forest Engineer
<b>Finanças</b>	Finances Secretary	
<b>Respostas a Incêndios e Emergências</b>	Fire Major	Volunteer firefighter
<b>Governança</b>	21 Councilors	
<b>Saúde</b>	Health Secretary	Hospital Managers
<b>Recreação</b>	Sports and Recreation Secretary	City sports clubs
<b>Segurança</b>	Police Major	
<b>Habitação</b>	Habitation Secretary	
<b>Telecomunicações e Inovação</b>	Managers from internet and telephony companies	
<b>Transporte</b>	Traffic Secretary	
<b>Planejamento Urbano</b>	Planning Secretary	
<b>Esgotos / Água e Saneamento</b>	SANEPAR Manager	

**Source:** Elaborated by the authors (2021).

This classification was made by direct observation and interview data. Among the listed agents it is necessary to highlight the responsibility that the citizens take as primary stakeholders in this city, mainly about the use of services and as essential part of all indicators. In some indicators it was not possible to identify secondary stakeholders.

In relation to the indicators, were founded 34 indicators, being 16 essential indicators and 18 support indicators. The next step interviews were conducted with Sports and Recreation, Finances, Economic Development and Innovation, Traffic, Planning, Education and Habitation Secretary; Environmental Engineer, and two councilors. The respondents received fictitious names from E1 to E10. The perceptions of respondents for each founded indicators of Norm are presented below.

The first indicators process is linked by Economic section of Norm. When asked about the public management role on the city employment rate E2 claimed that:

“It is needed to make that link, that bridge, between employee and employer, being a facilitator. ‘Are you in need a job? Do you need people? So look here!’ You know, it is necessary to do this match” (E2)

According to this speech, it is evident the necessity to build dialogue between companies and unemployed people, where the secretary works like a bond between both parts. When asked about the indicators 5.5 data, the youth unemployed, E2 answered::

“The respondent speech demonstrated that youth unemployed rate is not an information that is considered by the secretary, demonstrating an opportunity to find this information.” (E2)

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About Economic support indicators, the single indicator founded was the 5.6 indicator about the number of companies per 100.000 inhabitants, demonstrated a result of 9,55739. When asked about this number in the city E2:

“Theoretically, Guarapuava Empreendedora was a larger program, hence it encompasses the Entrepreneur Agency, reducing bureaucracy, credit lines... So it was a job, also very cool, that nowadays we are almost reaching 10 thousand IMEs that have already been done” (E2)

In the respondent answer it is noticed the importance of Individual Micro Entrepreneurs (IME) instigate by actions from a program called “Guarapuava Empreendora”. At last, the final section indicator was the number of cities patents, this data was not founded, but E2 claimed:

“I’m not saying patents, but we with the Cilla Tech Park that was created and the city hall is a member of the Cilla Tech Park. It is where we think about structuring these ideas, it’s where we think about putting together, starting to put together these startups” (E2)

The interviewee quotes about the foundation of a technologic park as a start to innovation development, patents and technological researchs inside the city. When asked about the innovation inside Guarapuava, E2 answered: “let’s try to oxygenate our economic matrix through innovation”.

The second section is related to Education indicators. When asked about the primary and secondary education, E8 replied that:

“There is the private initiative, fundamental education, which is the cycle of responsibility of the municipality, the application of the public part, and the second phase before the State...” (E8)

In the interviewee speech denotes the public management responsibility on primary education and the State responsibility on secondary education. The 6.4 indicator demonstrated a value of 18,95. When asked about the data collected for this indicators E8 quoted:

“So it’s enough for the demand we have, it’s enough if you ask me: a and if there were more, would it be better? Absolutely!’ If there were, for example, teachers to give support, to give reinforcements, to help in the counter shift then it would be excellent, but why not? Why do we have a budget”(E8)

In the quoted excerpt E8 claim that the teachers number is enough for the city demand, but the interviewee points to possibility to more actions be made if they have more available professionals and as this action is interrupted by budget questions.

At the last, the last indicators is about the university education in the city, according to the indicator was founded a value of 5.839, E8 points to:

“So from the point of view of the public institution, I particularly believe that the universities, UNICENTRO in particular UTFPR now that there is also one more, I think they should leave a little more, they should present more partnership proposals, they should give feedback for a little bigger society” (E8)

In E8 speech is clear the necessity of university external actions in the city, to give a highlight to your speech he uses the term “feedback”.

The Energy section, is important says that energy service from city it is responsibility from a private company, however this topic gain space in E4 speech we have cited a PPP (Public-private partnership) when:

“As is the case that we implemented in the state of Paraná, it is the first PPP of electricity, and in the country it is the second, so one of the first, let’s say, there must be others now, of course, but they are innovative processes that make it we would learn and learning is always constant, but make Guarapuava stand out not only at a regional level, but also at a national level.” (E8)

Accordingly to the contract have been the exchange of public energy lamps by LED lamps, about 23 thousand lamps have been exchange, the system counts with a Operational Center and more 120 cameras distributed at strategic points for monitoring (Field Journal, 2020).

The Norm Financial section, the only essential indicator founded was about debt rate of the city, therefore, a value of 2,5022% was obtained. This data was presented in E4 speech:

“Today our municipality, to zero our debt, we would only need to do this one month” (E4)

In the interviewee speech make it clear that the city has a low rate of debt. Thus tax billing and its collection was clearly in E4 speech, when said:

“Our IPTU, our ISS, and our ITBI, they reach around 15% of our budget only, so our own revenues today would have to increase here, for example, our IPTU today we do not update it, we only update financially, monetarily, but we do not update today by inflation rates” (E4)

Is evident the size of own contribution in the city and the necessity of a update in the collection system, this action can bring new resources for the city hall box, but can be unpopular between citizens.

The follow indicators is related to Governance section. The 11.1 indicator brings the percentage on voter participation in municipal elections and shows up a value of 78,26%. About this indicator E7 said:

“So we had an abstention, right, from those who stopped voting around 30%, which was more or less the national average of voters, but I still see that politics, electoral politics, you can say, it comes from that sort of historical rancidity that Brazil” (E7)

On E7 speech it is notice the number of voters stay in national average, the interviewee quotes the facts for people going to vote is your obligation. Complement, E10 claim that in the last elections “everyone had to invent themselves”, supporting the fact that the elections have been realize in middle of a pandemic.

About female representation in the city council, E7 said:

“So we doubled the number of women, but it's still very little, it's very low, and in the feminist movements of women's movements, when we talk about the role of women in politics, our horizon and our goal is that we stay at 50%” (E7)

In E7 speech exatls how the number of elected female councilors doubled in the last election, but still praises the lack os space about female participation inside the municipal politics, quoted that should be a equity on city council.

About Solid Waste indicators, the percentage of waste that have discard in landfills, been founded a percentual of 100%. The city landfill is linked to current Waste Plan, fact quoted by E6:

“Guarapuava already in 2010, 2011 in fact it was already in a sanitary landfill process until then, it didn't have this landfill, we started operating the landfill in 2011, but before starting to operate, there is a whole project with the entire history of seeking resources for actually get to the realization of opening the landfill and together with that in the obligation of you to open a landfill, the IAP already demanded 'no, you have to have a Waste Management Plan” (E6)



Even the collected data the life cycle of city landfill ends up in the next years (Field Journal, 2021), this necessity of build a new landfill is quoted by E6:

“Why is it that when you present a project to the municipal landfill at the IAP, the IAP looks at you and you're going to do a landfill, but what about recycling? What about other waste? What are you doing with this?”(E6)

Presented the interviewee perceptions about the founded indicators, this research consider the citizens has primary stakeholders. Thus, your perception about Norm indicators was collected by a questionnaire. After the data analysis, Table 2, presented yours socioeconomic informations:

**Table 2 – Socioeconomic collected data**

<b>What is your gender?</b>		
<b>Answer</b>	<b>Respondents N°</b>	<b>Respondents %</b>
Male	192	55,65%
Female	153	44,35%
<b>What is your education?</b>		
Elementary School	5	1,45%
High School	67	19,42%
University Education	126	36,52%
Post Graduation	147	42,61%
<b>What is your main occupation?</b>		
Only Work	175	50,72%
Only Study	31	8,99%
Work and Study	128	37,10%
Do not work and do not study	11	3,19%
<b>If you work, what is the predominant field of activity?</b>		
Trade	63	18,26%
Industry	221	64,06%
Service	19	5,51%
Do not work	42	12,17%
<b>What is your role in your job?</b>		
Owner/partner	33	9,57%
Director/Manager	24	6,96%
Autonomous	37	10,72%
Public Employee	83	24,06%
Private Employee	128	37,10%
Do not work	40	11,59%

How long have you lived in Guarapuava?		
Less than 5 years	19	5,51%
Between 5 to 10 years	23	6,67%
Between 11 to 20 years	43	12,46%
More than 20 years	260	75,36%
How old are you?		
Baby Boomers Generation (before 1965)	21	6,09%
X Generation (1965 to 1981)	108	31,30%
Y Generation (1982 to 1990)	73	21,16%
Z Generation (1991 to 2009)	143	41,45%

**Source:** Elaborated by the authors (2021).

According to respondents gender, noticed a few male predominance (55,65%) about female (44,35%). About the level of education, noticed a great post graduates predominance (42,61%) and graduates (36,52%), that measure more than a half of the respondents. Observed how this research reached a experient public about educational background, considering the time spend to complete a graduation and post graduation, this can be due from the public reached by social media and instant messaging apps.

About the main work of the respondents, noticed a more than half (50,72%) have your only occupation your work, follow by a portion that work and study (37,10%). About that have noticed the result “only study” (8,99%) and “do not study and do not work” (3,19%) presented a few expressive result. This macrovariables demonstrated how this research reach a public active on labor market and also search background and advances educational when still working in yours labor activities.

Then respondents was questioned about your predominance branch or activity in their works and more than half of respondents work with services (64,06%), follow by trade (18,26%), a parcel answered that work at industry (5,51%). These results reflects about the city economic mix, with a large predominance of services and trade regarding industry, that correspond by great part of population jobs.

About yours positions in work demonstrated a predominance by private employees (37,10%), follow by public employees (24,06%) both with correspond by more than half of all answers. Some respondents replied “jobless” (11,59%) and “autonomous” (10,72%), both answers presented average results, finally follow by “owners and partners” (9,57%) and “directors/managers” (6,96%) that answers presented inferior results. Thus have noticed how more than half of respondents works on labor market being private or public employees.

The last question was how much time they lived in Guarapuava. Noticed a expressive number of respondants that have been living in the city for more than 20 years (75,36%), follow by option 11 to 20 years (12,46%), 5 to 10 years (6,67%) and less than 5 years (551%). This facts have demonstrated how the situation of the city have been experienced for them in a great time cut, due to your knowlegde and experience.

For data interpretation about the age of respondents, it was chosen the classification by generations proposed by the study of Severo, De Guimarães and Dorion (2018) where the generations are separate by yours behavior characteristics, as being: Baby Boomers generation (born before 1965), generation X (born in 1965 to 1981), Y generation (born in 1982 to 1990), Z generation (born in 1991 until 2009) and Alpha generation (born after 2009).

Therefore, have founded 21 respondents by Baby Boomers generations, representing 6,09%; the data collected presented 108 respondents by X generation, representing 31,3%; also 73 respondents by Y generation, representing 21,16%; 143 respondents by Z generation, representing 41,15% from the sample; and any respondent by Alpha generation. Both X and Z generations correspond by 251 respondents, in other words, 72,75% from de sample.

On the research developed by Severo, De Guimarães and Dorion (2018) Y generation demonstrated a smaller perception about sustainability acts, although are recognize as a generation more connected with media. In this research, Y generation correspond only to 21,16% of the sample, already the ABNT NBR ISO 37120:2017 studied variables became clear for more than sample half, composed by X and Z generation.

Thus after data analysis, great part of correlations had presented values between 0,3 to 0,5, it can be considered how weak correlations (Kuhl, 2012). Still this correlations had a higher value than 0,7 can be considered Strong positive of negative correlations (Kuhl, 2012) and were presented in Table 3:

**Table 3** – Strong correlations variables (> 0,7)

Variable 1	Variable 2	Correlation
Q8 - The city of Guarapuava offers quality high school education;	Q7 - The city of Guarapuava offers quality education in Elementary School;	0,859
Q51 - The city of Guarapuava offers a quality mobile phone service;	Q50 - The city of Guarapuava offers a quality internet service;	0,787
Q30 - The city of Guarapuava has a satisfactory number of obstetricians;	Q29 - The city of Guarapuava has a satisfactory number of doctors;	0,784
Q39 - The city of Guarapuava has no property crimes;	Q38 - The city of Guarapuava has no crimes against life;	0,732
Q26 - The city of Guarapuava has a satisfactory number of women in public administration positions;	Q25 - The city of Guarapuava has a satisfactory number of elected women;	0,716

**Source:** Elaborated by the authors (2021).

The stronger correlation founded in analysis was 0,859 about two indicators from Norm Education. The second stronger correlation is linked to Telecommunications Norm, establishing a relation of 0,787 between mobile phone and internet sevices variables. The correlation founded about Q30 and Q29 variable was 0,784 and brings the relation between the medics and obstetricians number in the city.

For the variables Q39 and Q38, both from Security section, was founded a correlation of 0,732, establishing the relation between property crimes and crimes against life. The variables linked to Governance section, represented by Q26 and Q25 has a correlation of 0,716. Those variables brings the number of women in public service and the elected women.

In the end of each interview a question was made to respondents: if in they view Guarapuava could be considered as a sustainable city? According to Kobayashi *et al.* (2017) a sustainable city can be understood like a urban space that need to bring social, environmental, politics and cultural goals, ally them with economic and phisycal goals to the citizens, making a efficient use of all available resources. A speech that points Guarapuava as a sustainable city is given by E6:

“Look, I think so, but this is something that depends a lot on education, it's something that you have to work for 30 and 40 years and if you relax for a year, you've lost 5” (E6)

In the respondent spechs noticed how education takes a essential role in the sustainable city way on the long term, according to Bencke and Perez (2018) the cities are complex and dynamic systems when planning needs able methods to formulate, understand, mold and predict future strategies, Noticed that transformation process in city and your relation to sustainability must be continuos and interruptions can compromise the whole transformation process.

By other side, some interviwees do not agree Guarapuava has a sustainable city and note that actions taken inside the city were lead to that way. A speech that show this action is given by E2:

“I think everything is a process, we know that the city is very complex, it has all its consents, but I believe that through culture, we can become a sustainable city, but through education and culture, we have to start from the bottom” (E2)

In respondent spechs noticed how educational actions are turned to create a city culture. That way education assumes a fundamental aspect in the formation of future cities, in your research Andrade e Franceschini (2017) quote the presence about “Educational Cities”. This interviwee excerpt noticed the education importance about sustainability culture creation in city.

Other speech that noticed this view is given by E4: “It's almost, it's not one hundred percent yet, but we're on this path so we're working for this reality to materialize as a sustainable city”. In this speech E4 noticed actions that have been taken possess a way to sustainability. Complement this speech E9 said:

“I think it's still not 100%, right, but it's been a lot advanced, right, people charge a lot like that I've been living here in Guarapuava all my life, but here there's a lack of industries, right? That we are in a city with a more agricultural and livestock sector” (E9)

In E9 spechs noticed that beyond considered Guarapuava has a non-sustainale city, he mention the economic characters when mentioning the absence of great employer companies in city. Bichueti *et al.* (2017) noticed that sustainable cities are more able to attract skills and companies and to foster entrepreneurship.

Not all interviewee were unanimous about sustainability existence inside the city, E3 have noticed:

“Not totally. Due to the lack of planning in relation to the roads of our city, that is why we have planning and elaboration of urban mobility studies, thus bringing new forms of public transport and alternatives to improve the living conditions of our population” (E3)

In E3 speech further disagree he brings some specific facts liked to indicators that influence the city transformation, these facts if applied and led can bring better life conditions according to interviwee spechs. On the other hand E7 say:

“But we have the vision that sustainability is a necessity for the current world and not only for a long time now, but I don't see any action in this sense, in Guarapuava, that refers to being a sustainable city” (E7)

In E7 speeches some actions turned to a sustainable city are not found in city, this fact went against others respondents speeches when elucidate that actions have been taking in way to a sustainable city. In that negative fact about Guarapuava while sustainable while E10 noticed:

“No, no, not yet. Neither Guarapuava nor any city there I think, I don't know, but Guarapuava still has to grow a lot, to be a sustainable city. We still have a lot to do, to be conquered, it is well on the way to that, it's not just Guarapuava the world, right” (E10)

In interviewee speeches noticed that not only Guarapuava and no other city were considered on sustainable level, however he talked that should be the way that city were taken to your future development.

In next the Table 4 brings a model about the results get after content analysis, including categories, record unities, context unities and a brief content analysis.

**Table 4** – Model about interview results

<b>Categories</b>	<b>Record Unity</b>	<b>Context Unity</b>	<b>Content Analysis</b>
Agents perception of indicators	<p>“Today, in order for our municipality to zero our debt, we would only need to do this for one month, so the level of collection, let's say, our long-term financial commitment is very smooth, it is well managed.”. (E4)</p> <p>“So we had an abstention from those who stopped voting, around 30%, which was more or less the national average of voters as well.” (E7)</p>	Indicator is recognized by the respondent (stakeholder) in the municipality.	The agent interviewed demonstrates the perception of their indicators and its importance for the city.
Interviewed agent demonstrates few or no knowledge of the Norm indicator	“Kind of a program to promote, but to be honest it's not enough, that I have access like that, that it's	Indicator is not recognized by the respondent	The data showed by the Norm are not in the domain of the agent, making a opportunity for this information to be worked

	something easy, it's not like that. So this data is not so easy for me" (E2)	(stakeholder) in the municipality.	by the public administration.
Positive perception of Guarapuava as a sustainable city	<p>"I think it's not 100% yet, but it's been a lot advanced, right" (E9)</p> <p>"I think that we are moving towards this, I think that Guarapuava has advanced a lot, there is a policy that was very favorable, the government policy of the last eight years was extremely favorable for this path" (E8)</p>	Perception of sustainable aspects within the city that can be considered as a path to the formation of a sustainable city	Guarapuava has some characteristics and aspects that indicate the city is on the path to sustainability.
Negative perception of Guarapuava as a sustainable city	<p>"Not totally. Due to the lack of planning in relation to the roads in our city" (E3)</p> <p>"But we have the vision that sustainability is a necessity for the current world and not only for a long time now, but I don't see any action in this sense, in Guarapuava, that refers to being a sustainable city" (E7)</p>	Absence of sustainability factors within the municipality that prevent the city from taking the path to becoming a sustainable city.	Guarapuava does not show any signs of being on the path to becoming a sustainable city.

**Source:** Elaborated by the authors (2021).

At least, some parts of interview speeches can be highlighted, in E8 speeches that claim "it's not yet, she needs to mature, she's already matured a lot, she's already improved a lot". The interviewee put the city in a "maturation" process about sustainability, again liked a toward city future process. E6 noticed about "this change of attitude is very difficult, so for you to say Guarapuava the municipality is sustainable depends on its

population for it to be sustainable”, in this interviewee visions the sustainability came from population culture and actions. Below is presented the research conclusions.

## 5. Conclusion

Through a quantitative research with ten interviewee stakeholders was possible conclude that this agents have a median knowlegde about the ISO indicators. In more than one time the stakeholders show complementary informations about the indicators. Already the citizens have presented a general perception about Education, Health and Security indicators, sometimes a positive or negative way.

About the main objective noticed that searched stakeholders were linked about yours related indicators (sectors) and some agentes are direct linked to more than one indicator. Also are responsible to elaborate and lead the city in sustainability, although the perception of stakeholders are divide between the actions that lead the city to sustainability.

The results earned show the ISO 37120 indicators can assistant in a integrated monitoring about city governance and advise some specific goals to city improvement in many aspects. The Norm can bring beneficts for the governance and effective services provisions in many areas, decision taking support, urban planning, cities master plans, and others (ABNT, 2017).

The application contribution of ABNT NBR ISO 37120:2017 indicators in Guarapuava/PR, presented rates and value about some economic, social and environmental aspects inside the city. This survey are able to founded indicators can be worked or future researchs can studied the indicators not found. This data collection is essential to public management take this informations as a basis for public policy and in future chase the ISO certification. Because ISO 37120 presented 100 indicators, others contributions are linked with the necessity of complementary researchs about sectors and indicators inside the city, this others research can be development by interdisciplinary manners to others city universities.

The research limitations are the data collect to Norm indicators and your adaptation to national reality. Because this research was conducted during the COVID-19 pandemic some interviews need had to be rescheduled. This is a unique case study without the possibility to generalization in other cities.

The ISO indicators study allow the recognition about stronger and weaker indicators that can be improved in the city, function like a tool to help the public management. Further make easier the preview of sustainability data inside the city. This fact can conduct a set of actions from interested agents and bring long term beneficts for the citizens.

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