Infrastructure and Rurality: Challenges for Sustainable Economic Development in Latin America

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***Abstract*– Latin America is a region with a great environmental and cultural diversity; however, most of its countries have high levels of poverty and inequality, characteristics that are accentuated in rural areas. This paper establishes that the reduction of the urban-rural gap and investment in sustainable infrastructure are the key challenges facing Latin American governments to achieve significant progress. The analysis explains that, if infrastructure projects are promoted in the region, it impacts on at least nine sustainable development goals (SDGs), which would result in a significant increase in people's well-being.**

***Keywords*-- Sustainable infrastructure, sustainable development, poverty, inequality, rurality.**

I. Introduction

Strategies to promote economic development in the Latin American region is in need to be aligned with the Global Sustainable Development Goals (SDGs) and, therefore, must be considered from a multidimensional approach. Latin America is one of the most unequal regions in the world, despite the great natural wealth that this region possesses; furthermore, most countries have low economic growth, high levels of income-related poverty and a high degree of inequality. These problems are concentrated in the rural areas of each nation, being determining factors in the slowdown in economic growth they have been experiencing, which is a trend that started in 2014 and is expected to continue in 2020 [1].

This paper establishes that the reduction of the urban-rural gap and investment in sustainable infrastructure are the key challenges facing Latin American governments to achieve significant progress. The analysis explains that, if sustainable infrastructure projects are promoted in the region, it impacts on at least nine sustainable development goals (SDGs), which would result in a significant increase in people's well-being.

II. Poverty and Inequality in Latin America

Latin America is one of the most unequal regions in the world, despite the natural wealth that the region owns; what is more, most countries have low economic growth, high levels of income-related poverty and a high degree of inequality. These problems are concentrated in rural areas of each nation, being determining factors in the slowing economic growth they have been experiencing, which is a trend started in 2014 that is expected to continue in 2020 [1]

In its publication "*Social Panorama of Latin America, 2019"*, Reference [2] shows the estimated income poverty and extreme poverty rates, based on household surveys from 18 countries in the region. The result of the study shows that the Latin American region had an increase in these rates from 2014 to 2018, with an increase in income poverty from 27.8% to 30.8% (from 164 million to approximately 185 million people) while extreme poverty increased from 7.8% to 10.7% (approximately from 46 million to 66 million people). This result is mainly due to the increases in Brazil and to a greater extent to the Bolivarian Republic of Venezuela, according to the projection made by ECLAC. The other countries in the region managed to reduce poverty levels slightly, but the effort was insufficient (see Table I).

In addition to poverty, another problem experienced by these countries is inequality, which is accentuated by the urban-rural gap and has become a challenge for national governments. The Gini index, which measures the income inequality of people in a territory or country, shows for the Latin American region on average 0.425 in 2018, in which Brazil and Colombia had results greater than 0.50 (Table II) [2].

TABLE I
Evolution of income poverty and monetary poverty in Latin America and some of its countries

Source: Prepared by authors based on ECLAC's database CEPALSTAT, based on household surveys of countries. Notes: The average for Latin America was calculated by ECLAC on the basis of 18 countries (including Argentina that only has data from its urban area, Guatemala, Nicaragua and Venezuela that only present information from 2014, for these countries ECLAC uses projections or estimates in the respective years). [a] Comparable until 2015. [b] Comparable since 2016. [c] Comparable until 2016. [d] Comparable since 2017.

country	Income poverty					Extreme poverty				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Brazil	16,5a	18,8a	19,8b	20,3b	19,4b	3,3a	4,0a	5,0b	5,5b	5,4b
Bolivia	33,7	34,7	35,3	35,1	33,2	14,9	14,6	16,7	16,4	14,7
Chile	--	13,7	--	10,7	--	--	1,8	--	1,4	--
Colombia	31,1	30,5	30,9	29,8	29,9	12,0	11,3	12,0	10,9	10,8
Costa Rica	17,5	17,3	16,5	15,4	16,1	4,1	4,6	4,2	3,3	4,0
Ecuador	23,4	23,9	24,3	23,6	24,2	5,9	7,0	7,5	7,0	6,5
El Salvador	44,5	42,6	40,4	37,8	34,5	11,7	10,4	10,7	8,3	7,6
Honduras	55,3	55,2	53,2	--	55,7	19,2	19,0	18,8	--	19,4
Mexico	45,2	--	43,7	--	41,5	13,0	--	11,7	--	10,6
Panama	19,7	17,9	17,0	16,7	14,5	9,2	8,0	8,5	7,6	6,2
Paraguay	22,3	23,4	24,0	21,6	19,5	7,7	7,3	7,9	6,0	6,5
Peru	19,5	19,0	19,1	18,9	16,8	5,1	5,4	5,2	5,0	3,7
Dominican Republic	32,9c	29,6c	27,3c	25,0d	22,0d	9,7c	9,2c	7,2c	6,4d	5,0d
Uruguay	4,5	4,1	3,5	2,7	2,9	0,2	0,2	0,2	0,1	0,1
Latin America	27,8	29,0	30,0	30,1	30,0	7,8	8,8	10,0	10,5	10,7

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This statistic highlights the difficulties in terms of access to basic services such as energy, water, sanitation and quality education. An example of this is the data for Colombia shown in Fig. 1.

A. Urban - Rural Gap in Latin America

The Statistical Yearbook of Latin America and the Caribbean 2018, published by Reference [3] allows us to observe the gap between urban and rural areas, which is present in most countries of the region.

Except for Chile, Dominican Republic and Uruguay, the percentage of population living in income poverty and extreme poverty in Latin America show that in rural areas, it nearly doubles that in urban areas, as indicated in Fig. 2 and Fig. 3.

TABLE II
EVOLUTION OF THE GINI INEQUALITY INDEX FROM 2014-2018 IN LATIN AMERICA AND SEVERAL OF ITS COUNTRIES

Source: Prepared by the authors based on the latest available data from the indicator for each country in the World Bank (until 2017), the values recorded in 2018 and the regional averages were calculated by Reference [2].

Country	2014	2015	2016	2017	2018	Trend
Bolivia	0,478	0,467	0,446	0,44	0,438	↓
Brazil	0,515	0,513	0,537	0,533	0,54	↑
Chile	--	0,477	--	0,466	0,454	↓
Colombia	0,527	0,511	0,508	0,497	0,52	↑
Costa Rica	0,486	0,484	0,487	0,483	0,493	↑
Dominican Republic	0,443	0,452	0,457	--	0,444	↓
Ecuador	0,45	0,46	0,45	0,447	0,454	↑
Honduras	0,504	0,496	0,5	0,505	0,481	↓
Mexico	0,487	--	0,483	--	--	
Panama	0,505	0,508	0,504	0,499	0,498	↓
Peru	0,432	0,434	0,436	0,433	0,439	↑
Paraguay	0,507	0,476	0,479	0,488	0,474	↓
El Salvador	0,416	0,406	0,4	0,38	0,45	↑
Uruguay	0,401	0,402	0,397	0,395	0,391	↓
Latin America and the Caribbean	0,477	--	--	0,469	0,465	↓

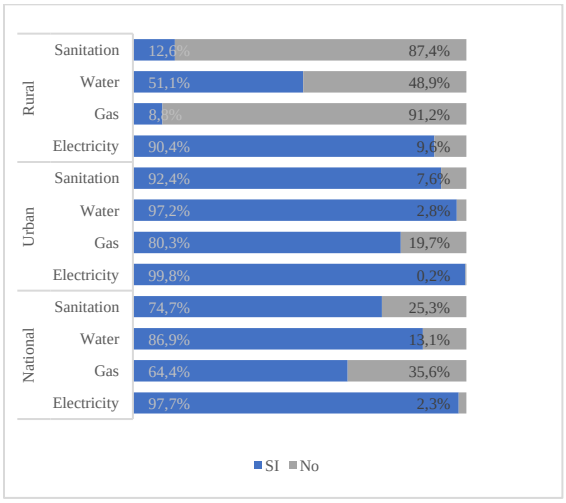

Fig. 1. Access to utilities gap between urban and rural areas in Colombia, 2018

Source: Prepared by the authors based on data from the National Survey of Quality of Life carried out by the National Administrative Department of Statistics - DANE in 2018.

Likewise, it can be seen that selected countries such as Honduras, Mexico, Bolivia, El Salvador and Colombia have the highest proportion of population living in income poverty and extreme poverty at the national level and in their respective rural areas.

Taking into account that throughout history rurality has been a source of sustenance for mankind and it is the scenario for great diversity of natural, environmental and cultural assets that can be used for the diversification of the productive matrix and enhance development [4], it remains the questions of the reasons for this urban-rural gap and for the concentration of poverty in rural areas.

Unfortunately, development in Latin America was conceived as the transition from rural to urban, and from agricultural to industrialized; however, from the sustainable development perspective, the rural environment is an area of opportunity for progress in connection with the economic processes in urban areas and transcends agricultural production, enabling progress in other industries.

For instance, the use of natural and cultural resources provides advantages for new tourism approaches (nature tourism, ethnographic tourism, historical tourism, among others), the production of sustainable alternative energy, agro-industrial goods and services trade, and ecosystem-related services.

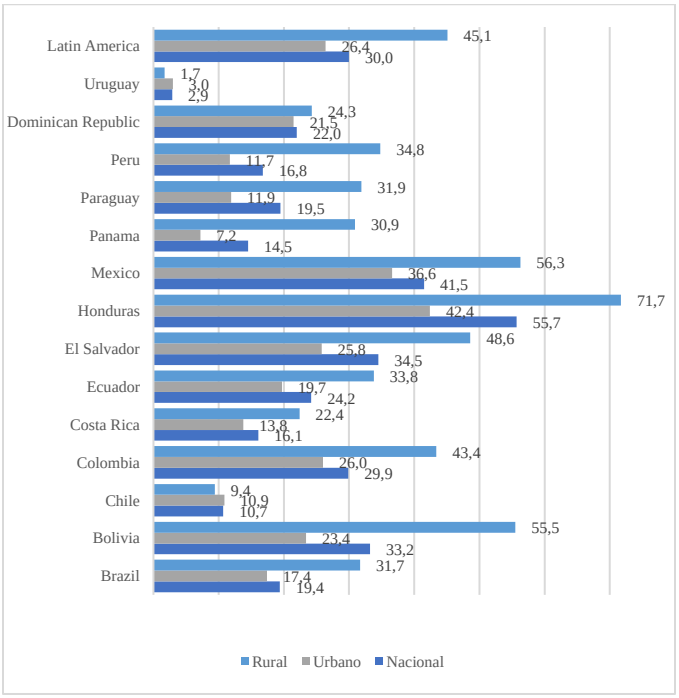

Fig. 2. Percentage of the population of Latin America and 14 countries that are in conditions of income poverty, 2017.

Source: Prepared by the authors based on data from the Statistical Yearbook of Latin America and the Caribbean, 2018 published by Reference [3]. Note: The ECLAC calculated the percentage of the region with the average weighted on the basis of information from the countries; The estimate is based on 18 countries in the region: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Venezuela , Dominican Republic and Uruguay

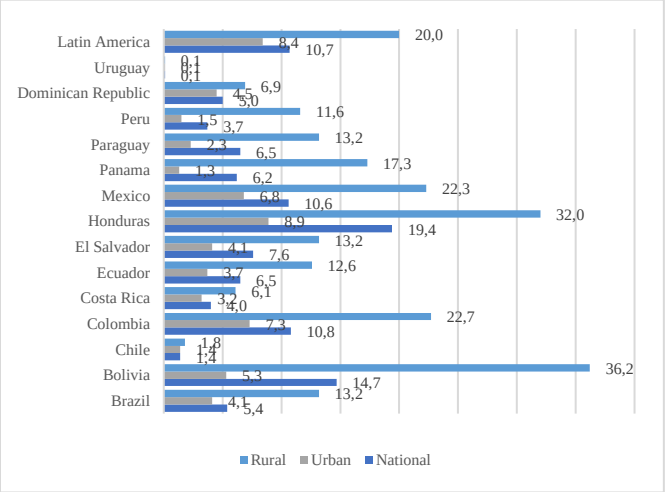

Fig. 3. Percentage of the population of Latin America and some of its countries with population under extreme poverty, 2017.
Source: Prepared by the authors based on data from the Statistical Yearbook of Latin America and the Caribbean, 2018 published by Reference [3]. Note: The ECLAC calculated the percentage of the region with the average weighted on the basis of information from the countries ; The estimate is based on 18 countries in the region: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Venezuela , Dominican Republic and Uruguay

In all the countries that make up Latin America, the extension of land area that represents the rural area is greater than the land of the urban area, however, the population is mostly concentrated in urban centers. Development policies in Latin America have focused on capitals and heads of municipalities in urban areas and as a result there has been a structural lag in rural areas, making the rural in synonymous with poverty, precariousness and vulnerability, as observed in Table III.

III. Infrastructure for Closing the Urban-Rural Gap and Reducing Poverty

Rural development in Latin America faces difficulties due to little investment of governments in quality and sustainable infrastructure. On one hand, infrastructure is defined as "the set of engineering structures and facilities – usually with a long life cycle - that constitute the basis on which the provision of services considered necessary for the development of productive, political, social and personal purposes occurs [5]. On the other hand, quality and sustainable infrastructure is understood as one that is resilient, which has a long shelf life, which is planned harmoniously with the natural environment, and which adequately and rationally leverages the economic, environmental and financial resources.

The ninth of the Sustainable Development Goals - SDG focuses on building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation. This SDG has a strong influence on the other objectives and goals, mainly on poverty reduction (SDG1), the generation of clean and affordable energy (SDG7), access to clean water and sanitation (SDG6), greater access to education of quality (SDG4) and the reduction of inequalities (SDG10).

Infrastructure is the axis that articulates the economic and territorial system of a country, allowing mobility and access to goods and services, as well as innovation in new products. In consequence, well-being improves if the existing urban-rural gap is reduced and infrastructure plays a priority role in this process. As an example, the results listed in Table 1 and Table III show that sustainable infrastructure investment in rural areas is necessary to curb the concentration of population in urban areas and seize the economic potential offered by the natural and cultural development environment of territories.

In addition, inequality and high poverty indexes inherent to these rural areas may be reduced by means of infrastructure investment, given that it would improve various aspects that are affecting the quality of people´s life.

For instance, the lack of access to electrical energy services, and drinking water and basic sanitation, as well as the low quality that these may have. Infrastructure investment also impacts in education quality, which indeed reveals the urban-rural gap, due to the lack of power grids and communications networks, information and communications technology – ICT, adequate classroom and sport practice spaces availability.

TABLE III
Distribution of land extension areas and population in urban and rural areas, and poverty index of each area for 2017
Source: Prepared by the authors based on data from the World Bank and the Statistical Yearbook of Latin America and the Caribbean, 2018 published by Reference [3]. Note: For comparison purposes with the other tables, Honduras and Mexico have the figures for 2016.

Country	Urban area			Rural area		
	Land area (km ^{2})	% of total pop.	Pov. index	Land area (km ^{2})	% of total pop.	Pov. index
Bolivia	--	69,08	6,5	--	30,58	38,6
Brazil	1.349.810,38	86,31	4,2	8.241.430,00	13,69	13,0
Chile	12.027,52	87,49	1,4	709.418,75	12,44	1,8
Colombia	36.132,14	80,45	7,4	1.090.598,13	19,22	22,9
Costa Rica	4.051,56	78,56	2,7	46.479,98	20,66	4,9
Dominican Republic	5.089,38	80,28	5,9	42.784,18	18,93	8,7
Ecuador	10.905,65	63,67	3,5	244.458,23	36,18	14,4
Honduras*	3.702,36	55,813	11,4	108.150,58	42,90	27,5
Mexico*	102.418,11	79,577	7,6	1.831.423,50	19,84	25,0
Panama	2.892,14	67,37	1,9	71.714,31	32,29	20,4
Peru	16.425,77	77,72	2,2	1.256.339,88	22,09	12,1
Paraguay	--	61,30	1,7	--	38,42	16,6
El Salvador	3.598,27	71,28	4,1	16.349,95	27,98	14,7
Uruguay	4.689,68	95,24	0,1	168.731,92	4,67	0,1
Latam & Caribbean	462.259,61	80,34	8,1	18.127.126,26	19,42	20,8

IV. Basic Services and Rurality in Latin America

According to the regional report on human development in Latin America and the Caribbean, published by [7], the poor infrastructure and the difficult access to utilities in rural areas makes people spend several hours a day fetching water or firewood, activities that are more frequently carried out by women than by men. On the other hand, due to the lack of appliances, the daily hours for household chores are extended; and as a consequence, the economic participation of the rural population in the labor market, especially women, is constrained.

Undeniably, access to basic utilities is essential for development. As such, the vast majority of the Latin American population have access to electricity service, according to data from the World Bank. Table IV shows the percentages of the population with access to electricity in the region, disaggregated in several countries, as well as the increases in the last four years. Chile is the regional power in the energy sector covering all of its population, both urban and rural, while the other countries show a slightly lower percentage in rural areas than in the urban area. In 2017, Brazil, the Dominican Republic, Ecuador, Mexico, Panama and Uruguay also managed to bring access to electricity to the entire population.

However, in rural areas, the price of the electricity service is high when contrasted with the income poverty and extreme poverty concentration in these areas; therefore, its inhabitants must give up the consumption of other goods and services or to minimize as much as possible energy use. In addition, the rural sector of Latin America does not have a modern and sustainable electric power service; the electrification of isolated rural communities is one of the great challenges that the region must face for the eradication of poverty. Geographical difficulties, population scattering, and the absence of policies focused on mobility and connectivity are some of the causes of rural lags.

"Bringing electricity to rural schools produces improvements in infrastructure and benefits for teachers and students. For example, devices for better environmental thermal adequacy and systems for water purification can be installed. In addition, access to electrical energy enables better lighting within classrooms, allowing more hours of study, more concentration and less reading effort" [8]

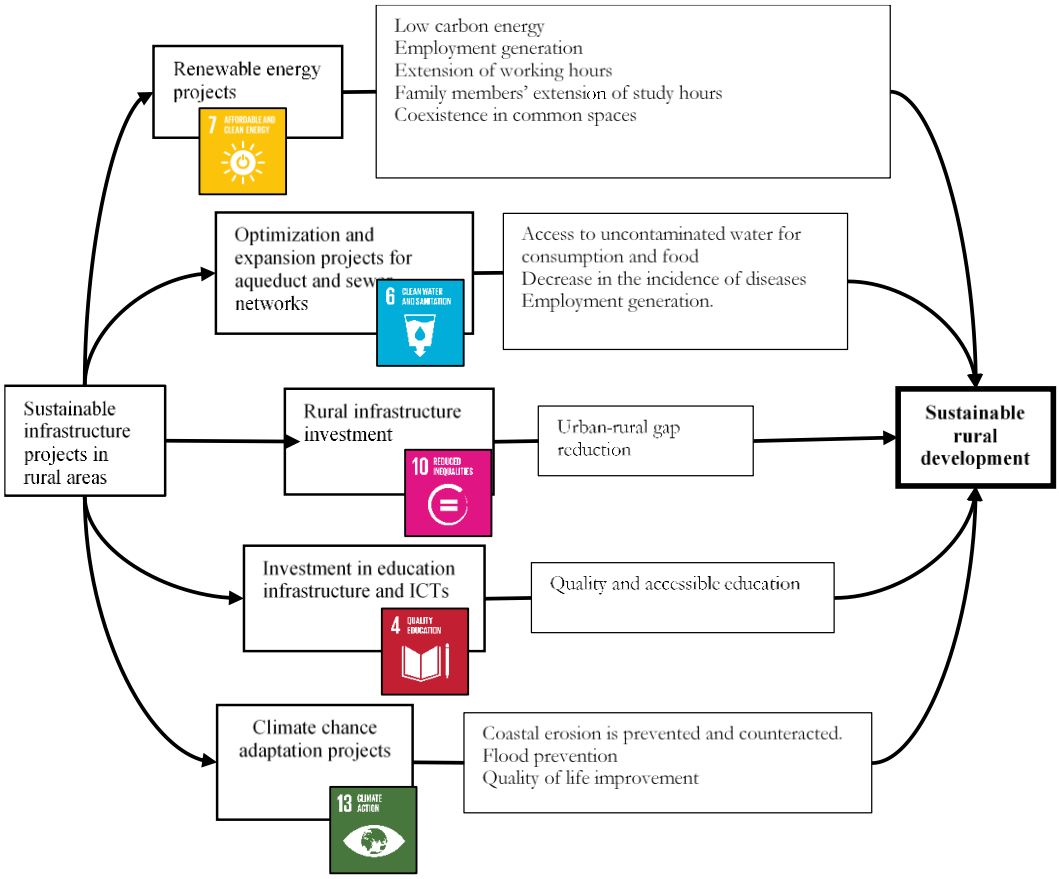

Fig. 4. Relationship of the impact of infrastructure investment on the other SDGs. Source: Prepared by the authors, in accordance with Fig. 1, in Reference [6].

TABLE IV
PERCENTAGE OF THE POPULATION OF LATIN AMERICA AND SOME OF ITS COUNTRIES WITH ACCESS TO THE ELECTRIC POWER SERVICE
Source: Prepared by authors based on data from the World Bank.

Country	Percentage of the population with access to electricity				Percentage of the urban population with access to electricity				Percentage of the rural population with access to electricity			
	2014	2015	2016	2017	2014	2015	2016	2017	2014	2015	2016	2017
Bolivia	90,04	91,52	91,80	91,80	99,31	99,46	99,50	99,40	70,29	74,34	74,87	74,82
Brazil	99,65	99,71	99,70	100,0	99,95	99,96	99,90	100,0	97,91	98,23	98,47	100,0
Chile	100,0	99,71	100,0	100,0	100,0	99,88	100,0	100,0	100,0	100,0	100,0	100,0
Colombia	97,79	98,19	98,40	99,60	99,84	99,81	99,80	100,0	89,89	91,79	92,76	97,93
Costa Rica	99,36	99,41	99,50	99,60	99,70	99,93	99,80	99,80	98,27	97,68	98,45	98,87
Dominican Republic	98,47	98,56	98,90	100,0	99,86	99,83	99,90	100,0	93,64	93,92	95,04	100,0
Ecuador	98,98	98,83	98,70	100,0	99,83	99,87	99,80	100,0	97,50	97,02	96,78	100,0
Honduras	88,65	89,98	91,60	86,50	98,76	98,90	99,10	97,80	87,82	89,20	89,90	91,89
Mexico	99,17	99,00	99,50	100,0	99,64	99,30	99,80	100,0	100,0	100,0	100,0	100,0
Panama	93,73	94,92	96,82	100,0	99,15	99,37	99,59	100,0	83,04	86,01	91,19	100,0
Peru	92,92	93,85	94,20	96,36	98,88	98,87	98,90	100,0	72,77	76,69	77,97	83,68
Paraguay	99,00	99,33	98,40	99,30	99,83	99,82	99,90	99,80	100,0	100,0	100,0	100,0
El Salvador	95,13	95,40	96,00	99,49	97,79	98,00	98,40	98,84	89,23	89,42	90,26	100,00
Uruguay	99,66	99,71	99,70	100,0	99,78	99,81	99,80	100,0	100,0	100,0	100,0	100,0
Latam & the Caribbean	97,04	97,33	97,57	98,13	99,40	99,38	99,48	99,65	97,43	97,85	98,33	100,0
World	85,61	86,80	88,00	88,87	96,40	96,63	97,02	97,36	73,33	75,40	77,38	78,68

A. Water and Basic Sanitation

According to the figures from the statistical Yearbook of Latin America and the Caribbean by Reference [3], the region has greater opportunities for access to drinking water services than to basic sanitation services; in the same way rural indicators are much lower that the urban ones (Table VI), because as with the electric power services , the difficulties in the access and the dispersion of the inhabitants in the rural area, makes the task of increasing the coverage in rural areas much difficult.

In spite of the water wealth of the region, counting over 30% of global freshwater reserves, Latin America is a region in which people has difficulty accessing water services and basic sanitation quality. According to Reference [9]:

"… About 200 million people experience an intermittent water service and wastewater treatment is a pending task, since less than 20% of those waters receive some type of treatment before being reintroduced into the environment. "

Hence, improving the infrastructure for access to drinking water and sanitation is essential for health and environmental protection; investment in technology enables proper management of organic waste and a lower pollution caused by these wastes, thus reducing diseases. According to Reference [9], to achieve universal access to water in 2030, the Latin American and Caribbean region would need to invest at least USD 28 billion, while sanitation investment should be greater than USD 49 billion. Table VII shows the available data for public infrastructure investment in water and sanitation in several countries in the region from 2014, where significant investment increases are not observed in infrastructure in most countries, and others have even decreased the percentage allocated to these.

TABLE V
PUBLIC INVESTMENT IN ENERGY INFRASTRUCTURE AS A PROPORTION OF GDP IN SOME LATIN AMERICAN COUNTRIES, 2014 - 2017
Source: Prepared by authors with data from the database of investment in economic infrastructure of Latin America and the Caribbean - INFRALATAM

Country	2014	2015	2016	2017
Bolivia	0.65%	0.94%	2.56%	2.18%
Brazil	0.47%	0.34%	0.28%	0.25%
Colombia	0.05%	0.04%	0.02%	0.03%
Costa Rica	1.16%	0.83%	0.61%	0.53%
Ecuador	2.24%	3.02%	2.81%	0.00%
Honduras	0.49%	0.43%	0.62%	0.68%
Mexico	0.53%	0.58%	1.17%	0.22%
Panama	0.05%	0.01%	0.04%	0.07%
Paraguay	0.58%	0.60%	0.43%	0.53%
Peru	0.10%	0.05%	0.04%	0.00%
Dominican Republic	0.59%	0.64%	0.85%	1.23%

V. CHALLENGES OF EDUCATION FOR SUSTAINABLE DEVELOPMENT IN LATIN AMERICA.

The education sector is also favored through infrastructure investment; especially the one that is destined for rural electrification, drinking water and sanitation, as well as by the improvement of roads and direct investment in the adaptation of educational spaces. Thus, improving the access conditions to basic services, dropout indicators are reduced, the study day at home is extended and, in this way, the illiteracy rate could decrease.

Reference [3] groups the percentage of the population between 15 and 24 years that does not study or work and their situation by areas (Table VIII). It can be seen from these data that the percentage of young people in this age range is higher in the rural area than in the urban areas of Latin America. This pattern is repeated in the countries selected for the analysis, except in Peru whose percentage of young population between 15 and 24 who does not study or work is higher in the urban area.

TABLE VI
PERCENTAGE OF THE POPULATION OF LATIN AMERICA AND SOME OF ITS COUNTRIES WITH ACCESS TO DRINKING WATER AND BASIC SANITATION SERVICES BY AREAS, 2017.
Source: Prepared by the authors based on data from the Statistical Yearbook of Latin America and the Caribbean, 2018 published by Reference [3].
Note: The values of Honduras and Mexico correspond to 2016, as it is the last year for which ECLAC has data on these indicators.

Country	Years	Water service			Basic Sanitation Services		
		National	Urban	Rural	National	Urban	Rural
Bolivia	2017	72.5	87.9	41.7	47.6	63.4	15.9
Brazil	2017	90.4	93.0	73.9	76.9	75.2	88.3
Chile	2017	97.1	99.6	80.1	93.8	97.0	71.3
Colombia	2017	90.5	95.5	72.2	89.1	93.4	73.4
Costa Rica	2017	99.4	99.7	98.7	48.8	30.8	96.2
Ecuador	2017	87.8	95.1	70.8	78.7	82.1	71.0
El Salvador	2017	68.2	70.5	64.4	43.9	57.1	21.3
Honduras	2016	86.0	91.1	79.4	55.9	65.0	42.5
Mexico	2016	92.9	96.1	81.0	86.9	89.3	78.1
Paraguay	2017	66.7	57.6	81.2	22.1	15.3	33.2
Peru	2017	86.6	91.7	69.8	76.2	85.9	44.7
Dominican Republic	2017	87.0	91.7	68.8	31.7	25.5	56.1
Uruguay	2017	97.5	98.0	89.9	67.5	65.9	97.3
Latin America	2017	85.9	89.3	75.1	64.7	68	54.5

Likewise, from the database of the Latin American Youth Observatory – JUVeLAC, it can be identified that the percentage of population that concludes their secondary school studies is significantly lower, especially in rural areas (Table IX).

Similarly, in Table X are displayed the number of schooling years for the population aged 25 to 59 years, where at the regional level, 29.9% of the population has between 6 and 9 years of schooling, 27.3% of the population reaches 10 to 12 years of schooling, while 20,1% of the population in this group has schooling of five years or less.

TABLE VII
PUBLIC INVESTMENT IN INFRASTRUCTURE IN DRINKING WATER AND SANITATION AS A PROPORTION OF GDP IN SOME LATIN AMERICAN COUNTRIES, 2014 - 2017.
Source: Prepared by authors with data from the database of investment in economic infrastructure of Latin America and the Caribbean – INFRALATAM.

Country	2014	2015	2016	2017
Bolivia	1.05%	0.90%	0.68%	0.70%
Brazil	0.07%	0.04%	0.06%	0.06%
Colombia	0.46%	0.67%	0.70%	0.37%
Costa Rica	0.14%	0.15%	0.13%	0.16%
Ecuador	0.43%	0.67%	0.19%	-
Honduras	0.03%	0.04%	0.10%	0.04%
Mexico	0.18%	0.13%	0.11%	0.07%
Panama	0.56%	0.21%	0.10%	0.21%
Paraguay	0.05%	0.09%	0.08%	0.10%
Peru	0.63%	0.47%	0.28%	-
Dominican Republic	0.09%	0.08%	0.08%	0.12%

TABLE VIII
PERCENTAGE OF THE POPULATION OF LATIN AMERICA BETWEEN 15 AND 24 YEARS WHO DO NOT STUDY OR WORK, BY AREAS, 2017.
Source: Prepared by the authors based on data from the Statistical Yearbook of Latin America and the Caribbean, 2018 published by Reference [3]. Note: The values of Honduras and Mexico correspond to 2016, as it is the last year for which ECLAC has data on these indicators

Country	National			Urban			Rural		
	Age groups								
	15-24	15-19	20-24	15-24	15-19	20-24	15-24	15-19	20-24
Bolivia	10.3	4.9	16.5	10.0	5.1	15.0	11.2	4.4	23.6
Brazil	23.5	18.2	29.2	22.6	17.9	27.5	28.8	19.8	39.8
Chile	16.0	10.9	20.4	15.7	10.9	19.6	18.8	10.7	27.1
Colombia	20.5	16.9	24.1	19.4	16.0	22.6	24.5	19.8	30.0
Costa Rica	14.9	12.7	17.2	13.7	11.7	15.8	18.0	15.3	20.8
Ecuador	15.8	11.2	21.2	16.2	11.4	21.5	14.9	10.8	20.4
El Salvador	24.6	18.4	30.8	20.4	14.1	26.3	30.5	24.0	37.7
Honduras	26.6	24.2	29.5	22.9	20.1	26.0	31.0	28.6	34.4
Mexico	16.6	13.4	20.0	15.1	12.3	18.1	21.6	17.0	27.3
Panama	16.7	12.3	21.9	15.0	10.2	20.4	20.3	16.5	25.7
Paraguay	16.5	14.3	18.9	13.3	11.6	14.8	22.3	18.3	27.5
Peru	12.0	9.5	14.7	12.4	10.1	14.6	10.3	7.6	14.9
Dominican Republic	16.2	11.7	21.3	15.8	11.5	20.6	18.3	12.6	24.5
Uruguay	17.1	14.4	20.1	17.2	14.4	20.2	16.4	14.4	18.8
LatAm	18.5	14.7	22.6	17.1	13.3	20.9	21.6	16.9	27.5

TABLE IX
PERCENTAGES OF POPULATION BY AREA THAT COMPLETED PRIMARY AND SECONDARY SCHOOL STUDIES, 2016.
Source: Prepared by the authors with data from the Latin American Youth Observatory (JUVeLAC), with information on household surveys by country. Note: The regional average was estimated with data from 18 countries.

Country	Primary education		Secondary Education	
	Urban	Rural	Urban	Rural
Bolivia	81.5	48.4	61.1	20.8
Brazil	86.1	64.5	55.4	23.2
Chile	91.5	78.1	72.0	42.7
Colombia	86.7	62.4	63.4	25.9
Costa Rica	88.0	75.2	48.2	25.6
Dominican Republic	79.5	61.0	50.1	27.5
Ecuador	91.0	76.6	58.1	29.3
Honduras	79.4	57.2	37.7	11.2
Mexico	87.4	69.6	43.7	16.8
Panama	94.6	74.1	64.4	27.8
Peru	82.6	53.2	71.0	27.1
Paraguay	87.3	67.3	55.5	22.3
El Salvador	76.2	50.9	42.0	12.4
Uruguay	91.9	85.3	32.8	16.6
Latin America*	86.6	63.0	54.9	21.2

According to the regional report on human development for Latin America and the Caribbean, published by the United Nations Development Program – UNDP [7], it is necessary to expand the quality and equity of the education sector in rural areas, in the field of primary and secondary education, and also to ensure access to technical training programs and work skills appropriate to the offer of formal work that can be created in rural areas.

VI. CONCLUSIONS

This work contributes to the global discussion around regional challenges for the fulfillment of the SDGs and serves as the basis for country or sub-national focused studies. As could be seen from the analysis, progress and well-being are possible only if they are studied from a multidimensional perspective. The results show that the indicators associated with poverty (SDG 1), health (SDG 3), quality of education (SDG 4), access to drinking water and sewerage (SDG 6), sustainable energy (SDG 7), employment (SDG 8), inequalities (SDG 10), coastal erosion (SDG 13) and environmental impacts (SDG 15), concentrate the information related to the biggest problems for sustainable development and these challenges are accentuated in rural areas. Similarly, it is explained that tackling these problems requires the implementation of large investments in sustainable infrastructure that overcome the precarious conditions that characterize rural areas.

Consequently, it is necessary to design, promote and execute a regional agenda that aims to reduce the gap between rural and urban areas, and that has a social commitment with the ability to transcend government terms. Therefore, international alliances are required for the implementation of rural programs and projects aimed at improving the quality of life of people in the countries of the region.

TABLE X
PERCENTAGE OF THE POPULATION FROM 25 TO 59 YEARS OF AGE ACCORDING TO THEIR YEARS OF SCHOOLING, 2017.
Source: Prepared by the authors based on data from the Statistical Yearbook of Latin America and the Caribbean, 2018 published by the Economic Commission of Latin America and the Caribbean - ECLAC (2019b). Note: The values of Honduras and Mexico correspond to 2016, as it is the last year for which ECLAC has data on these indicators.

country	Sex	Years of schooling				country	Sex	Years of schooling				country	Sex	Years of schooling			
		0 - 5	6-9	10-12	13 years and over			0 - 5	6-9	10-12	13 years and over			0 - 5	6-9	10-12	13 years and over
Bolivia	Both genders	27.6	13.3	28.9	30.2	**Dominican Republic**	Both genders	20.6	25.9	30.6	22.9	**Paraguay**	Both genders	18.6	34.2	22.2	25.0
	Men	22.8	14.0	32.6	30.7		Men	22.8	29.2	31.0	17.0		men	17.8	34.9	24.4	22.9
	Women	32.1	12.5	25.5	29.8		Women	18.4	22.8	30.2	28.6		Women	19.3	33.5	20.2	27.1
Brazil	Both genders	25.5	18.6	35.5	20.4	**Ecuador**	Both genders	10.5	35.0	31.2	23.3	**Peru**	Both genders	18.7	18.0	31.0	32.4
	Men	27.8	19.9	34.6	17.7		Men	9.6	35.6	33.1	21.8		Men	13.8	17.7	35.1	33.4
	Women	23.4	17.5	36.2	22.8		Women	11.3	34.6	29.5	24.6		Women	23.1	18.2	27.2	31.5
Chile	Both genders	5.5	16.2	42.9	35.4	**Honduras***	Both genders	31.7	39.1	17.7	11.6	**El Salvador**	Both genders	33.7	28.7	24.3	13.3
	Men	5.5	16.3	43.1	35.0		Men	33.2	39.0	16.3	11.5		Men	30.3	30.9	25.5	13.4
	Women	5.5	16.0	42.7	35.8		Women	30.5	39.1	18.8	11.6		Women	36.5	26.9	23.4	13.2
Colombia	Both genders	29.2	13.5	32.3	25.0	**Mexico***	Both genders	13.1	45.7	20.3	20.9	**Uruguay**	Both genders	4.4	43.7	29.1	22.7
	Men	31.3	13.7	31.6	23.3		Men	12.5	44.9	20.8	21.8		Men	5.1	47.6	28.9	18.4
	Women	27.1	13.4	32.9	26.6		Women	13.6	46.4	19.9	20.2		Women	3.7	40.1	29.3	26.9
Costa Rica	Both genders	12.3	44.1	20.6	23.0	**Panama**	Both genders	8.8	30.6	30.9	29.8	**Latin America**	Both genders	20.1	29.2	27.3	23.5
	Men	12.2	45.9	20.6	21.3		Men	8.6	33.1	33.5	24.8		Men	19.6	30.6	28.3	21.5
	Women	12.4	42.6	20.6	24.4		Women	8.9	28.4	28.4	34.3		Women	20.4	27.8	26.5	25.3

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