



UANL Sustainability Annual Report

Year 5, Number 5
January-December 2022

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AFFORDABLE AND CLEAN ENERGY

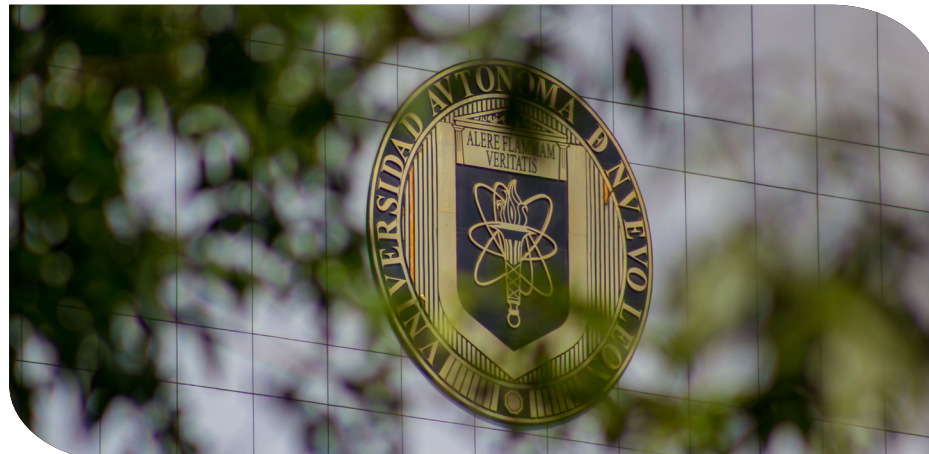
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Prologue

I am pleased to present to the university community and civil society, the 2021 Sustainability Annual Report, which contains the most relevant results and achievements, despite the limitations imposed by COVID-19 pandemic, to accelerate the transition process of the Universidad Autónoma de Nuevo Leon (UANL) towards sustainable development.

In 2021, UANL began the process of a gradual, orderly, and safe return to face-to-face activities, both academic and administrative, which allowed it to increase its contributions to the fulfillment of the United Nations Sustainable Development Goals (SDGs), as well as to continue promoting sustainability on university campuses and the surrounding social environment.

This document informs the reader in a clear, objective and transparent approach, the results of the implementation of multiple initiatives aimed at containing the growth of the institutional carbon footprint, through the reduction of water and energy consumption, the promotion of good consumption practices, the proper management and confinement of waste, the design and operation of sustainable mobility schemes, the incorporation of new infrastructure built with sustainability standards, and the different actions of mitigation and adaptation to climate change that are carried out with a proactive approach, among many others; in addition to incorporating the environmental perspective and criteria in the curricular framework of all educational levels.

In the process of designing the 2022-2030 Institutional Development Plan, my firm desire was expressed to continue working hard and with dedication to maintain UANL's leadership in sustainability, which for the fifth consecutive year, is awarded as the most sustainable university in Mexico and as part of the select group of the 20 most sustainable universities in the world, among the more than 950 institutions of higher education included in the GreenMetric World Ranking.

This is an invitation to read this report, to know and be proud of all the work done and the achievements obtained by our University in the field of sustainable development, thanks to the commitment and collaboration of the members of the university community who work daily to build a new reality through the perspective of sustainability.

DR. MED. SANTOS GUZMAN LÓPEZ
Provost

About us



Mission

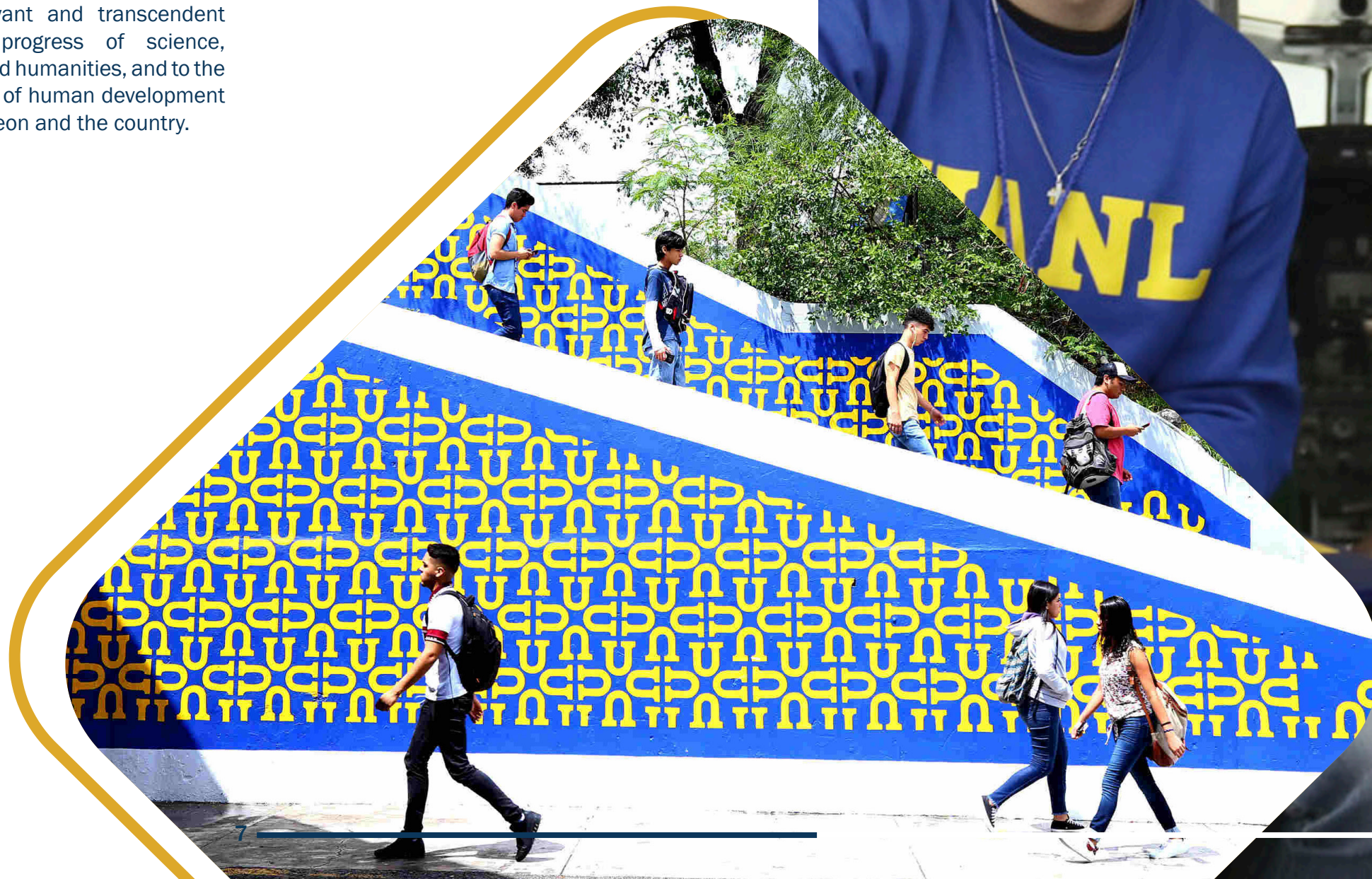
To educate graduates, technicians and professionals who are competent, competitive and innovative, socially responsible, with full awareness of the regional, national and global environment, with principles and values, committed to sustainable, scientific, technological and cultural development. Generating timely, relevant and transcendent contributions to the progress of science, technology, innovation and humanities, and to the improvement of the level of human development of the society of Nuevo Leon and the country.

Vision

In 2030, the Universidad Autonoma de Nuevo Leon will be known worldwide for offering a comprehensive quality education for life, inclusive and equitable; innovative in the generation and application of knowledge that transcends by its social responsibility and contributions to the transformation of society.

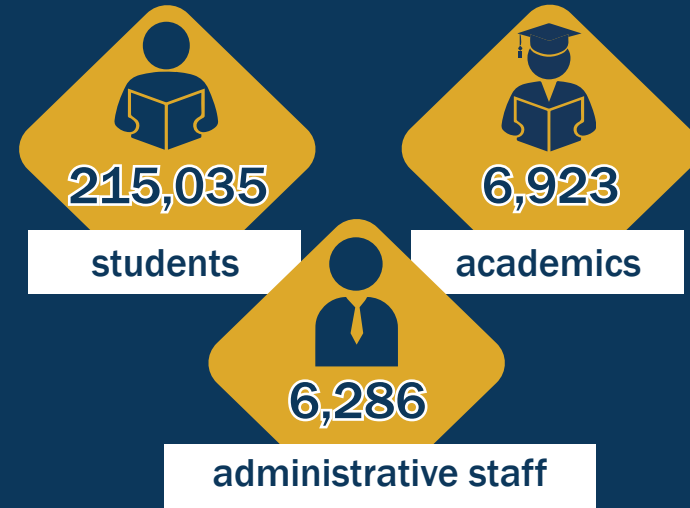
Values

- Responsibility
- Justice
- Freedom
- Equality
- Truth
- Honesty
- Tolerance
- Solidarity
- Respect



Numbers

UANL Community

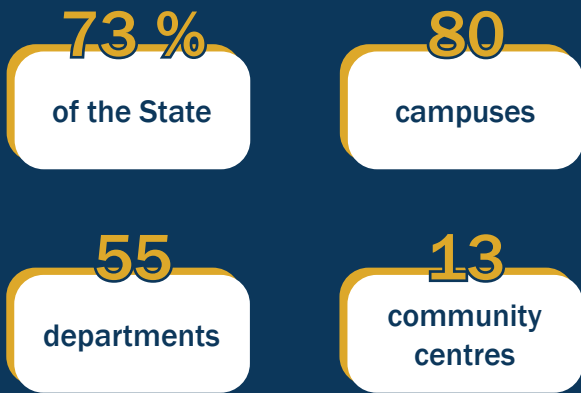


The UANL provides educational services to students who come primarily from the 51 municipalities of the state of Nuevo Leon and the states that form the northeastern region of the Mexican Republic.

UANL has academic infrastructure in 34 municipalities in the state of Nuevo Leon.



Educational coverage

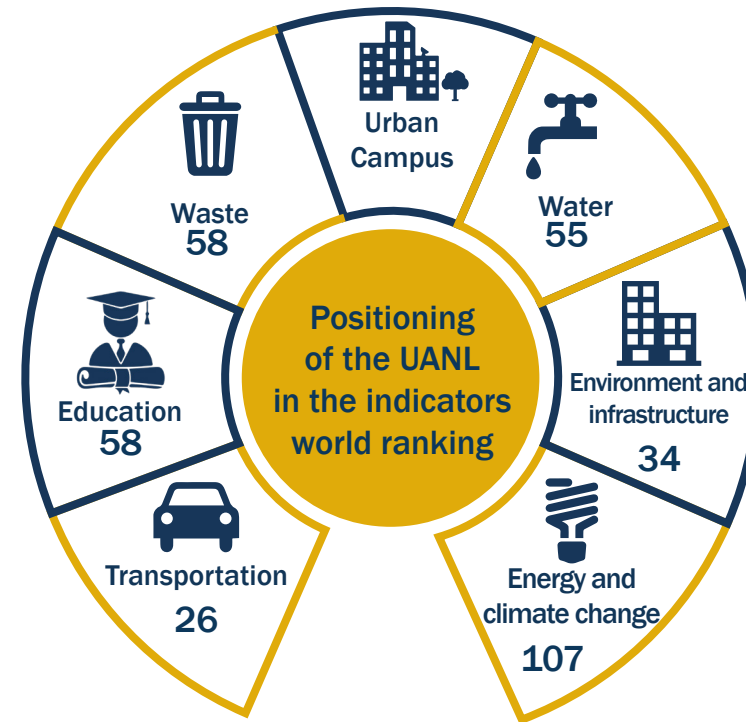


Distribution of enrollment by gender



Specialized higher education institution.

World university ranking

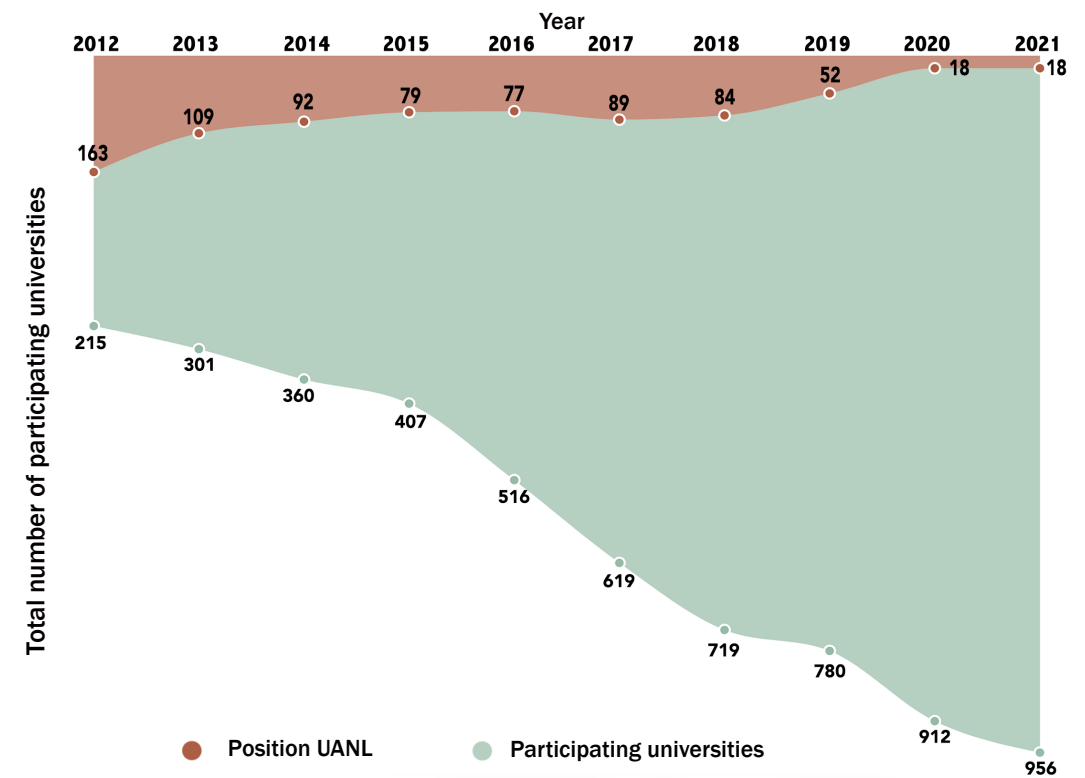


1st
national
5th consecutive year

4th
North America

18th
worldwide
2nd consecutive year

Green Metric World University Ranking



Educational quality

100 % of the programs accredited in the National Register of Quality Educational Programs (PNPEC) at the undergraduate and graduate level.

46 worldwide academic organizations with which we have collaboration agreements.

46 % internationally accredited educational programs.



Source: Academic Secretariat and Report of activities developed at UANL corresponding to the year 2021.

Academic Groups (AG)

AG: groups of professors who share one or several lines of generation and application of knowledge in disciplinary or multidisciplinary topics.

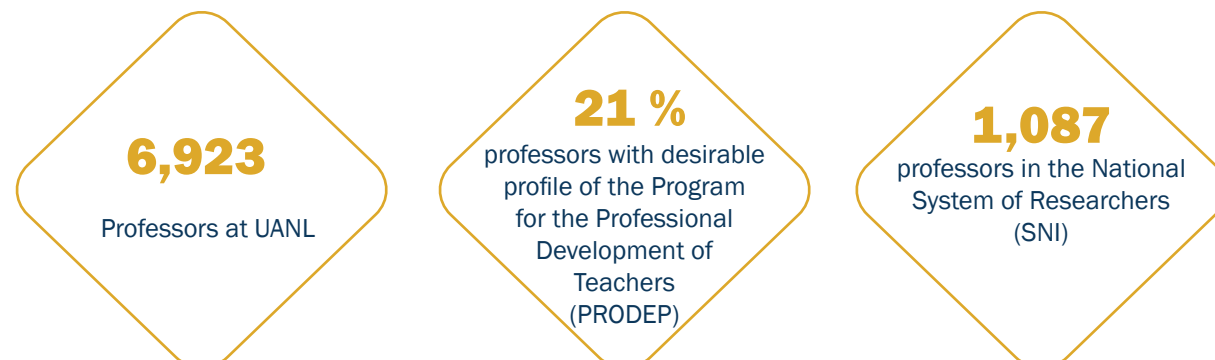


90 % of the AGs are linked to sustainability issues.



Academic bodies linked to sustainability issues.

Professors' awarding



Academic staff qualification

Professors	Academic level	Upper intermediate studies		Undergraduate studies		Total	
Full time	Undergraduate	27	34 %	52	66 %	79	2 %
	Masters Degree	615	39 %	977	61 %	1,592	50 %
	Speciality	9	5 %	176	95 %	185	6 %
	Doctorate	60	4 %	1,285	96 %	1,345	42 %
	Subtotal		711	22 %	2,490	78 %	3,201
Part time	Undergraduate	7	18 %	31	82 %	38	18 %
	Masters Degree	70	45 %	86	55 %	156	75 %
	Speciality Degree	0	0 %	1	100 %	1	0 %
	Doctorate	3	23 %	10	77 %	13	6 %
	Subtotal		80	38 %	128	62 %	208
Subject	Undergraduate	936	53 %	829	47 %	1,765	50 %
	Masters Degree	602	39 %	954	61 %	1,556	44 %
	Speciality Degree	6	17 %	29	83%	35	1 %
	Doctorate	21	13 %	137	87%	158	4 %
	Subtotal		1,565	45 %	1,949	55 %	3,514
Total		2,356	34 %	4,567	66 %	6,923	100 %

Source: Report of activities carried out at UANL for the year 2021.



Undergraduate and Technical University Education Programs (TSU) by broad field of academic education

Field no.	Wide field of academic training	No. of educational programs		
		Undergraduate	TSU	Total
1	Education	1	0	1
2	Arts and humanities	14	1	15
3	Social sciences and law	14	0	14
4	Business and administration	8	0	8
5	Natural sciences, mathematics and statistics	11	0	11
6	Information and communication technologies	6	0	6
7	Engineering, manufacturing and construction	16	0	16
8	Agronomy and veterinary science	4	0	4
9	Health sciences	6	0	6
10	Service	2	0	2
Totals		82	1	83

Source: Office of the Academic Secretary.

Number of undergraduate educational programs evaluated and accredited by national agencies

CIEES: Inter-institutional Committees for the Evaluation of Higher Education

22

COPAES: Council for the Accreditation of Higher Education

68



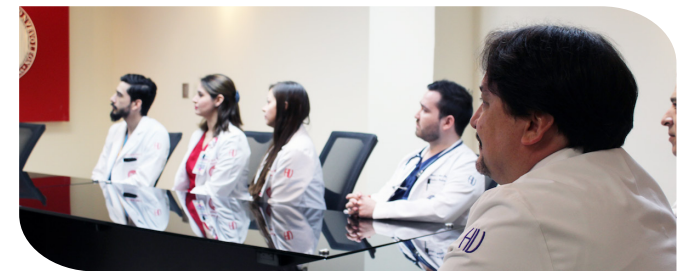
Source: Report of activities carried out at UANL for the year 2021.



Master



Doctorate



Speciality



Postgraduate academic programs

	Grade			Totals
	Doctorate	Master	Speciality	
Programs by level	43	107	59	209
Programs in PNPC*	34	48	36	118
International competition	2	3	11	16
Consolidated	12	16	13	41
In progress	17	20	11	48
Recent creation	3	9	1	13

*PNPC: National Program of Quality Graduate Programs. Source: Academic Secretariat.

Academic offer in alternative modalities



Modality	Grade			Totals
	High School	Undergraduate	Postgraduate	
Mixed distance learning	N/A	0	0	0
Distance learning	4	3 (unschooled)	4	11
Open	1	0	0	1
Mixed	15 (at 17 sites)	2	14	31
Blended in community centers (Aula.edu)	10 (13 community centers)	0	0	10
Total	30	5	18	53

Source: Academic Secretariat.
*N/A: not applicable.

Educational Programs (EP) at the Undergraduate and Higher Technical University (TSU) Levels

Level	Total	PE Assessable	PE non-assessable
Bachelor's Degree	82	72	10
University Technician	1	1	0
Totals	83	73	10

Source: Academic Secretariat

University for the Elderly



205
students

graduated in 2021 from the university for the Elderly

Offers an educational and training alternative for people over 55 years of age.

	Quantity	Participants
Diploma of the University for the Elderly Program	4	103
Courses and workshops	8	102
Totals	12	205

Source: Academic Secretariat.

Inclusion program for students with disabilities

The purpose of this program is to sensitize the university population on the attitudinal management of people with disabilities, promote their integration and adaptation to university spaces and propose adaptations to the physical infrastructure to allow their free movement through university facilities.



7,208
students enrolled
in the inclusion
program

Objectives of the program:

- Promote the inclusion of students with disabilities in UANL's secondary and higher education.
- Design training, education and updating programs for teaching, administrative and service personnel in the area of educational attention for students with disabilities.
- Plan and coordinate programs, strategies and actions in academic and human resources matters that are required to provide comprehensive support to aspiring and/or current students with disabilities at UANL.

Functions:

- Provide guidance and support to applicants for admission to the UANL in the process of assigning spaces in the upper secondary level and the selection process to the higher level.
- It acts as a communication bridge between the agencies and students with specific educational needs and/or disabilities, to support their academic permanence.
- Provide training courses and workshops on educational inclusion for teaching and administrative staff. Events are organized to promote inclusion and are aimed at the university community and the general public interested in the subject.

Total number of student population with disabilities at UANL

Students with disabilities	Quantity
High School Level	3,052
Higher Level	4,156
Totals	7,208

Source: Coordination of Educational Inclusion for Persons with Disabilities and Older Adults.



Types of disability by educational level

Type of disability	High School level	Undergraduate
Impaired hearing (hearing loss)	17	6
Blindness	11	6
Hearing impairment	87	202
Visual impairment	2,113	3,203
Major depression	8	27
Cognitive development	15	28
Motor development	85	195
Dyscalculia (severe math difficulties)	3	1
Severe intellectual disability	2	2
Moderate intellectual disability	7	1
Mild intellectual disability	15	1
Motor disability of the lower extremities	33	7
Upper extremity motor disability	19	9
Multiple motor disability	17	2
Mental disabilities	8	38
Neurological disabilities	47	83
Dysgraphia (difficulties in learning to write)	0	1
Dyslexia (reading difficulties)	32	16
Moderate to severe visual impairment	29	14
Epilepsy	38	36
Multiple sclerosis	1	5
Schizophrenia	2	3
Post-traumatic stress	1	1
Nonverbal learning disabilities	28	0
Asperger's syndrome	127	33
Deafness	3	2
Stammering	4	6
Eating disorder	3	3
Bipolar disorder	4	16
Anxiety disorder	55	91
Communication Disorder (expression and comprehension)	4	0
Autism spectrum disorder	40	17
Intermittent explosive disorder	1	0
Oppositional defiant disorder	3	1
Attention deficit disorder	115	28
Learning Disorder	75	72
Totals	3,052	4,156

Source: Coordination of Educational Inclusion for Persons with Disabilities and Older Adults.



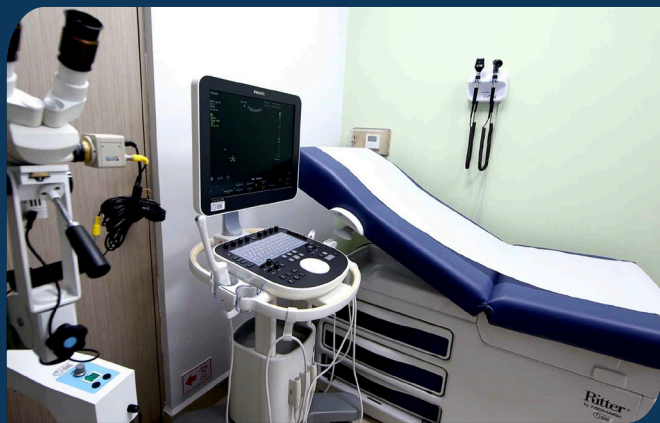
Health Services at University Health Centers (CUS)



184,215
annual consultations and services provided in:

- 6** university clinics located in Guadalupe, Apodaca and Ciénega de Flores.
- 2** modules of dentistry and specialties located in the municipalities of Ciudad Guadalupe and Apodaca.
- 1** comprehensive care clinic for adolescents and young people in the municipality of Ciudad Guadalupe.

Source: University Health Center



Social assistance, community service and volunteer programs

Services provided	Number	Population benefited
Social	113,819	2,398,620
Legal	24,640	16,696
Totals	138,459	2,415,316

Source: Report of activities carried out at UANL corresponding to the year 2021.

138,459 services provided and
2,415,316
citizens benefited through social assistance programs.



Protocol for the safe and gradual return to on-site classes

In order to preserve the health of university students during the on-site reactivation of academic and administrative activities, the Special Commission for the Prevention and Attention of COVID-19 and the Academic Commission of the University Senate through a protocol provide a series of recommendations for the safe and gradual return of on-site activities on university campuses and reduce or avoid the risks of SARS-CoV-2 virus infection from an approach of personal and social responsibility of students, professors and administrative staff.

The UANL, giving continuity to the guidelines provided in the document of health prevention and occupational safety UANL, in 2021 opted to carry out a safe and voluntary gradual return where the hybrid modality is privileged through the digital strategy and the present protocol of informative, consultative and orientative character for face-to-face activities, which makes it a guide for the transition to the new normality of university life.

One of the key tools integrated into the protocol is the Asiste Seguro mobile application, which was developed by the University as a means for those who come to university campuses to report their health status, acting as a filter to detect symptoms related to COVID-19 and provide timely care.



The mobile application “Asiste Seguro” is designed to detect symptoms related to COVID-19 in order to safeguard the health of the university community during the reactivation of academic activities.



Bienvenido de vuelta

Matrícula
 Introduce tu matrícula

Contraseña
 Introduce tu contraseña

Soy maestro

COMENZAR





Stages of the protocol for the return to classrooms at UANL

1. Planning and coordination of actions

Safety filters, mandatory use of masks, staggered schedules, sanitization of common spaces, training and registration of cases by COVID-19.

2. Gradual and staggered return

Learning units in hybrid modality, as a pilot test, combining online and face-to-face sessions, the latter lasting a maximum of 30 minutes with limited capacity, following appropriate hygiene and safety guidelines.

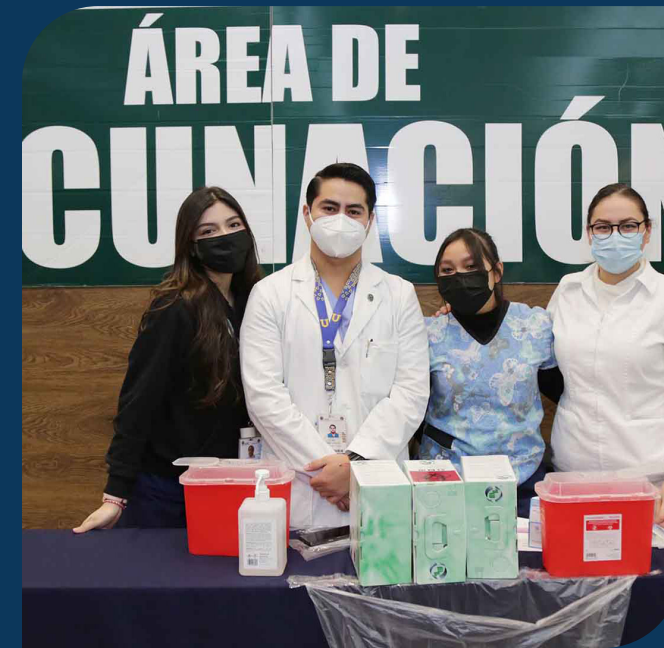
3. Follow-up, evaluation and monitoring

Promote a culture of self-care and prevention through the dissemination of the back-to-school protocol and compliance with the actions recommended by the protocol.



UANL Actions during the COVID-19 Pandemic

More than **870** medical brigadistas from the University Hospital and students from the UANL participated in the application of more than half a million vaccines in Covid-19 in the state of Nuevo Leon.



In the month of April 2021, vaccination of teachers and administrative personnel throughout the state began. The UANL supported this health campaign by providing human and infrastructure support in the module installed in Ciudad Universitaria, specifically in the Polideportivo of the Faculty of Mechanical and Electrical Engineering (FIME).

One of the great challenges and obstacles of the pandemic is self-care and hygiene and mental health so the UANL through the School of Psychology to strengthen the residence created 10 programs, among which are:

- ◆ Uni Contigo
- ◆ COVID-19 App Reports
- ◆ CEERCA
- ◆ Business Monitoring Unit
- ◆ Integral Development of Emotional Management (DIME)
- ◆ Psicology, orientation and integrative therapy

In addition, the Center for Research and Innovation in Molecular Virology (CIIViM9) was created to conduct research on the virus that causes COVID-19.

CO₂

In 2021 the UANL Per Capita Carbon Footprint was **0.268 metric tons***.

Water and energy efficiency program



6.4 m³

water consumption per capita / annual



293 kWh

energy consumption per capita / per year

UANL funds and budget allocated to sustainability



15.25 %

UANL budget allocated annually to issues related to sustainability.

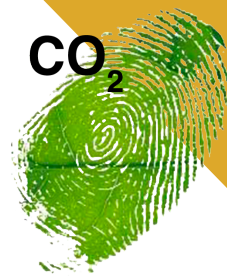
\$ 451,407,363.31 US Dollars
total university budget

\$ 68,818,678.37 US Dollars
university budget for sustainability effort

\$ 3,005,614.55 US Dollars
total research funds

\$ 1,239,750.07 US Dollars
total research funds dedicated to sustainability research

In 2021 the UANL Carbon Footprint was **57,523 metric tons***.



*Calculated using the methodology proposed by Carbon Footprint TM (www.carbonfootprint.com).



UANL Culture



2,141 artistic and cultural events through social networks with **3,150,715** views.



14 events that correspond to the program Vive el Arte en tu Escuela with **26,200** views.

48 virtual events within the framework of the UANLeer 2021 Book Fair with more than **120,000** views.



Includes concerts, contests, awards and recognitions, courses, workshops, seminars, conferences, dance, ballet, theater and poetry shows, as well as exhibitions and film screenings, among others.

Source: Report of activities developed at UANL corresponding to the year 2021.





Athletics



2,176 students practice sports at UANL.

70 students in **10** disciplines of adapted sports.

Source: Department of Athletics and Report of activities developed at UANL corresponding to the year 2021.



709 high school students in 10 Intra-university E-sports (video games) tournaments.

165 athletes and **37** coaches in National Championships National Sports Council of Education (CONDDE).



JOSÉ ROMÁN RUIZ CASTRO

Student of the School of Mechanical and Electrical Engineering.

Bullet Throwing



14 UANL ATHLETES WHO TRIUMPHED IN TOKIO 2021

5 athletes in Tokyo 2020 Paralympic Games.

9 athletes in the Tokyo 2020 Olympic Games.



1st place nationally, for **15** consecutive years.





Sustainable Infrastructure

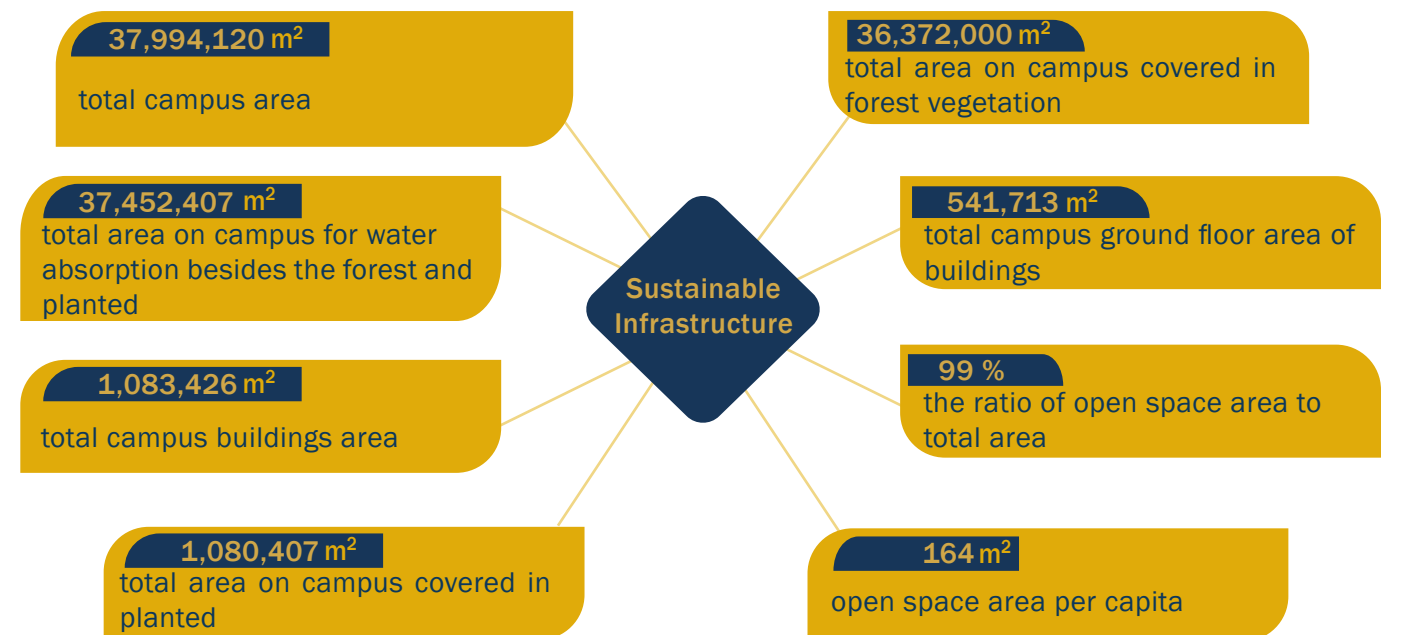
Universidad Autonoma de Nuevo Leon is an Institution of Higher Education with 87 years of history, considered the third largest public university in Mexico and one of the largest universities in Latin America, which has the largest educational offerings in the northeast of the country.

UANL has six university campuses: Ciudad Universitaria, Health Sciences, Mederos, Agricultural Sciences, Sabinas Hidalgo and Linares, where the 26 colleges and 29 high schools that make up its educational system are located. Currently, an additional campus in the municipality of Cadereyta Jiménez is in the final phase of construction.

Due to the geographic location of the state of Nuevo León, most of the UANL infrastructure is located in climatic regions considered semiarid.



Additionally, the UANL has 43 research centers and institutes, where new knowledge is generated and transferred, and an Integral Library System made up of 84 libraries with an institutional collection of more than 2 million volumes and more than 90 databases at the service of the academic and student community.





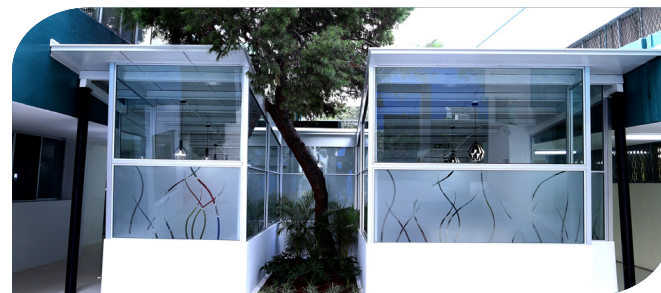
The institutional policy of the UANL in terms of infrastructure is to provide the university community (students, academics and administrative staff) with spaces and equipment with world-class quality standards, so that they have the best conditions to carry out their activities, despite the great physical and financial efforts that this entails.

Within this framework of action, for several years the UANL has been incorporating environmental standards and best practices in the design, construction, equipment and operation of new buildings, extensions and real estate modifications, which has allowed it, through the Secretariat of Sustainability, to issue a series of technical guidelines that consider the application of different technical recommendations such as the following:



- Promote self-generation of energy using renewable sources.
- Air conditioning of study and work spaces using energy-efficient technology.
- Thermal insulation of infrastructure.
- Use of natural light and ventilation to reduce energy consumption.
- Replacement of traditional lighting fixtures with high-efficiency LEDs.
- Installation of low energy consumption LED screens.
- Installation of motion detectors in classrooms and offices.
- Water-saving equipment in service areas in administrative and educational buildings.
- Increased areas for parks and gardens on all campuses.
- Design and installation of green roofs.
- Increase rainwater retention surface.
- Use solar thermal plants to heat water, among others.

The application of this type of guidelines by university departments has allowed 95 % of UANL buildings to use high efficiency air conditioning and lighting equipment, generating significant economic and energy savings.





Ciudad Universitaria Campus

Municipality
**San Nicolas de los
Garza, Nuevo Leon,
Mexico.**

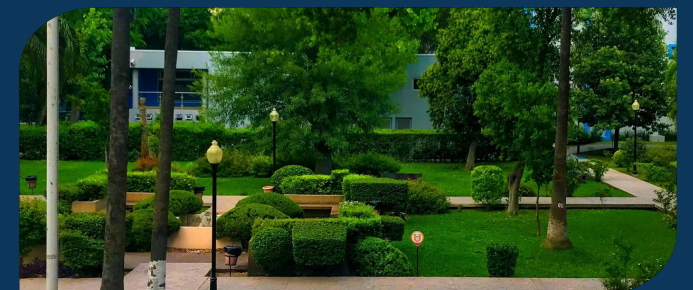
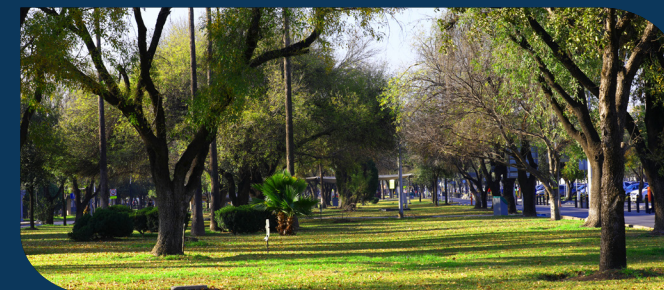


Extension
95 hectares



Departments and Faculties

- Office of the President
- School of Architecture
- School of Biological Sciences
- School of Physical and Mathematical Sciences
- School of Chemical Sciences
- School of Public Accounting and Administration
- School of Law and Criminology
- School of Civil Engineering
- School of Mechanical and Electrical Engineering
- School of Philosophy and Letters
- School of Sports Organization
- School of Social Work and Human Development



Health Sciences Campus



City of Monterrey, Nuevo Leon, Mexico.



Extension
29 hectares

Departments and Faculties

- School of Nursing
- School of Medicine
- School of Dentistry
- School of Psychology
- School of Public Health and Nutrition
- University Hospital





Linares Campus

Departments and Faculties

- School of Forestry Sciences
- School of Earth Sciences
- Academic extension of the School of Public Accounting and Administration.
- Academic extension of the School of Law and Criminology
- Academic Extension of the School of Philosophy and Literature
- Academic extension of the School of Mechanical and Electrical Engineering
- Academic Extension of the Faculty of Sports Organization
- Academic Extension of the School of Nursing
- Agricultural Production Research Center
- Forest Reserve Forest - School



Municipality
Linares, Nuevo Leon, Mexico.



Extension

2,042 hectares





Mederos Campus

Departments and Faculties

- School of Performing Arts
- School of Visual Arts
- School of Communication Sciences
- School of Political Science and International Relations
- School of Economics
- School of Music
- Institute of Social Research
- Center for the Study and Certification of Foreign Languages
- Center for Research, Innovation and Development of the Arts
- University Theater
- University Radio and Television Facilities

Municipality
Monterrey, Nuevo
Leon, Mexico.



Extension

194 hectares

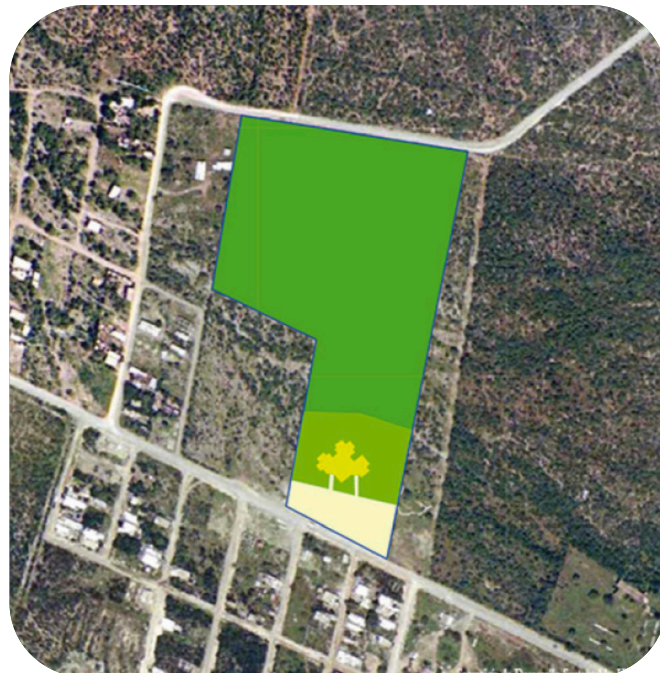


Sabinas Hidalgo Campus



Departments and Faculties

- School of Accounting and Public Administration
- School of Law and Criminology
- School of Nursing
- School of Psychology

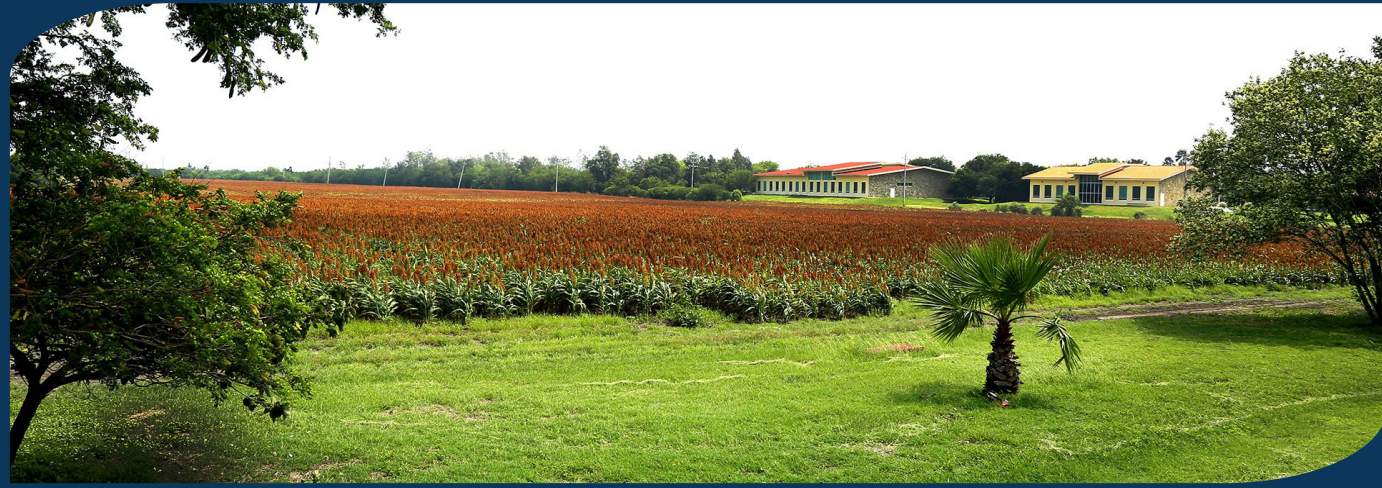


Municipality
Sabinas Hidalgo,
Nuevo Leon, Mexico

Extension
7 hectares



Agricultural Sciences Campus



Departments and Faculties

- School of Agronomy (with annex in Marin)
- School of Veterinary Medicine and Zootechnics Husbandry (with annex in General Bravo, N.L.)
- Agricultural Research Annex (General Bravo, N.L.)

Municipality
General Escobedo,
 Nuevo Leon, Mexico



Extension

1,417 hectares





Cadereyta Campus (under construction)



Municipality
Cadereyta
Jimenez, Nuevo
Leon, Mexico.

Extension

15 hectares



Departments and Faculties

- Academic extension of the School of Public Accounting and Administration.
- Academic extension of the School of Law and Criminology.
- Academic extension of the School of Nursing



Total extension of university campuses

3,799

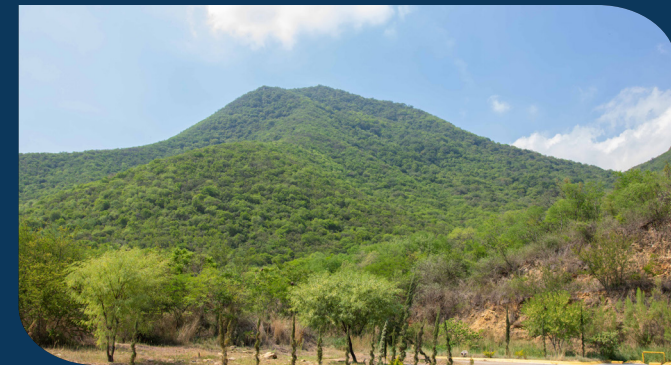
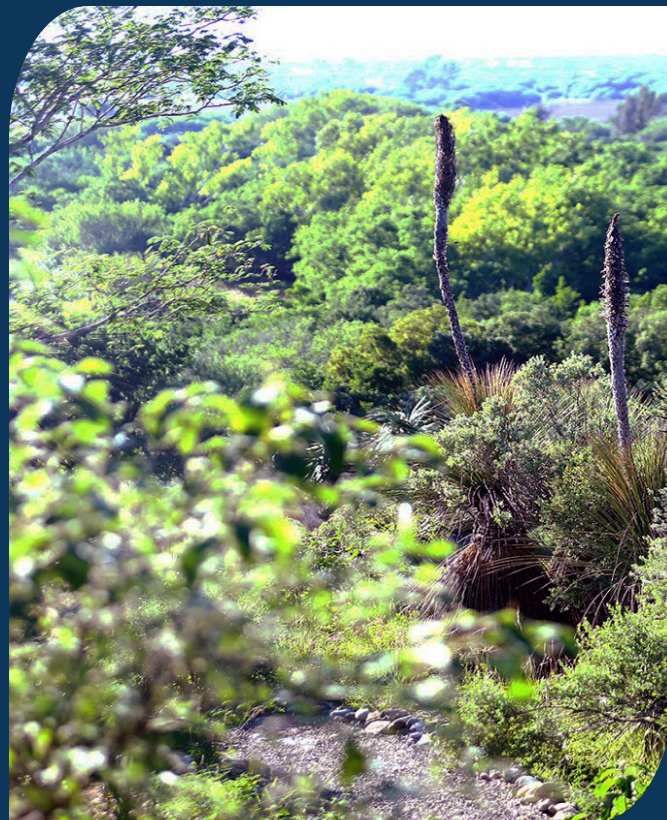
hectares

Type of vegetation on campus



Linares

- Vegetation type: **Thorn scrub**
- Area (ha): **772.60**
- Area with natural vegetation: **680.00**
- Factor (C ha-1): **34.50**
- Carbon stored (ton): **23,460.00**
- CO₂ equivalent (ton): **86,098.20**



Maderos

- Vegetation type: **Submontane scrubland**
- Area (ha): **193.60**
- Area with natural vegetation: **161.10**
- Factor (C ha-1): **41.30**
- Carbon stored (ton): **6,653.43**
- CO₂ equivalent (ton): **24,418.09**



Iturbide

- Vegetation type: **Pine-Oak**
- Area (ha): **988.60**
- Area with natural vegetation: **989.00**
- Factor (C ha-1): **34.50**
- Carbon stored (ton): **34,120.50**
- CO₂ equivalent (ton): **125,222.24**



Marin

- Vegetation type: **Thorn scrub**
- Area (ha): **1,052.40**
- Area with natural vegetation: **1,051.00**
- Factor (C ha-1): **51.80**
- Carbon stored (ton): **54,441.80**
- CO₂ equivalent (ton): **199,801.41**



Bravo

- Vegetation type: **Thorn scrub**
- Area (ha): **630.00**
- Area with natural vegetation: **600.00**
- Factor (C ha-1): **51.80**
- Carbon stored (ton): **31,080.00**
- CO₂ equivalent (ton): **114,063.60**





Sustainable Agricultural Production Model

Agricultural Production Research Center

The Agricultural Production Center was founded in 1983, and in 2013 changed its name to Agricultural Production Research Center (CIPA), with an area of 977 hectares, most of them covered with natural vegetation, where teaching, research, production and innovation activities in the agricultural area are developed, with the collaboration of related educational institutions and linking the specialized service in agricultural matters with the regional and national community.

One of CIPA's greatest environmental strengths is the School Forest, which has been part of UANL's heritage since 1985, and whose main objective is to serve as a "living laboratory" for members of the academic and student community to carry out research and teaching activities in natural environments, in addition to developing important aspects such as their innate sense of belonging and respect for nature. Of belonging and respect for nature. It is located in the municipality of Iturbide, Nuevo León (24° 42' 24.64" N and 99° 51' 40.86") and has an altitudinal gradient ranging from 1,280 meters above sea level to almost 1,900 meters above sea level. It covers an area of almost 1,100 hectares with different types of vegetation such as oak, oak-oak, oak-ash-cedar, pine, pine-oak, cedar, and scrub-chaparral forests.



On the other hand, CIPA's experimental fields practice the eco-friendly agricultural production method known as "Conservation Tillage", which increases water infiltration, reduces soil erosion, and helps enrich the physical and chemical properties of this valuable element. Through this production method, the characteristics of production, adaptation, stability, disease and pest resistance of different varieties of plants such as grain and forage sorghum, corn, beans and wheat are analyzed, and with the results obtained, recommendations are made for productive improvement that contribute to improving the development of regional agricultural production.

Since 2011, a productive diversification project has been undertaken for semi-arid regions using different varieties of wine grapes (Cabernet Sauvignon, Merlot, Malbec, Shiraz, Chardonnay and Chenin Blanc) that reduce agricultural water consumption and whose results have led to the emergence of local wine production, opening new business opportunities for agricultural producers in the region.



The Livestock area contributes to the fulfillment of the Center’s mission through its work on real problems and social impact in livestock through its products such as breeding stock, embryos and semen, in addition to the provision of services in the areas of Reproduction and Feed Efficiency Evaluation.

In the field of feed efficiency, CIPA has developed methods of livestock production, such as the Feed Efficiency Evaluation program, which have allowed reducing production costs, as well as the expression of environmental risks associated with livestock production, because the improvement of feed efficiency reduces feed consumption, which in turn reduces the production of organic waste and methane emissions into the atmosphere.

In 2008, CIPA established the “Centro de Mejoramiento Genético de Venado Cola Blanca” environmental management unit, which is registered (PVSNL-UMA-EX0296-NL) and recognized by the environmental authorities.

The development of this project supports the production of Texan white-tailed deer of high genetic quality through the selection and controlled crossbreeding of parents for research and teaching purposes, with the objective of supporting the conservation and improvement of Texan white-tailed deer populations in northeastern Mexico.

In the field of goat farming, since 2019 CIPA has been working on the development of production models, using French Alpine and Boer goats, which have allowed the improvement of herds in the region, achieving good productive results through the implementation of environmentally friendly controlled feeding processes, such as stall feeding and controlled grazing.



Sustainable gardens

Efraim Hernandez Xolocotzi Botanical Garden

The Efraim Hernandez Xolocotzi Botanical Garden (JB-EHX), in charge of the School of Forest Sciences of the Universidad Autónoma de Nuevo Leon (UANL), was founded in 1986 and its mission is to contribute to the conservation of the regional wild flora through research, teaching and cultural extension to promote its sustainable use.

Located on the Linares campus of the UANL, it covers an area of 10 hectares where there is a collection of more than 153,000 plants of 75 species, including cacti and succulents, 20 of which are in danger of extinction (NOM-059-SEMARNAT-2010).

The objectives of the JB-EHX are:

- a) To represent the diversity of plant species of northeastern Mexico in collections of living plants, mainly xerophytic species.
- b) To promote research on the regional flora to improve knowledge of its ecology and promote its sustainable use.
- c) To support teaching on topics related to Botany, Ecology and sustainable management of natural resources.
- d) To serve as a reservoir of germplasm of plant species, mainly those catalogued as being at risk of extinction.
- e) Contribute to the dissemination of knowledge about the importance of the regional flora, through environmental education programs.

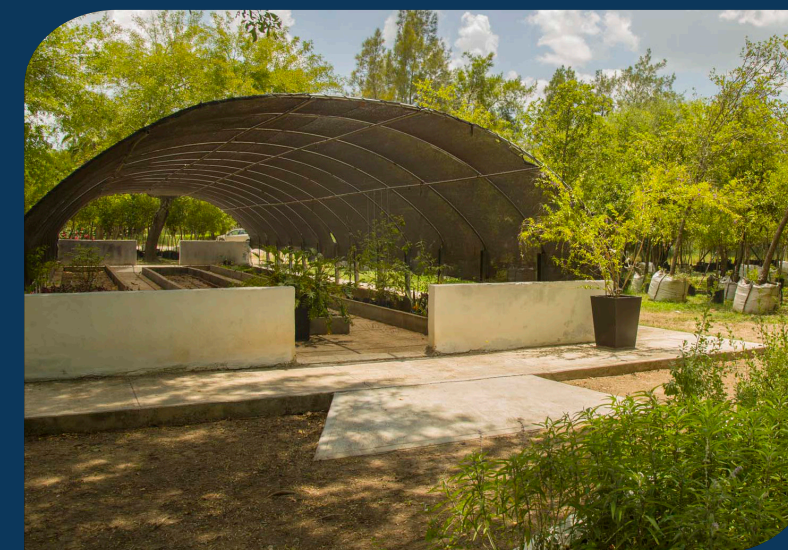


Municipality
**Linares,
Nuevo Leon**

Extension
10 hectares

Collection
+153,000 plants of

73 species



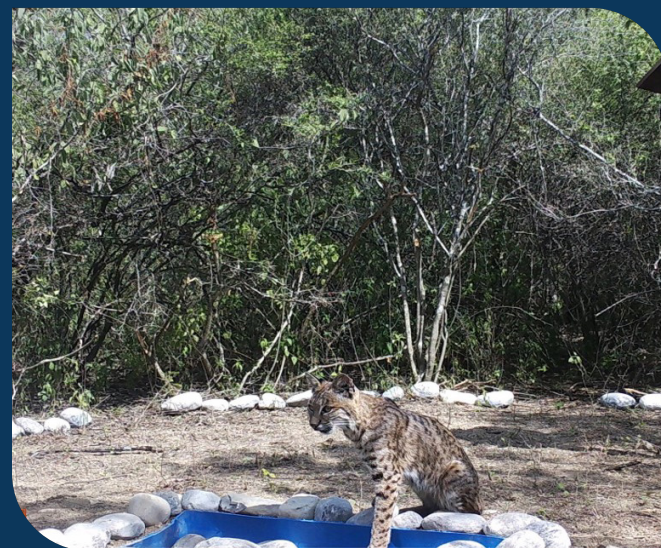
The Botanical Garden is officially accredited to carry out biodiversity conservation activities, as it is registered as a Management Unit for the Conservation of Wildlife (PVSNL-UMA-IN-1270-NL), which allows it to reproduce and exchange plants with other botanical gardens, as well as receive plants from seizures and rescues.

The JB-EHX is a reference for plant species in the region which makes it a conservation space that shows the importance of biodiversity where environmental education plays an important role in order to involve the scientific community and the general public interested in improving their relationship with the environment, carrying out various activities that have the participation of student groups, among which guided tours and lectures on the importance of environmental care, sustainable management of natural resources and management of urban solid waste, among others.



Since 2018 in the JB-EHX an environmental education program has been carried out, in coordination with the Nuevo León Secretary of Education, in which more than 30 thousand basic education students have participated, in addition to carrying out various scientific research in the area of biology and ecology of plant species in the region, where topics ranging from phenology, pollinators, predators, nodricism, among others, are addressed, in which higher and postgraduate level students from the Faculty of Forestry Sciences and other Higher Education Institutions collaborate.

Since 2020, the faculties of Biological Sciences, Agronomy and Forestry Sciences of the UANL have jointly carried out the project “Strengthening the capacities of the ethnobiological gardens of Nuevo León to promote conservation, research, teaching and scientific dissemination of regional biodiversity”, with funds from Conacyt (Fordecyt/03SE/2020/02/14-04; key: 304982), with the objective of expanding living collections to other groups of organisms in the JB-EHX we study the way in which humans relate to biodiversity, in order to analyze alternatives for sustainable use of natural resources.



As a result of this research work, sites have been implemented to attract and exhibit the region’s faunal species, through the establishment of feeding and watering troughs to record terrestrial vertebrate species (mainly reptiles, birds and mammals) and pollinating insects.

The collections of live plants of the Agave and Yucca genera have also been expanded and spaces have been set up for the region’s representative plant communities: Tamaulipan thorn scrub and submontane scrub to carry out ecological studies and show visitors their floristic composition, structural characteristics, and the environmental services they provide to society. There are plans to establish an arboretum of xerophytic species.

Currently, the JB-EHX has a germplasm bank with more than 2 million seeds of 34 xerophytic species, which are studied and used in reforestation and restoration programs for degraded ecosystems.

The JB-EHX is a reference in northern Mexico in its field, showing that botanical gardens are spaces linked to the conservation of biodiversity, in addition to allowing people to connect with nature, fostering among them the recognition and reconciliation necessary for the construction of a sustainable society.





Sustainable Buildings

Sustainable buildings are those that take into account environmental criteria in their design that significantly reduce the negative impacts caused by their construction on the environment; in addition, their operation incorporates adaptations and equipment to carry out an efficient use of water and energy, which also lowers their operating cost.

Universidad Autonoma de Nuevo Leon has a policy of construction and renovation of sustainable infrastructure, which has as its main objective the creation of healthy, economically viable spaces that are sensitive to the social needs of the university community and society.



During 2021, more than 4,000 square meters were added to the existing infrastructure that has been built with the following sustainability criteria:

Materials

- Recycling of materials
- Use of environmentally friendly materials
- Non-toxic materials
- Use of local materials
- Non-polluting materials

Natural resources

- Water saving and reuse
- Efficient use of energy
- Use of renewable energy sources
- Proper waste management

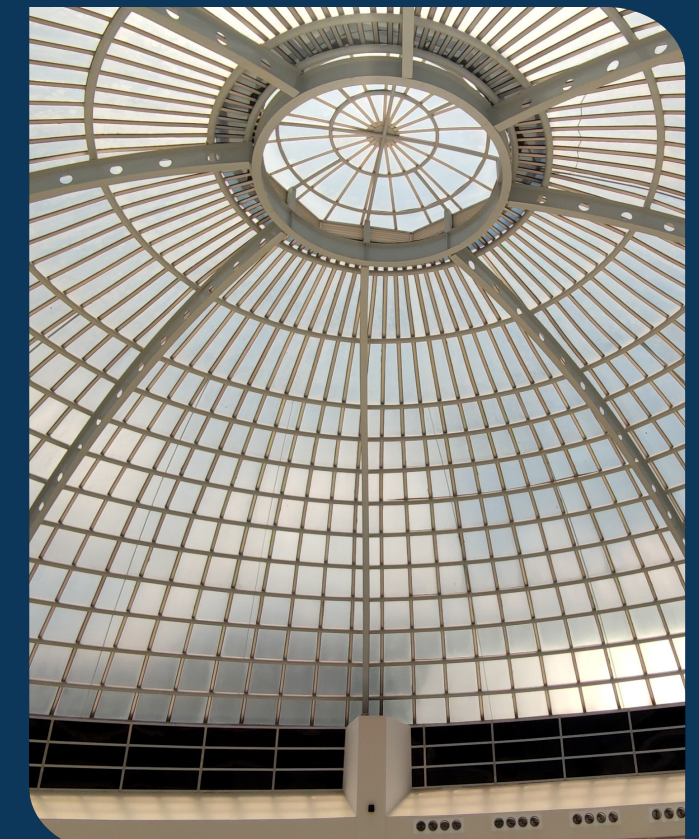
Human comfort

- Adequate ventilation
- Adequate thermal sensation
- Promotes good acoustics
- Inclusive
- Physical well-being

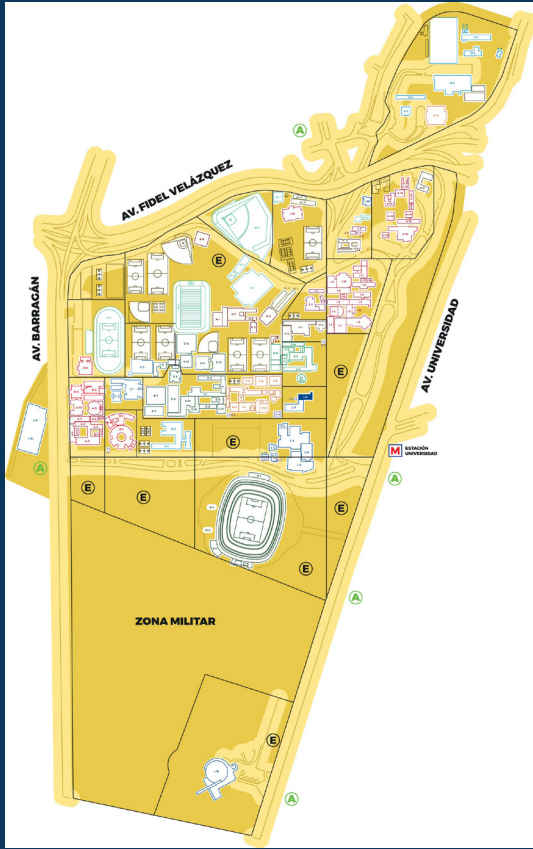


Sustainable building surface

Center for Research and Development in Health Sciences (CIDICS)	15,592 m ²
Center for Research, Innovation and Development of the Arts (CEIIDA)	8,335 m ²
Center for Internationalization	7,773 m ²
Center for Innovation, Research and Development in Engineering and Technology (CIIDIT)	7,380 m ²
Center for Research for Sustainable Development (CIDS)	5,913 m ²
Center for Digital Education and Entrepreneurship	5,352 m ²
Center for Research in Biotechnology and Nanotoxicology (CIBYN)	6,119 m ²
Center for Research and Innovation in Aeronautical Engineering (CIIA)	3,600 m ²
Center for Innovation and Design (CID)	2,687 m ²
Medical Services Clinic, Ciudad Universitaria campus	1,445 m ²
Total	64,196 m²



Medical Services Clinic Ciudad Universitaria campus



Located in Ciudad Universitaria

Of the 5,000 families of UANL employees, 30% of those living in the northern part of the Monterrey metropolitan area will benefit.

Inaugurated in **2021**

Daily capacity of consultations **160**



First and second level health care services:

- Internal Medicine
- Gynecology
- Pediatrics
- X-Ray
- Sample collection
- Pharmacy

Internal sustainable building features:



Motion sensors

High efficiency luminaires

High efficiency HVAC systems

Use of natural lighting and ventilation

Intelligent communication and warning systems



1,445 m² total floor area and \$ 2,122,284.00 US Dollars investment.



External sustainable building features:

- Use of PTR sunshades to reduce thermal load.
- Ventilated louver facade.
- Hydraulic plus pipe piping.
- Duovent-based fenestration to reduce the building's thermal load.
- Sikaplan waterproofing to insulate roofs.



Innovation and Design Center (CID)



2,687 m² of total area and \$ 3,082,365.00 US Dollars of investment.
Location: Faculty of Architecture



External sustainable building features:

- The building has glass curtains and PTR sunshades, thereby reducing the thermal load.
- The building has an elevator, cistern, fire alarm, fan and coil central air conditioning and service stairs.
- The building has a ventilated louver facade.



Research Center for Sustainable Development

Construction and equipment:
\$ 6,568,974.00 US Dollars



Dedicated to research on the environment and sustainability, it aims to be a regional reference for environmental information and communication and sustainable development in the search for better alternatives for the solution of environmental problems in northeastern Mexico, generating proposals for solutions to the problems of efficient use of water, energy, gas and soil through the scientific method and technological development.



5,913 m² total building area.

Sustainable building characteristics:

- Thermal insulation using multiplanel walls and 2" Foamular 2" tiles
- Use of solar lighting
- Non-heated central ventilation system
- North façade with DouVent roof to reduce the building's thermal load
- Energy efficient LED lighting
- High-efficiency air-conditioning units
- Reduced water usage due to installation of ecological tanks
- Dry urinals





Sustainable energy use in university environments

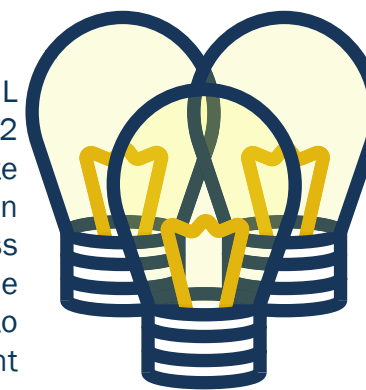
The Universidad Autonoma de Nuevo Leon (UANL) is a macro university located in northeastern Mexico, which in 2021 had a population of more than 230,000 people (students, academics and administrative staff). A university population of this size requires the use of large spaces, infrastructure and resources, including energy.

Aware of this situation, the UANL has promoted, for more than 12 years, various actions to promote the efficient use of energy, in addition to promoting a process of transformation towards the use of renewable energies in order to further reduce its carbon footprint and the generation of greenhouse gases (GHG) to the atmosphere.

In addition, the UANL promotes various actions to reduce energy consumption on all its campuses, such as the ConCiencia and Comunicación y Difusión para la Sustentabilidad programs, as well as courses,

conferences and workshops that promote the reduction of energy consumption by members of the university community.

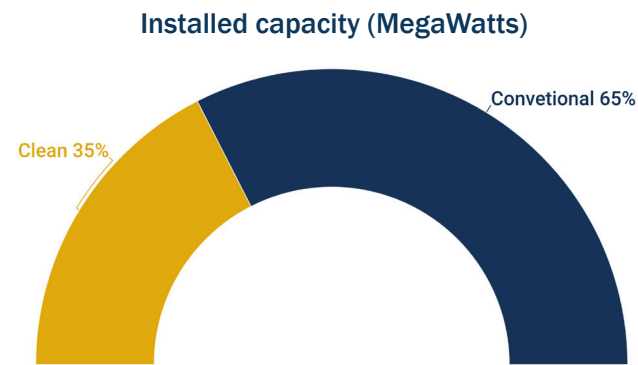
Another of the major actions implemented by the UANL, regarding the efficient use of energy, is the periodic review of its facilities to identify areas where the inefficient use of energy is evident, in order to implement measures to correct this situation, which in addition to generating significant economic savings, promotes a culture of efficient energy use.



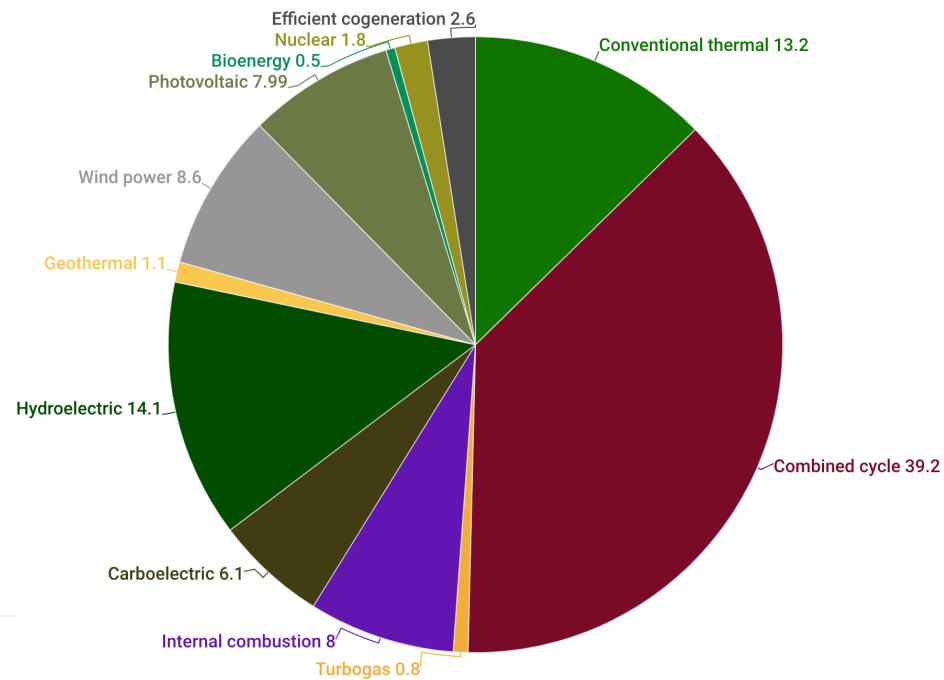
The implementation of energy efficiency measures favors the creation of good consumption habits in the members of the university community, which they subsequently transfer to their homes and workplaces, allowing them to achieve greater benefits, as well as an increase in their awareness and commitment to the process of sustainable energy management.



According to the report provided by the energy supplier, of the total energy consumed in the different UANL campuses and facilities in 2021, 35 % was generated using renewable energy sources.



Energy generation by type of technology



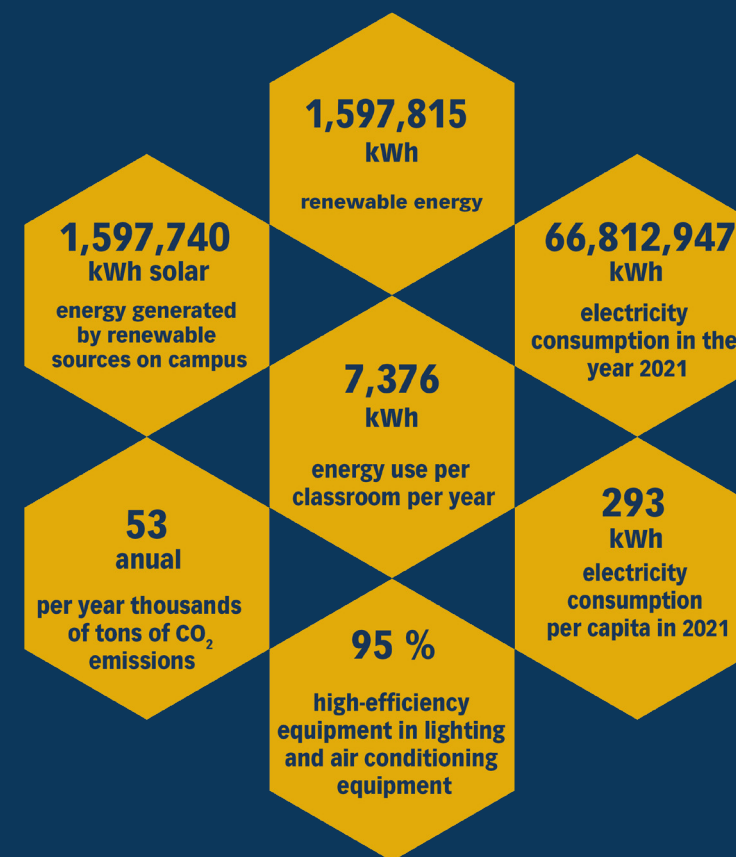
Source: SENER with information from CENACE.

Annual consumption of electric energy

With the objective of knowing the behavior of energy consumption in the UANL campuses and facilities, since 2015 the Control Panel program was implemented, a computerized system that allows accounting the energy consumption that university departments have throughout the year, fed with the information generated by 217 meters of electric energy consumption (169) and gas (48), which are distributed in the university departments, which has allowed creating databases that are used to make relevant decisions regarding sustainable energy management.

According to the annual energy consumption report issued by the Control Panel, in 2021 UANL registered a total energy consumption of **66,812,947 kWh**, which translated into a per capita consumption of **293 kWh** for that same year.

1,597,740 kWh
of photovoltaic energy production per year.

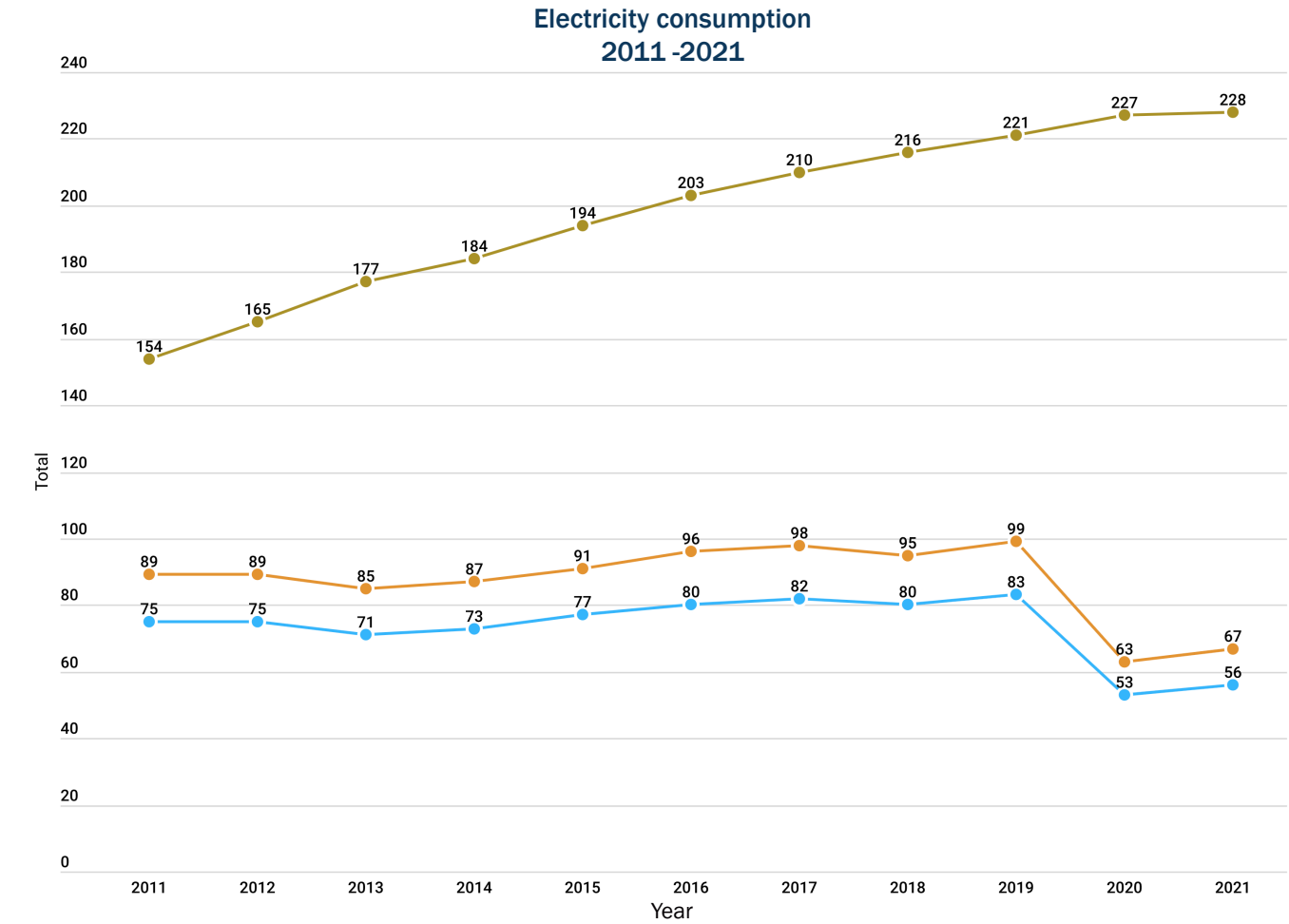
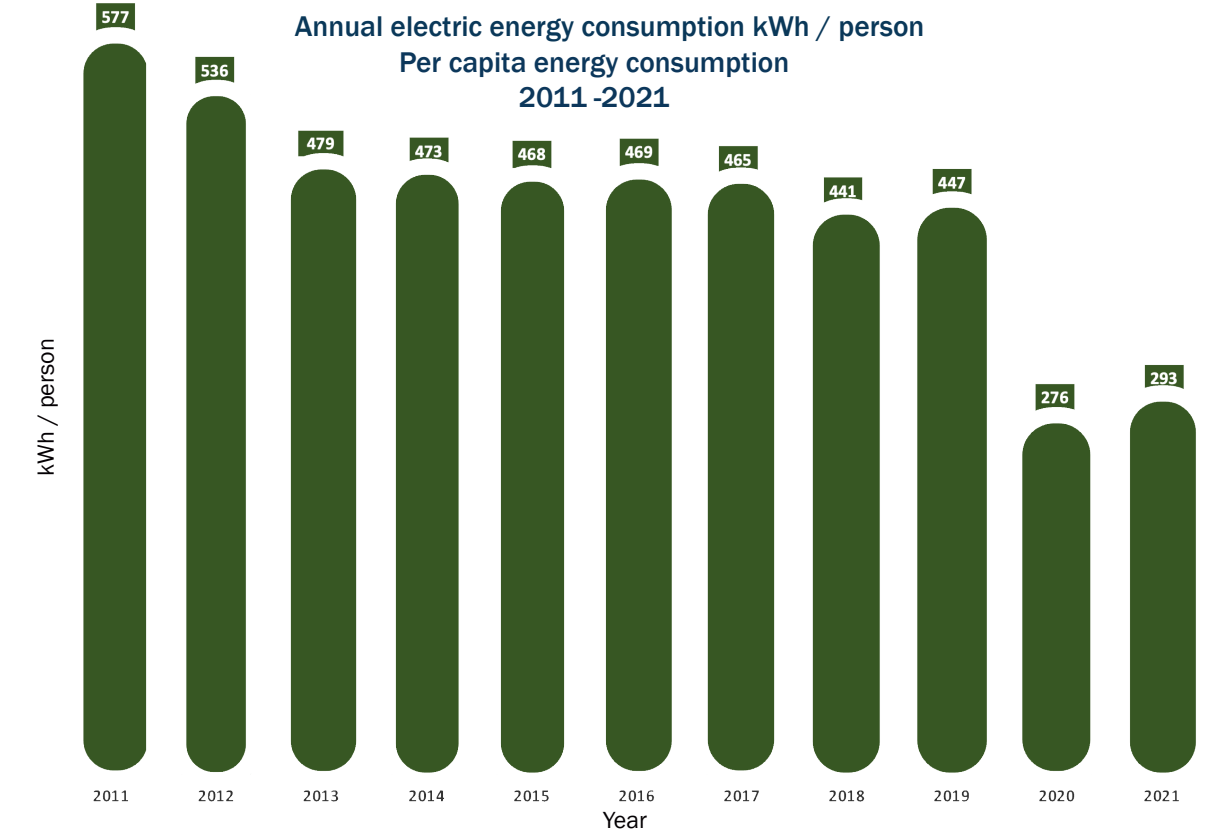
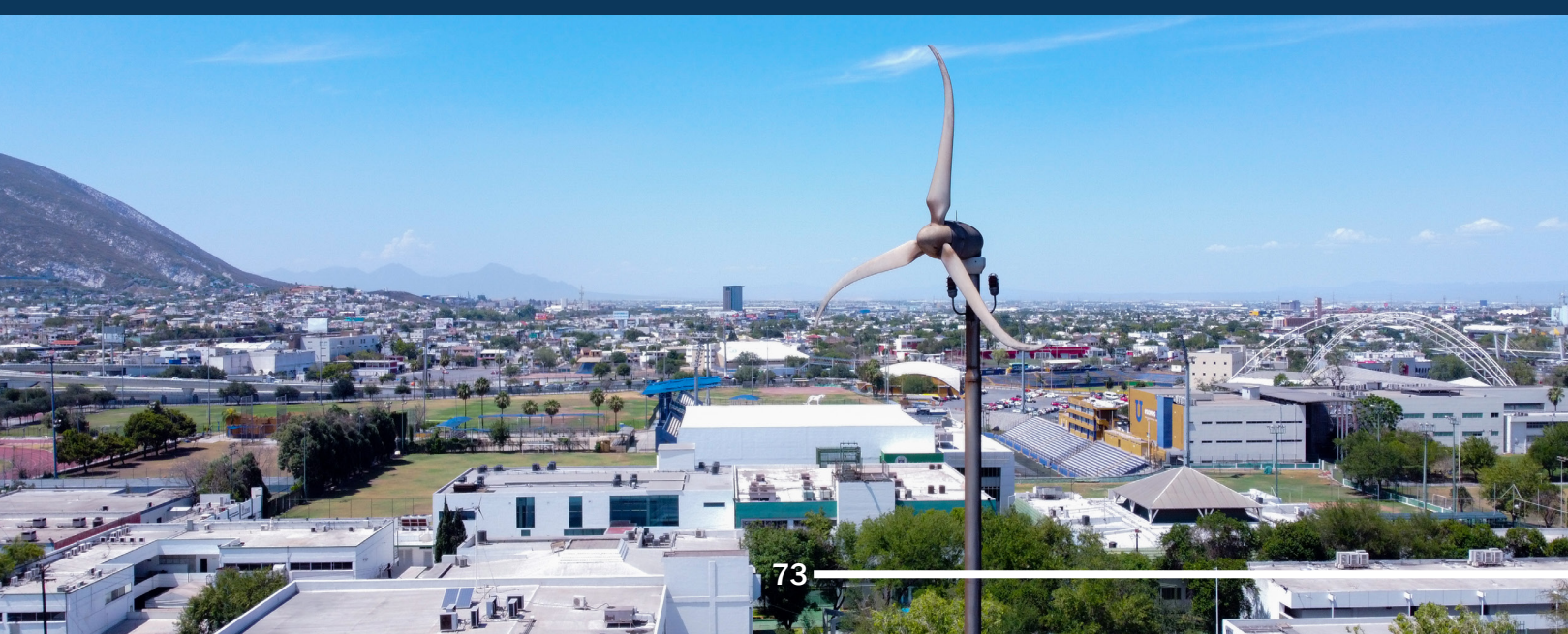


Through the program to promote the use of renewable energy sources, was made the acquisition of 45 photovoltaic cells that were installed in the School of Political Science and International Relations located on the Mederos campus, which generate **52 kWh**.





Energy consumption was **293 kWh** per capita in 2021

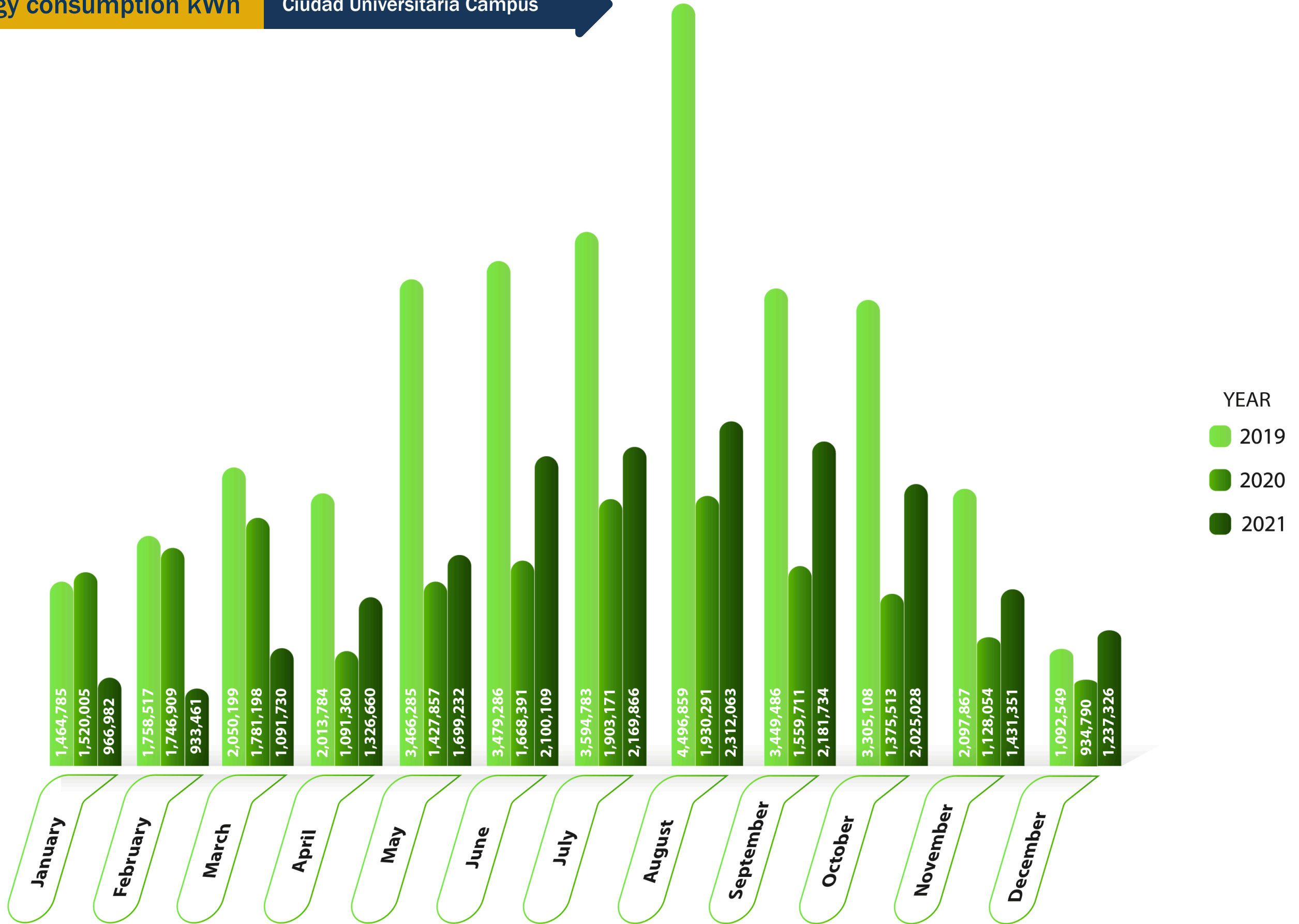


● GHG emissions (Thousands of tons) ● Annual kWh consumption - Millions ● Total population (students, academic and administrative)

Monthly energy consumption kWh

Ciudad Universitaria Campus

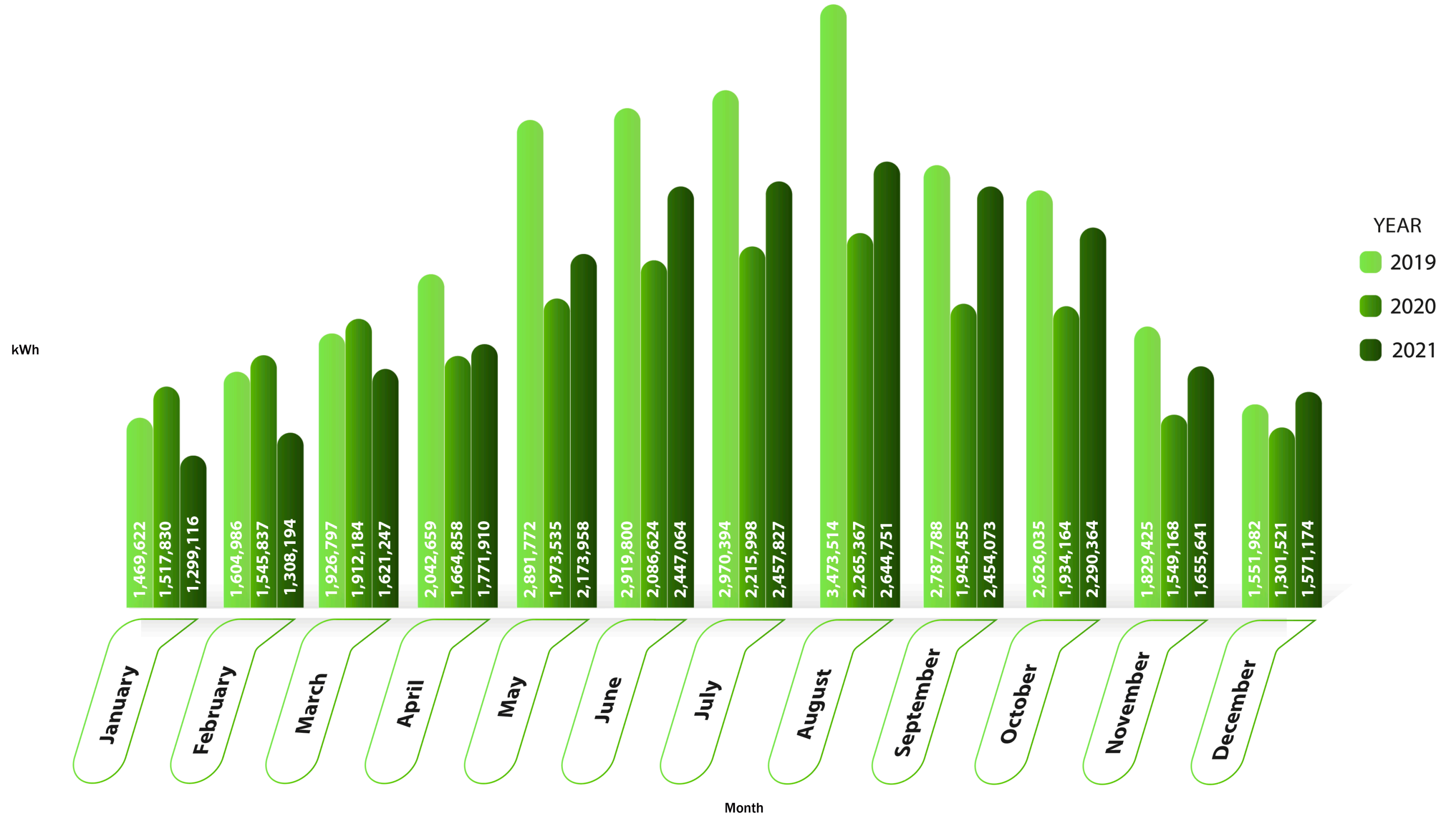
kWh



Month

Monthly energy consumption kWh

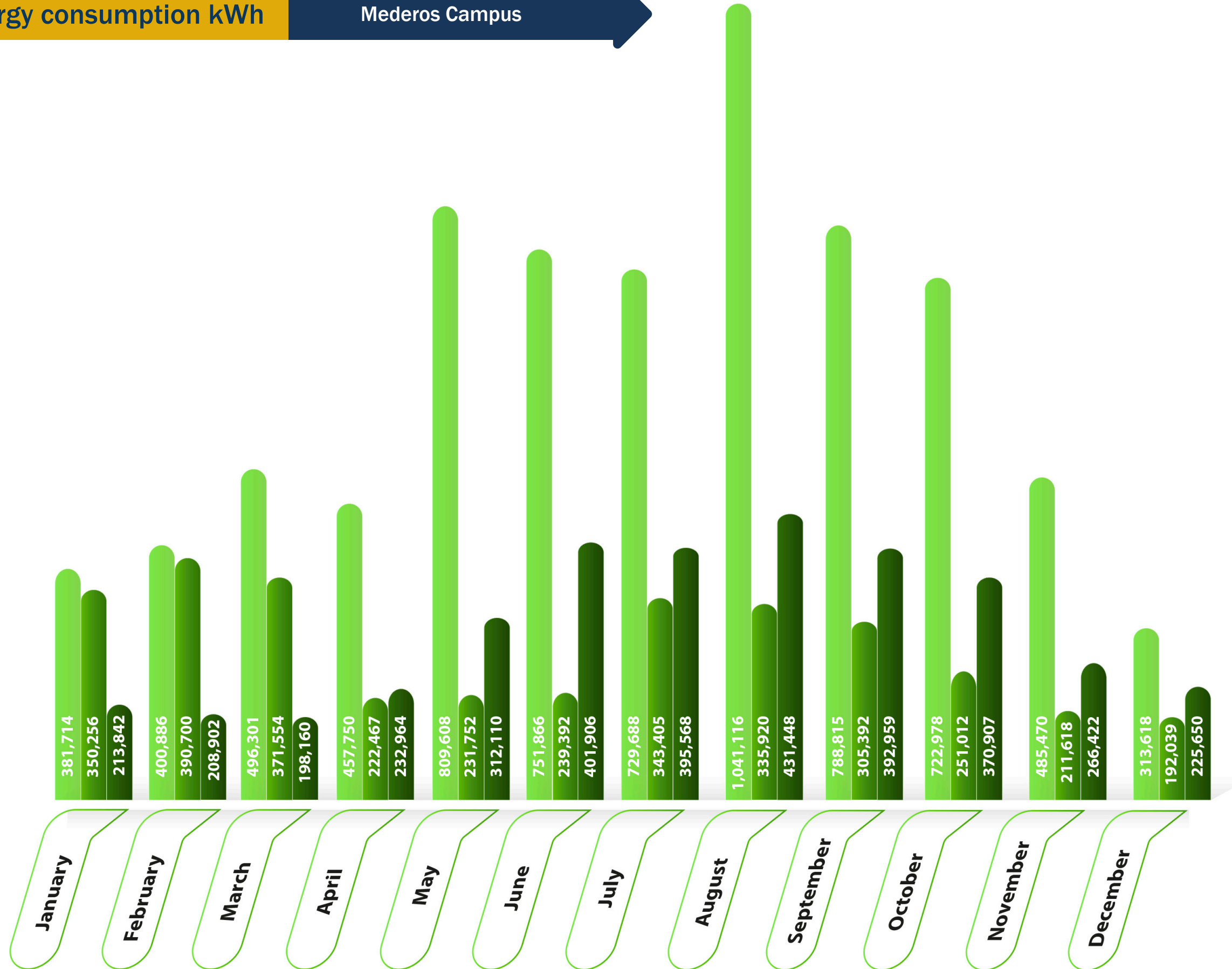
Health Sciences Campus



Monthly energy consumption kWh

Mederos Campus

kWh



YEAR
 2019
 2020
 2021

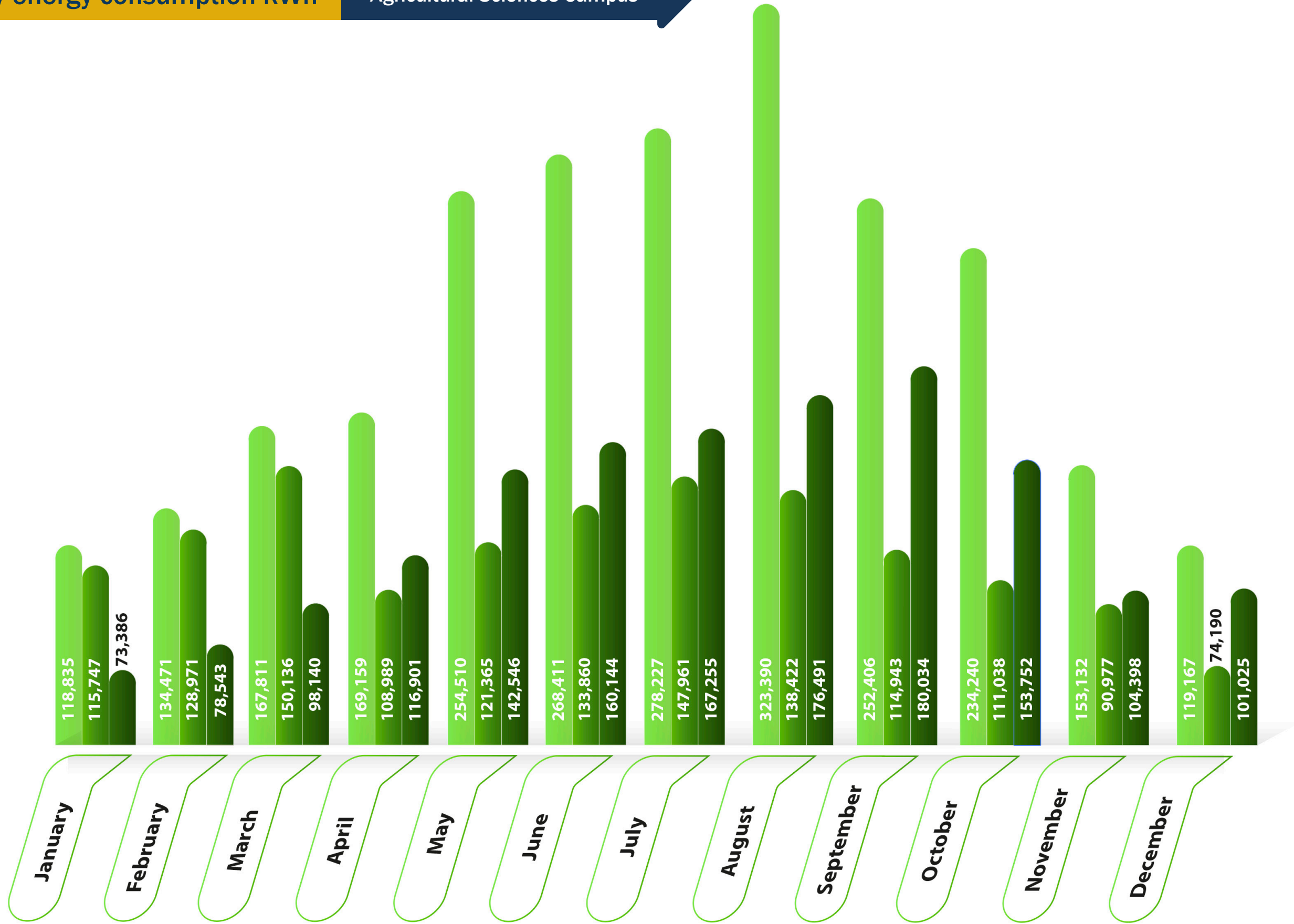
Month

Monthly energy consumption kWh

Agricultural Sciences Campus

kWh

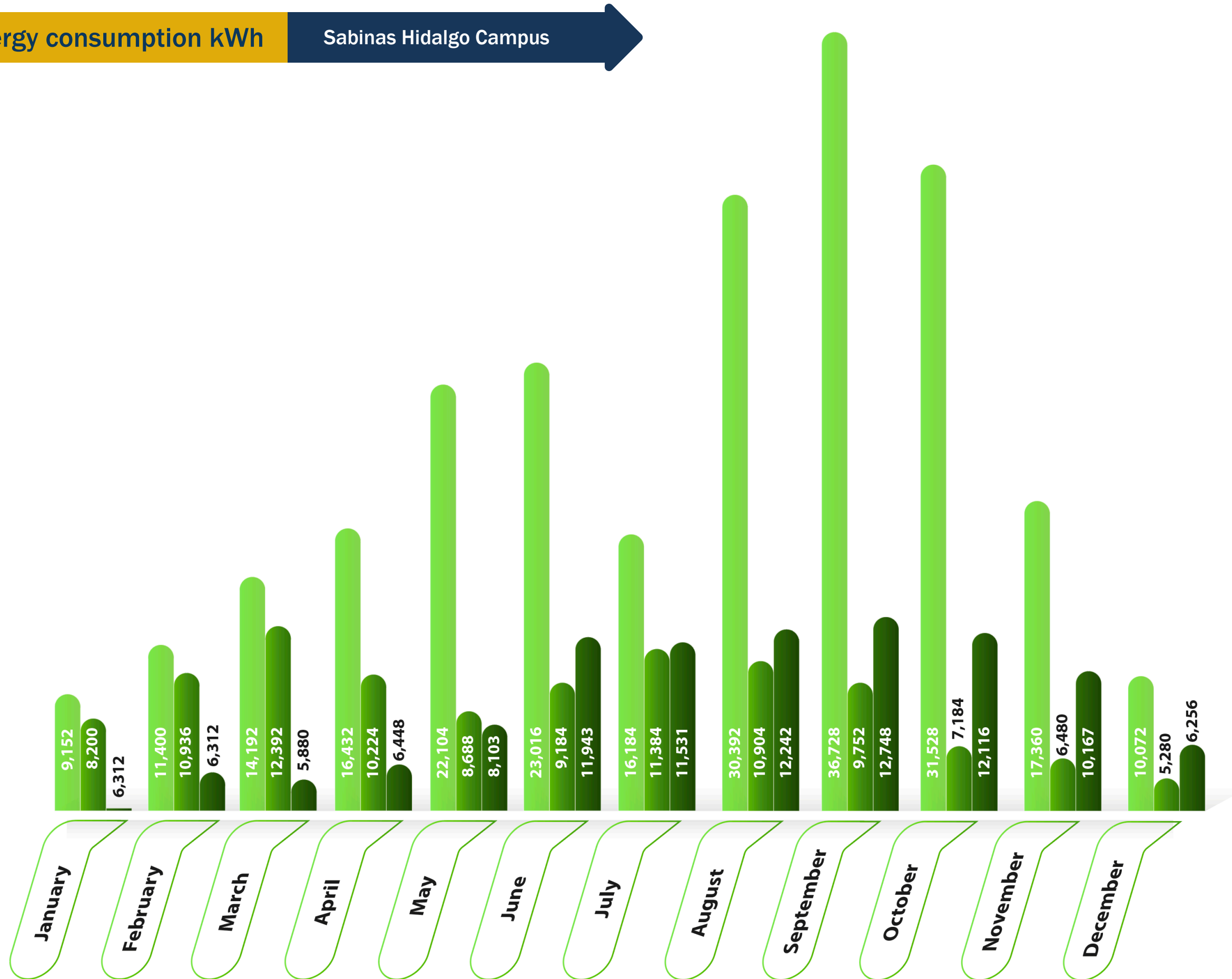
YEAR
 2019
 2020
 2021



Monthly energy consumption kWh

Sabinas Hidalgo Campus

kWh

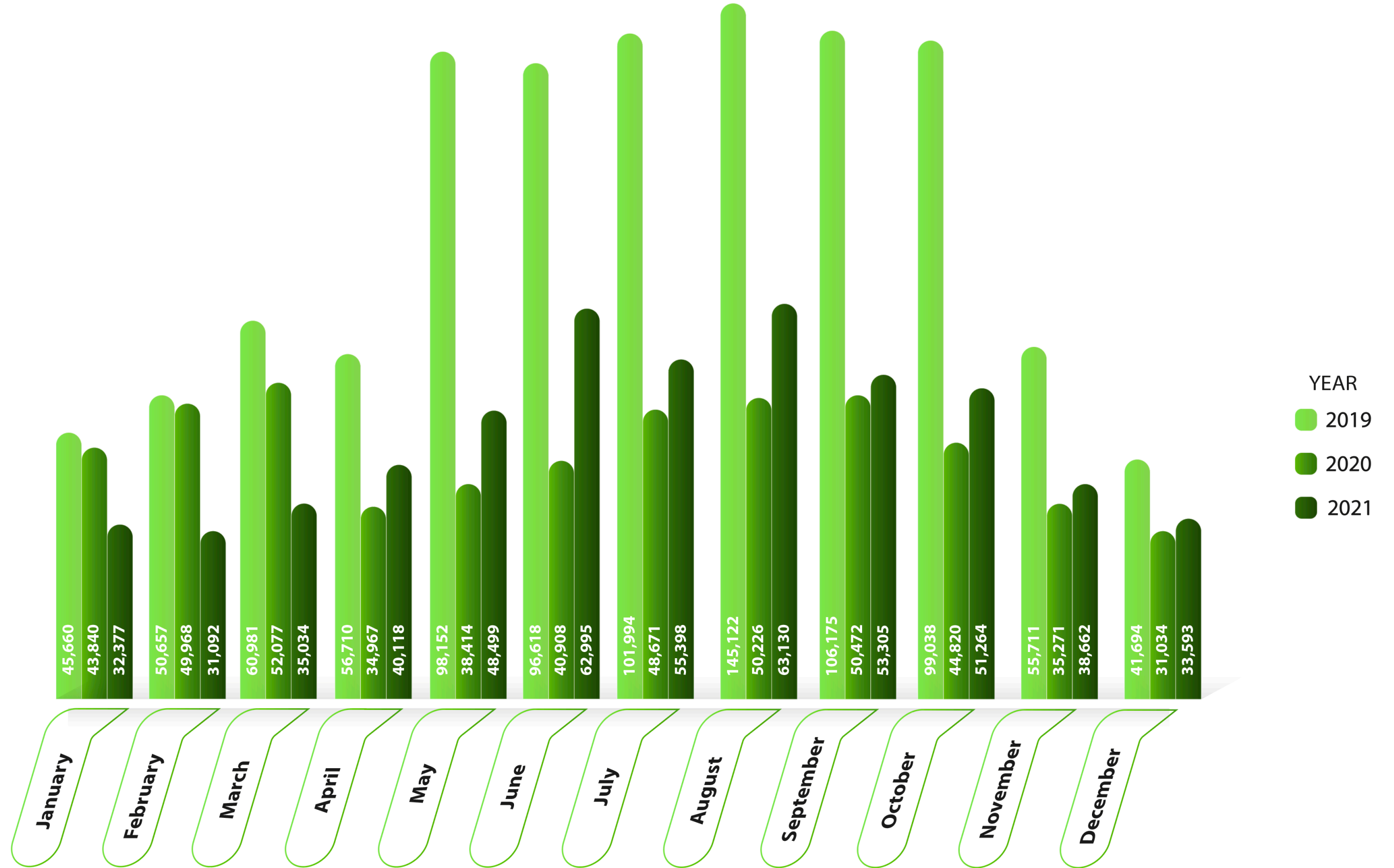


YEAR
 2019
 2020
 2021

Monthly energy consumption

Linares Campus

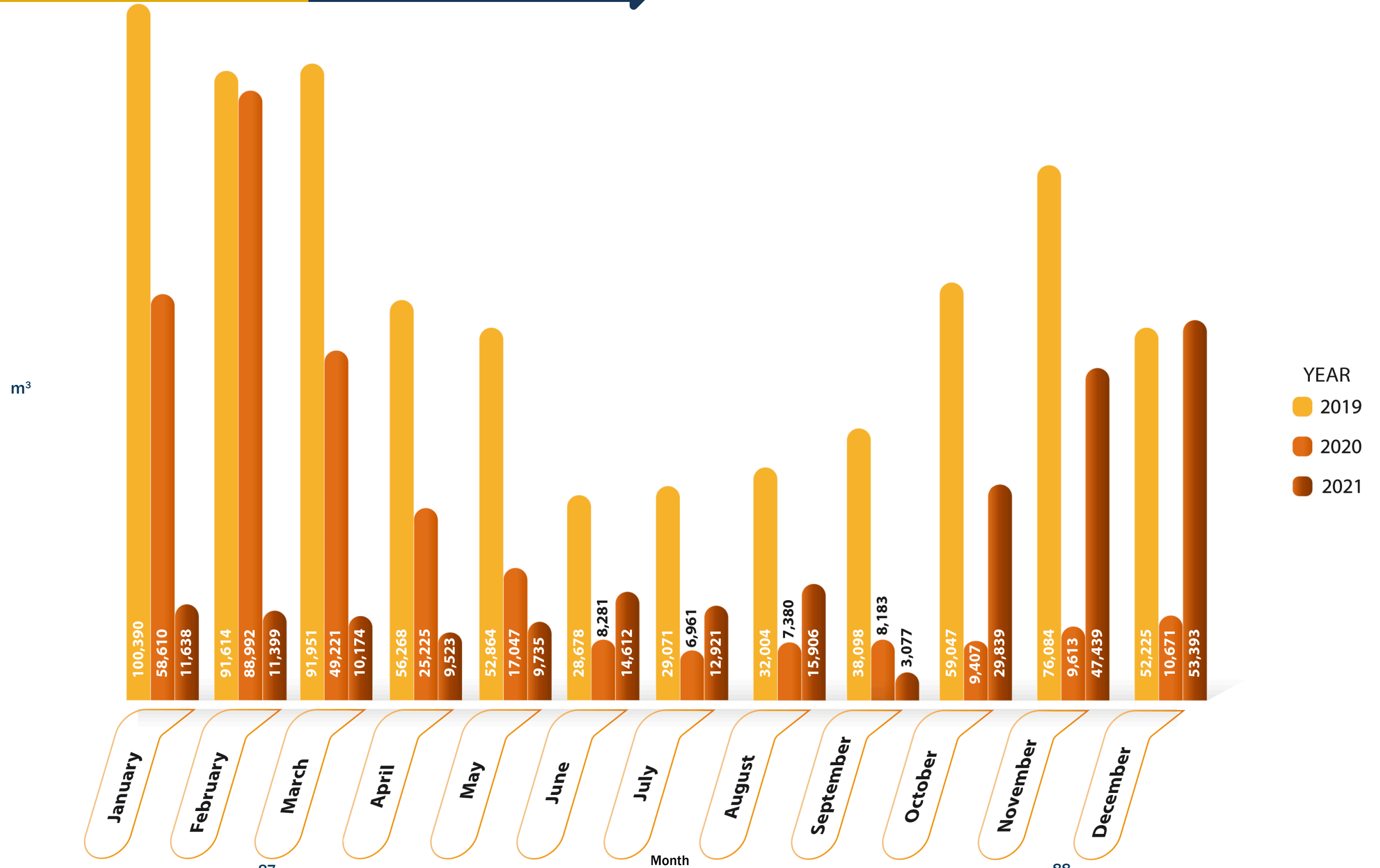
kWh



Month

Monthly gas consumption m³

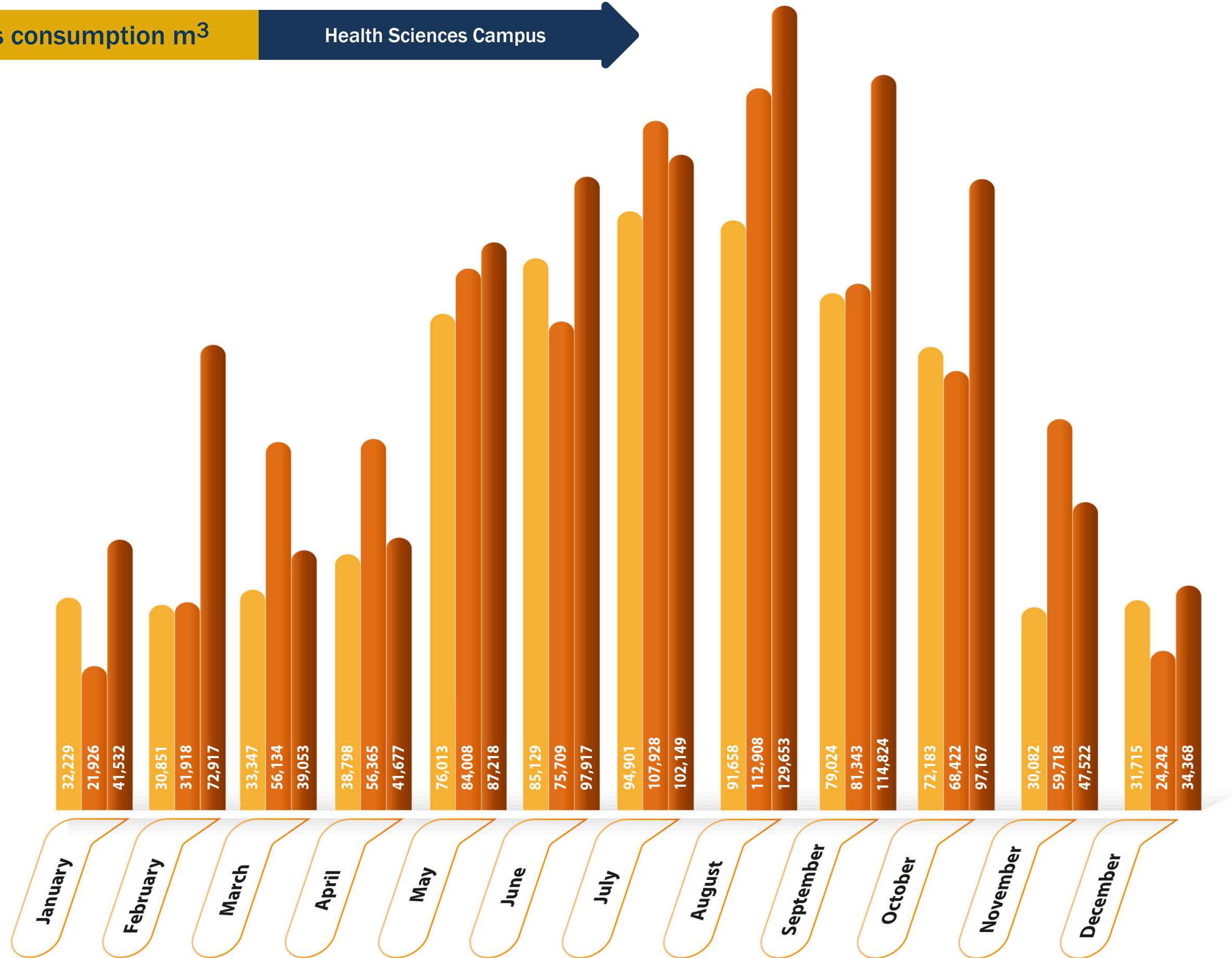
Ciudad Universitaria Campus



Monthly gas consumption m³

Health Sciences Campus

m³

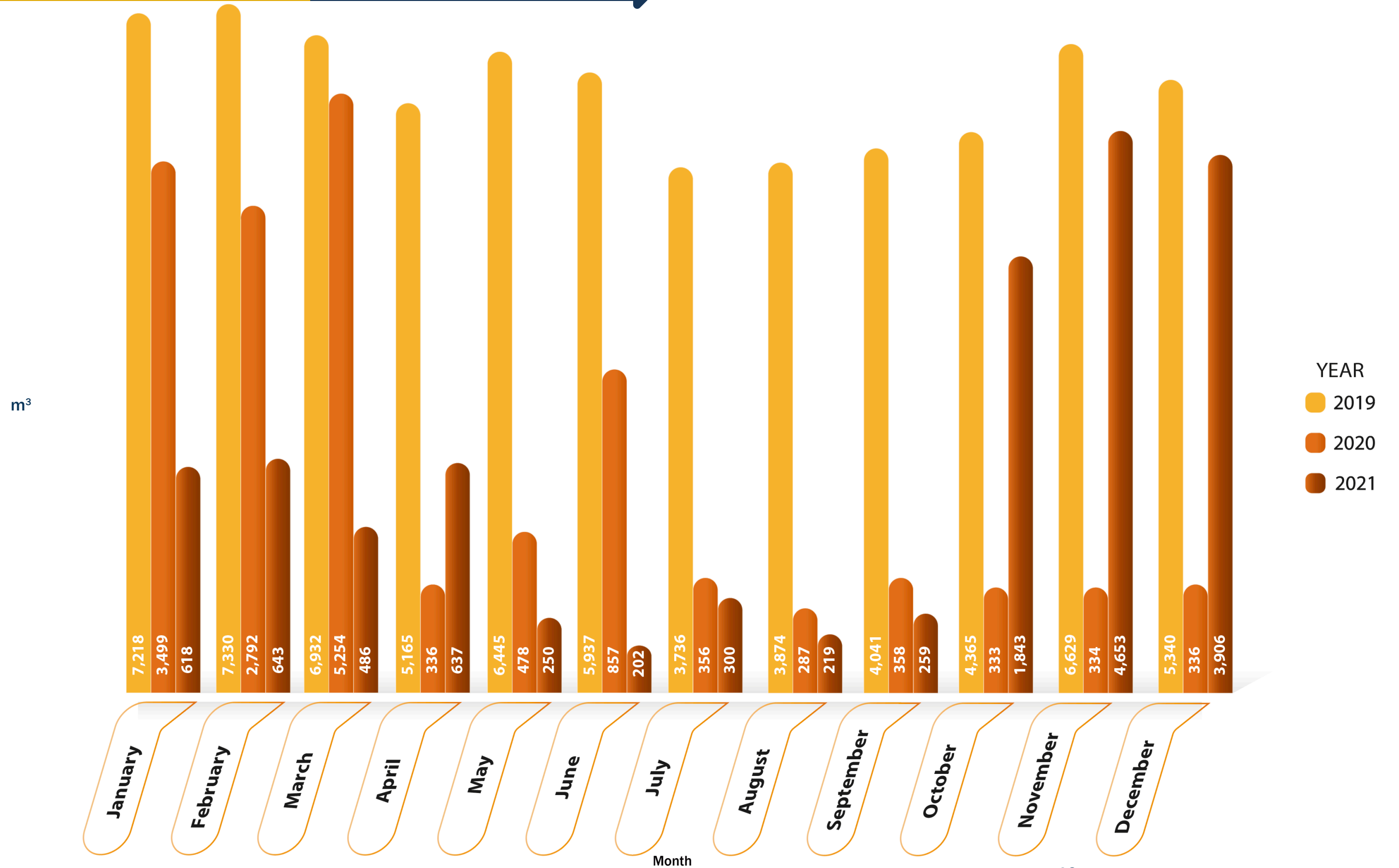


YEAR
 2019
 2020
 2021

Month

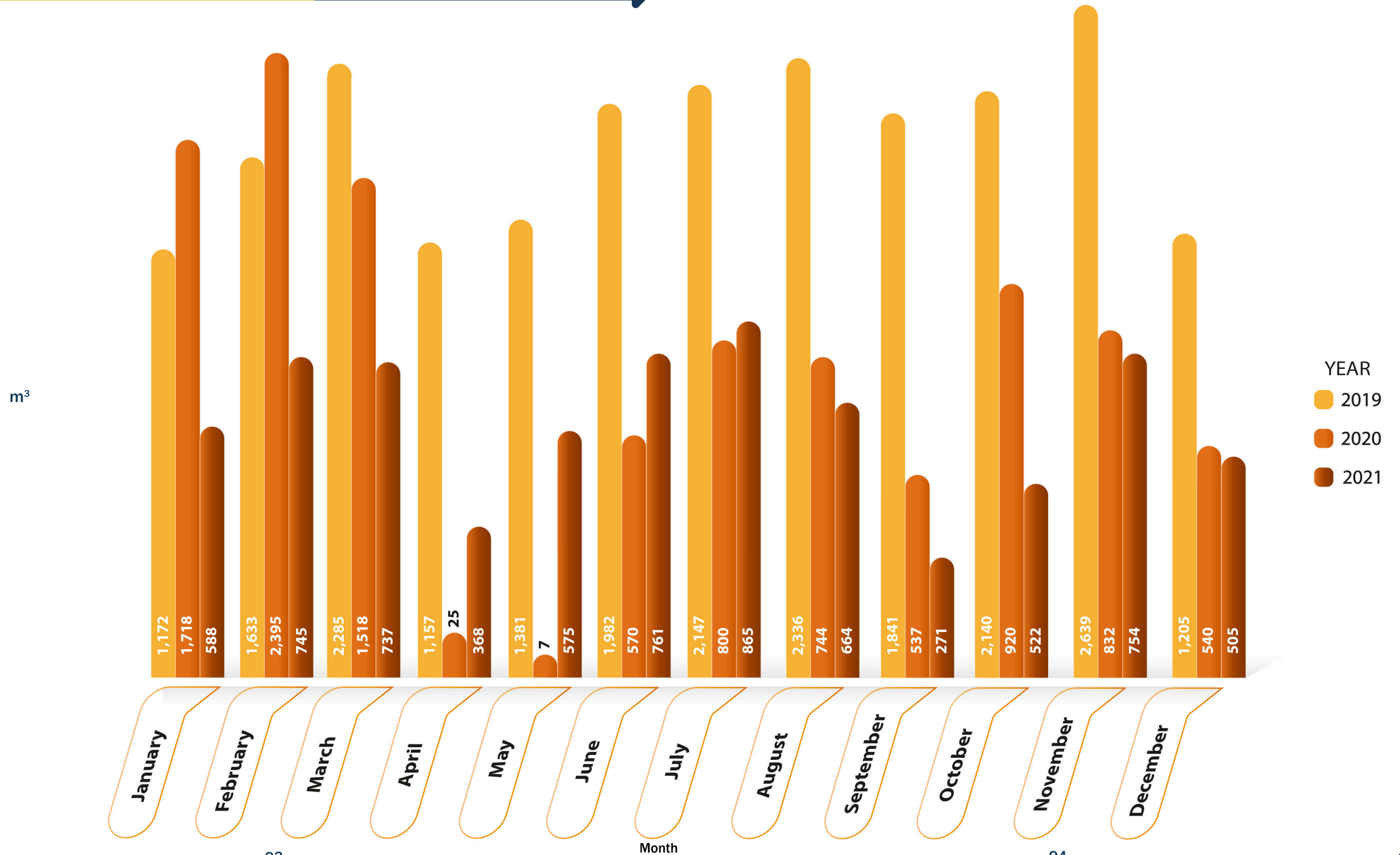
Monthly gas consumption m³

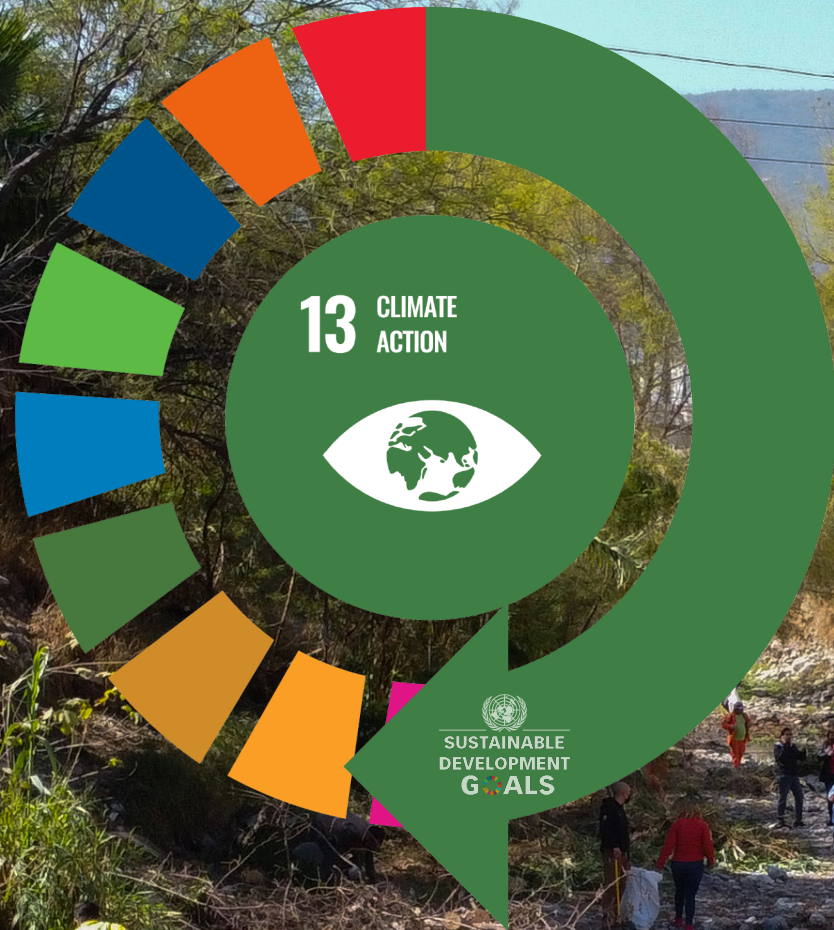
Mederos Campus



Monthly gas consumption m³

Agricultural Sciences Campus





Climate Change adaptation Actions

98% of the UANL territory is covered by natural vegetation in a good state of conservation

where they are contained



550 thousand tons of CO₂



While it is true that climate change is one of the main threats to the future of the planet, it is also true that there is still time to adapt to it and mitigate its effects.

Climate change is a reality that affects millions of people around the world, especially the most vulnerable, by increasing the frequency and virulence of extreme weather events that cause numerous material damages and population displacements.



In 2021 the UANL registered a positive balance positive in its Greenhouse Gas Emissions (GHG) of 498,420,340 kg of CO₂ equivalent.



Until a few years ago, great efforts had been made worldwide to try to limit the generation of greenhouse gas (GHG) emissions. In recent years, however, the international community has adopted a broader strategy, promoting complementary strategies such as climate change adaptation and mitigation policies that converge in the common goal of minimizing the effects caused by climate change.

With the objective of contributing to the reduction of the effects caused by climate change, the Universidad Autónoma de Nuevo León (UANL) carries out various climate change adaptation and mitigation actions, the former aiming to combat the cause and minimize the possible impacts of climate change, while the latter are focused on reducing the negative consequences of climate change.

Among the mitigation measures promoted by the UANL in all its campuses are the sustainable management of water and energy, encouraging the use of public transportation and non-motorized mobility, the promotion of responsible consumption and the promotion of a circular economy, among others.

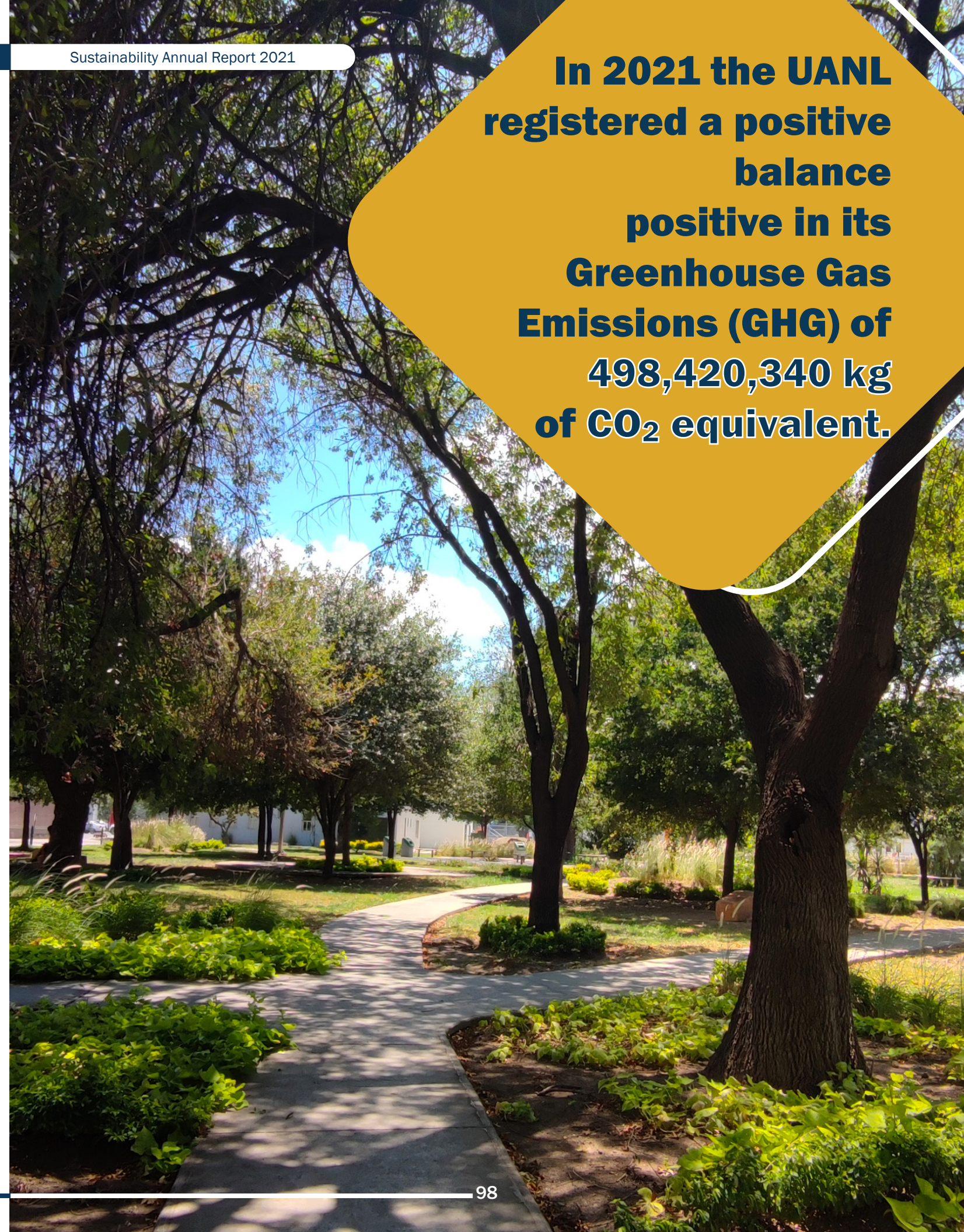
At the same time, adaptation actions are carried out such as the construction of sustainable buildings and the conservation of natural areas. In this sense, the UANL has been promoting for more than 20 years the sustainable use of the natural areas under its protection, maintaining the environmental services they provide and allowing their conservation.

Currently, 98% of the territory occupied by the UANL is covered by natural vegetation that is in a good state of conservation, which allows it to have a carbon sink of more than **550 thousand tons of CO₂ equivalent**, which also allows it to have a carbon balance of approximately **500 thousand tons**.

Carbon Footprint CO₂

	Kg CO ₂ (equivalent)	Balance
Electricity consumed	56,122,875	56,122,875
University buses (TigreBus)	272,000	56,394,875
Motor vehicles	1,094,000	57,488,875
Motorcycles	34,000	57,522,875
CO ₂ storage in vegetation	-549,604,000	-492,081,125
Waste recycling	-3,853,152	-495,934,277
Digital education	-2,486,063	-498,420,340

Source: Sustainability Department Project Development Directorate, UANL



Key actions to adapt to climate change

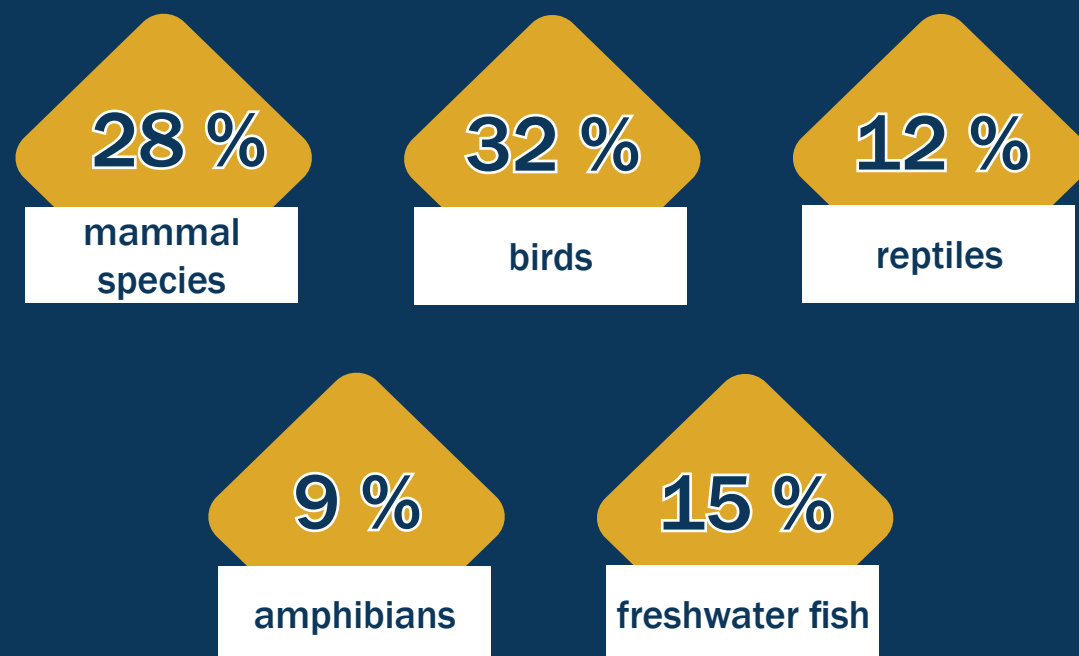
Tropical rainforests are the terrestrial ecosystems that have suffered the greatest anthropogenic transformations among Mexico's major vegetation types. Of their original extension, only 17% of the rainforests remain with a degree of conservation and structure similar to that of the original rainforest. One of the most important tropical rainforest remnants in the country is the Selva Lacandona, located in the east of the state of Chiapas.



This jungle is one of the most important regions due to the enormous biological richness it contains and the environmental services it provides, which is why it is considered the center of the highest biological diversity in the tropics, not only in Mexico but also in North America.

However, this area has been reduced to less than one third in the last three decades due to the non-sustainable productive activities practiced by its current inhabitants, but despite the severe transformation of its natural conditions, this region still conserves one fifth of Mexico's biological diversity in an area that represents 0.2 % of the national territory.

The Lacandon Jungle has a territorial extension of more than 331,200 hectares, which has the following biological richness of the country:



The Montes Azules Biosphere Reserve (RBMA) is located in the southern portion of the Lacandon Jungle, one of the seven natural protected areas in this region, which is also the largest and most ecologically significant, with an area of 331,200 hectares, located in the Lacantun river valley. It is part of a complex hydrological system that represents 53 % of the Usumacinta river system, where it is still possible to find some of the very few pristine rivers, which allows this area to have one of the most diverse and best preserved ichthyofauna in Mexico.

For more than 12 years, UANL has supported efforts made by Natura and Ecosistemas Mexicanos, A.C. (NATURA), a non-profit civil organization, to preserve the region known as the Lacandon Jungle.

The natural vegetation present in the Lacandon Jungle stores more than 106 million tons of CO₂ equivalent and releases more than 77 million tons of oxygen into the atmosphere annually.

The Lacandon Jungle contributes more than 85 billion m³ of average annual runoff to the Usumacinta-Grijalva Basin, considered the most important hydrological river valley in the country and the seventh largest in the world.



	Vegetation type	Area (ha)	Vegetation (ha)	Carbon (ton/ha)	Carbon stored (ton)	O ₂	O ₂ equivalent (ton)
Montes Azules Biosphere Reserve Tropical Forest	Tropical Forest	321,200	321,200	90.5	29,068,600	77,869,899	106,681,762
	Total	321,200	321,200	90.5	29,068,600	77,869,899	106,681,762

The natural vegetation present in the Selva Lacandona stores more than **106,681,762** tons of CO₂ equivalent and releases more than **77 million tons** of oxygen into the atmosphere annually.



Natural environment restoration workshops in urban áreas

In the last twenty years, Monterrey and its metropolitan area have experienced a rapid population growth produced by internal migration of people from other states of the country who travel to Nuevo Leon attracted by the creation of skilled jobs generated by the economic growth of the state, driven primarily by the service, construction, automotive and steel industries.

In 2021, the total population of Nuevo León was approximately 5 million 800 thousand inhabitants, 92 % of which lived in Monterrey and its metropolitan area.

The growth of urban areas in Nuevo León has increased the pressure on the remaining natural areas, causing their deterioration or disappearance, with the serious consequences that this situation causes.

Natural areas located in urban areas are of great importance, primarily due to the environmental services they provide, such as climate regulation and air quality improvement, carbon sequestration and storage, moderation of natural phenomena, water catchment, erosion prevention and soil fertility conservation, pest control, pollination, and they provide vital spaces for flora and fauna, which helps maintain the biological richness of the ecosystems where cities are located. In addition, natural areas provide city dwellers with aesthetic inspiration, cultural identity, and spiritual experiences related to the natural environment, as well as spaces for recreational activities and tourism.

The degradation or disappearance of natural areas in urban areas causes an increase of human health problems derived from pollution, the aggravation of social problems, and puts urban systems at risk of collapse.

Due to the above, the Sustainability Department of the Universidad Autonoma de Nuevo Leon (UANL) promoted the creation of the Journeys of recovery of natural areas in urban areas in 2016, with the objective of recovering public spaces with ecological importance to improve the environmental quality of urban areas, promote social coexistence and recreation.

Those actions carried out in the Journeys have consisted of the removal of municipal solid waste deposited inappropriately, as well as supporting the growth of populations of invasive plant species in the intervened areas, in addition to providing environmental education workshops in order for participants to learn about the structure and functioning of the intervened ecosystems and the benefits that their actions cause on them.





20 events in **7** natural areas located in Monterrey and its metropolitan area in which more than **2,500 voluntarios.**

Since the creation of the workshops, 20 events have been held in 7 natural areas located in Monterrey and its metropolitan area, with the participation of more than **2,500 volunteers** from the student and academic community of the UANL, municipal and state public institutions, citizen and private organizations, as well as other educational institutions.

The results have shown that the workshops work as a good tool for change towards sustainability, since several of the sites where they have worked have improved the environmental condition in which they were, in addition to having been incorporated into the work agendas of public institutions that have increased their attention to them, aware of the great benefits they provide to the city.

In 2021, the scheduled workshops for the recovery of natural spaces in urban areas had to be cancelled due to health restrictions imposed by the health authorities due to the pandemic caused by COVID-19. However, this important university initiative has managed to attract the attention of municipal, state and federal institutions, as well as various educational institutions, who have taken on the task of reproducing the intervention model used to provide attention to more natural areas located in the city.

The intervention model used in the workshops is based on the principle of learning-by-doing, providing participants with new knowledge and skills, but above all the possibility of proving that through community actions it is possible to transform degraded natural areas into ecological recovery zones, improving the situation of the intervened areas and thus the quality of life of city dwellers.



2016

Date	Event	Venue
August 26th	Journey of restoration of natural environments in urban areas in the Jardines del Canadá Humedal in the municipality of General de Escobedo.	Ojo de Agua of Jardines del Canadá

2017

Date	Event	Venue
March 25th	Jornada de recuperación de ambientes naturales en zonas urbanas en el “Río la Silla”	Nature park “Río la Silla”
June 7th	Jornada de recuperación de ambientes naturales en zonas urbanas en el “Parque Lago”	Park Lago
August 11th	Jornada de Recuperación de Ambientes Naturales en zonas urbanas - Campus Mederos	Forest reserve area of the Mederos Campus of the UANL, School of Communication Sciences
October 20th	Journey of restoration of Natural Environments in Urban Areas, in the Ecological Park “La Huasteca”	Ecological Park “La Huasteca”

2018

Date	Event	Venue
March 23rd	Journey of restoration of natural environments in urban areas in the framework of the celebration of World Water Day Wetland located in Jardines del Canadá	Ojo de Agua of Jardines del Canadá
April 20th	Journey of restoration of natural environments in urban areas, in the Ecological Park “La Huasteca”	Ecological Park “La Huasteca”
October 13th	Journey of restoration of natural environments in urban areas in the “Río la Silla”	Nature park “Río la Silla”

2019

Date	Event	Venue
February 23th	Journey of Restoration of Natural Environments in Urban Areas in the “Río Santa Catarina”	Río Santa Catarina
March 23th	Journey of Restoration of natural environments in urban areas in the creek “El Capitán”	Creek “El capitán”
May 17th	Journey of Restoration of Natural Environments in Urban Areas, in the Ecological Park “La Huasteca”	Ecological Park “La Huasteca”
June 7th	Journey of Restoration of natural environments in urban areas in the “Río la Silla”	Nature park “Río La Silla”
September 27th	Journey of Restoration of natural environments in urban areas in the “Río la Silla”	Nature park “Río La Silla”
October 11th	Journey of Restoration of natural environments in urban areas in the “Parque Lago”	Park Lago
November 15th	Journey of Restoration of natural environments in urban areas as part of the celebration of World Water Day Humedal located in Jardines del Canada	Ojo de Agua of Jardines del Canadá

* In 2020 and 2021 the events scheduled for the COVID 19 pandemic have been cancelled.





Waste

◇ Institutional Program for the Integral Management and Handling of Waste

The UANL promotes the integral management of the different types of waste generated on all campuses as part of the strategies of the institutional program for the management and integral management of waste, which has as its main objective the correct classification, identification, labeling, storage and final disposal of waste within the current legal framework, as well as promoting the reduction of waste generation in applicable cases. The Department of Sustainability, through the Directorate of Environmental Management and Operational Safety (DGASO) is responsible for coordinating this program.



Waste

t = tons according to the International System of Units.



◇ Hazardous Waste (HW)

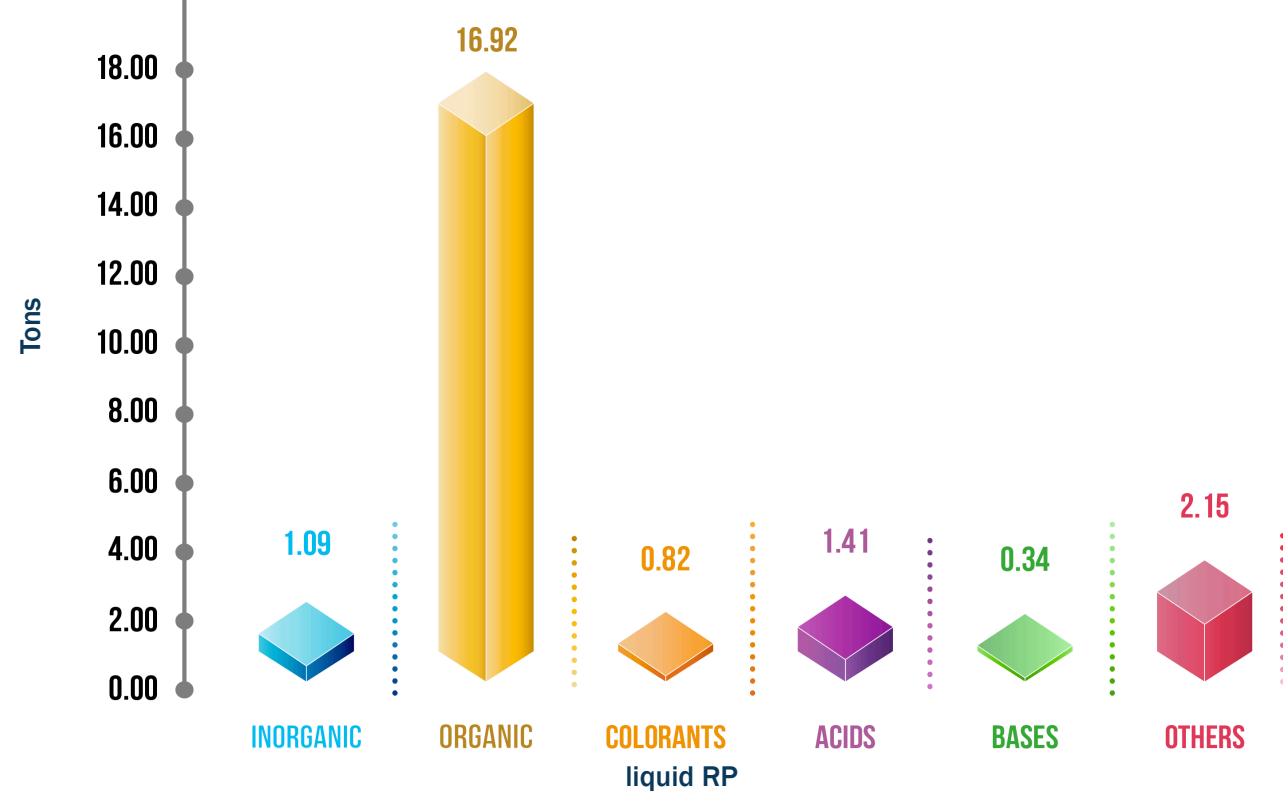
In order to standardize the handling and disposal of PR in all UANL departments, procedures have been distributed so that each one of them has elements for the preparation of the manual for the environmentally appropriate management of the waste they generate. During 2021, a total of **218.55 tons (t)** of hazardous waste was generated in **40 departments of the UANL**, of which **83 %** corresponds to hazardous biological infectious waste (RPBI) and the remaining **17 %** to hazardous waste of chemical origin, which were managed in accordance with the current legal framework.



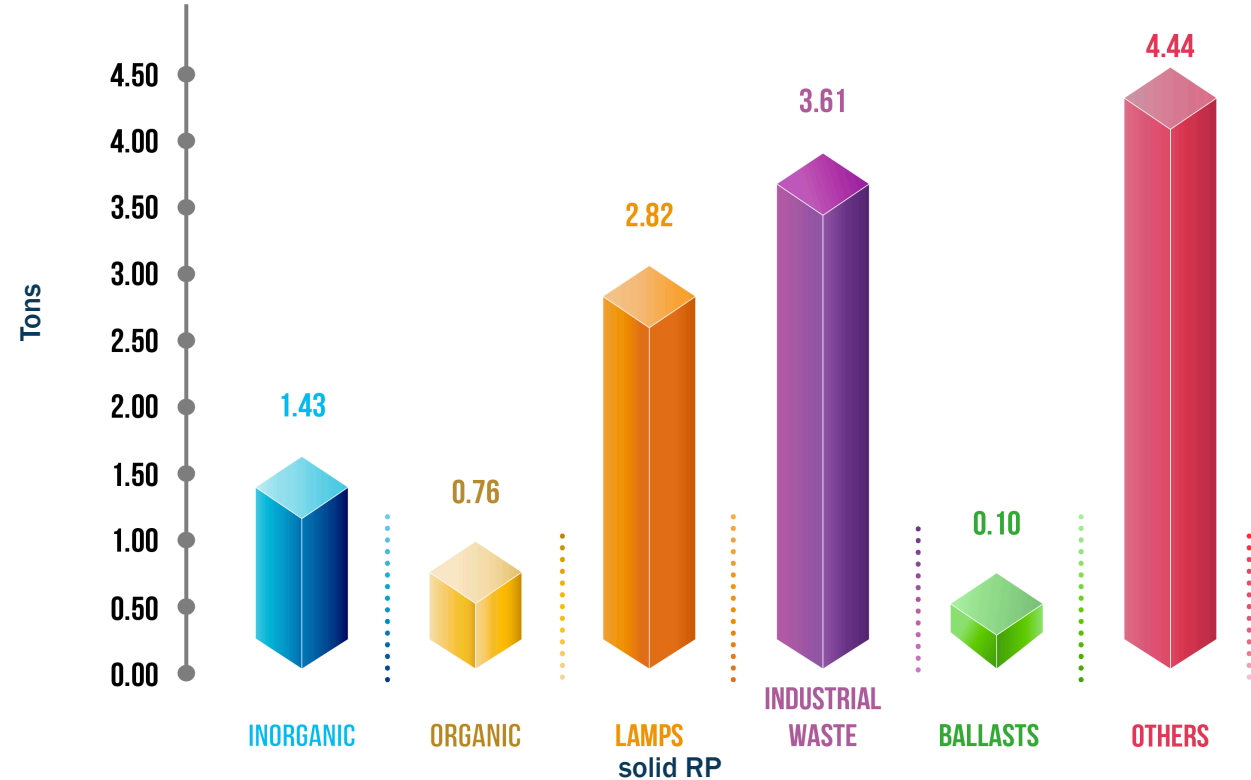
Waste Generation

Hazardous waste of chemical origin

Characterization of liquid RP (january - december 2021)



Characterization of solid PR (january - december 2021)



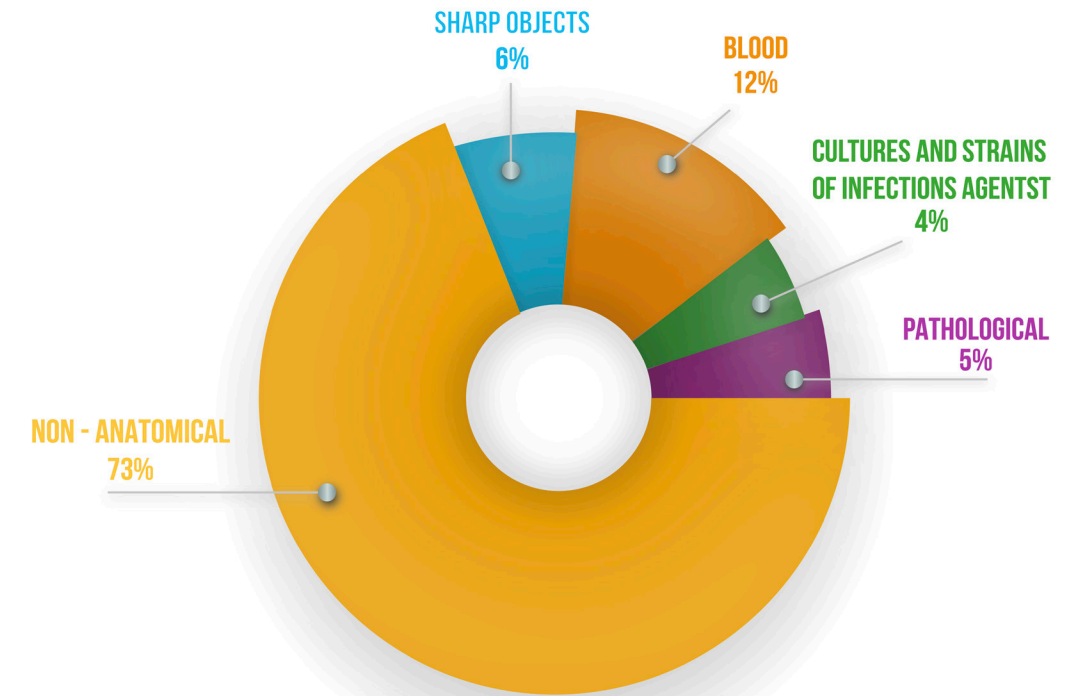
During the same period **35.89 tons** of chemical hazardous waste were generated, of which **13.15 tons** corresponded to solid waste and **22.74 tons** to liquid waste.



Biological-Infectious Hazardous Waste (BHWWR)

Biological Infectious Hazardous Waste (BHWWR) are those materials generated during health care services that contain biological-infectious agents according to the definition of NOM-087-SEMARNAT-SSA1-2002. **In the period January-December 2021, 182.66 t** of this type of waste were generated. The 73 % corresponded to non-anatomical waste and the remaining 27 % to the other 4 types of RPBI as shown below:

Waste Management Characterization of RPBI 2021



Hazardous waste (HW), once collected by a company authorized by the corresponding authorities, is subject to treatment or confinement in accordance with current environmental regulations.

As part of the management of hazardous waste, it is important, first, to obtain registration as a generator with the Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT), based on the average estimate generated in a year and the category in which they fall (micro, small, or large generator) in order to manage them correctly. During the period January-December 2021, **six university departments** completed the procedures before this federal agency and obtained their Environmental Registration Number (NRA) with the support and advice of the DGASO.

On the other hand, in most homes and workplaces there is another type of hazardous waste such as: expired medicines, which must be treated accordingly. UANL has a container located at the University Pharmacy "Q.F.B. Emilia Vásquez Farías" of the School of Chemical Sciences where this waste is deposited by the university community and general community. Afterwards, the waste is collected by personnel from a company specializing in the field, who take it to a collection center where it is separated from its primary container and then taken to final disposal.

During the period Jan-Dec 2021, **309.50 kg of expired medicines** of expired medicines were collected at the aforementioned collection center.

In the period January-December 2021, 309.50 kg of expired medicines were collected.



Special Handling Waste



Another type of waste generated nowadays due to the use of digital technology is electrical and electronic waste, which can cause harm to human health and the environment if not disposed of correctly. In order to avoid this situation, the UANL, through the Secretariat of Sustainability, has been carrying out collection campaigns for this type of waste since 2014. During the year 2021, due to the COVID-19 health contingency, the campaign could not be carried out, however, some university departments in particular disposed of electronic material that had already been discarded.

During that period, a total of **14.49 tons of electrical and electronic waste** and were subsequently managed through service providers authorized by the Secretary of the Environment of the State of Nuevo Leon.

With the aforementioned quantities of electrical and electronic waste, important environmental benefits were obtained as shown below:



Circular economy

Once collected at the UANL facilities, the waste is sorted into groups and disassembled into its different components. For example, plastic is taken to local recyclers to be incorporated as raw material for the production of new products such as toys and pallets, copper and aluminum are sent to a national foundry for the production of electrical cable, copper pipes, aluminum coils, etc., and finally, electronic cards and power supplies are sent to foreign companies where precious metals and other materials are recovered to be incorporated into other production cycles for the production of cell phones, car seats, fans, pens, etc. That said, the waste generated at UANL follows a **circular economy model** as shown in the following figure:



Source: Ecolec Foundation

Organic waste



The UANL carries out a project for the use and exploitation of waste from livestock and garden pruning by the Faculty of Agronomy at the Marin campus, which is used for the production of compost through the use of earthworms. From this, humus or compost and a leachate rich in essential nutrients are obtained, which have been used to fertilize the nursery, experimental crops and gardens of the same campus for 16 years.



During 2021, approximately **9.24 t** of organic waste were treated, obtaining a total of **350 kg** of humus or compost, as well as **500 L** of leachate.

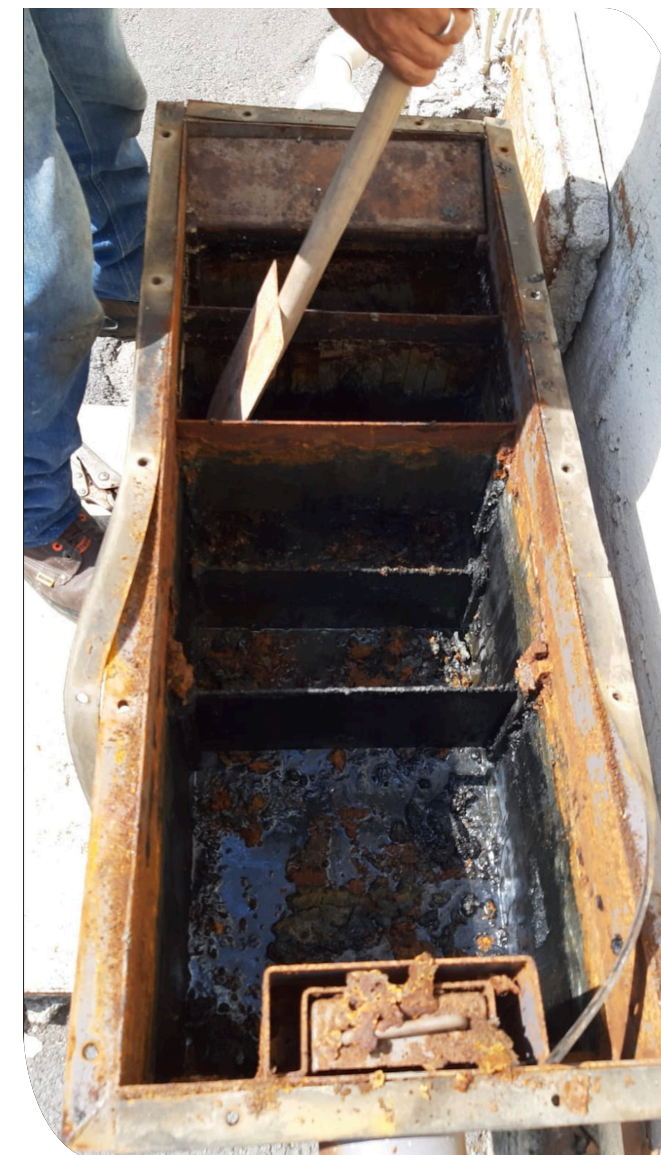
Grease and oil waste from cafeterias

In 2021, **9.24 tons** of vegetable oil were collected from cafeterias operated by different university departments.

One of the main causes of surface and groundwater contamination is the uncontrolled dumping of waste generated in the preparation of food, such as vegetable and/or animal oils and fats. It is estimated that one liter of used oil can contaminate 1,000 to 10,000 L of water, causing obstructions, bad odors and the proliferation of pests in drainage and/or sewage systems, as well as damaging the soil.

UANL promotes a program to collect and dispose of the vegetable oil generated in the cafeterias that operate on campus with a specialized company that has the corresponding authorizations.

In 2021, **9.24 tons of vegetable oil** were collected to be recycled and subsequently used in the manufacture of environmentally friendly chemical products and biofuels.





Urban Solid Waste (USW)



USW generated at UANL offices is collected and transported by authorized companies to the landfill of the Integrated System for Ecological Management and Waste Processing (SIMEPRODE) located in the municipality of Salinas Victoria, which is administered by the State Government of NL.

At this site, some of the collection trucks take the waste to a sorting plant where recyclable material (cardboard, paper, aluminum, plastics, and steel) is separated and the rest is taken to the landfill cells, where it is compacted to reduce its volume and covered with layers of clay and soil. The landfill also has infrastructure for capturing

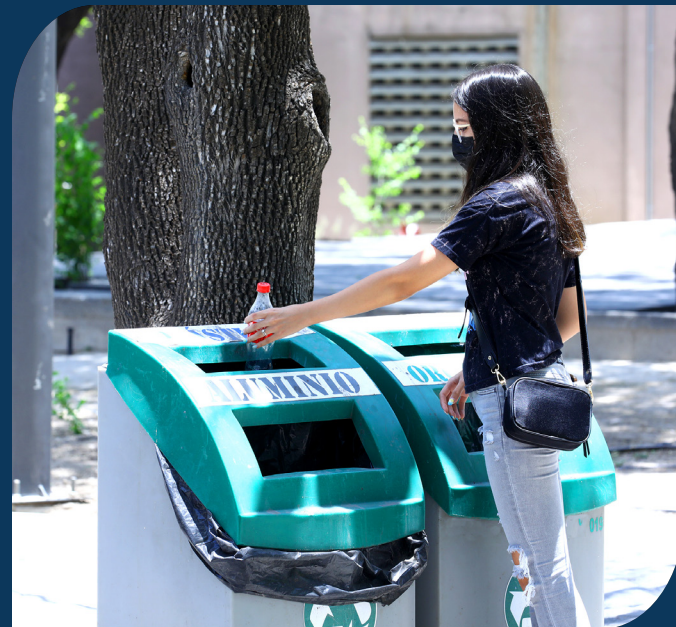
the methane (biogas) produced by the anaerobic decomposition of organic waste, as well as wells for monitoring leachate. The biogas is piped through a special system to the bioenergy plant of Servicios Sustentables de Nuevo León S.A. de C.V. (SSNL), attached to the landfill, where it is converted into electricity. This energy is used to power the public lighting network of seven municipalities in the Monterrey Metropolitan Area, five state government agencies, and Fundidora Park, in addition to providing energy to the Monterrey public transportation system (urban electric train), a cutting-edge project that is important as part of the country's greenhouse gas mitigation actions.

Waste Separation and Recycling Program (PROSER)

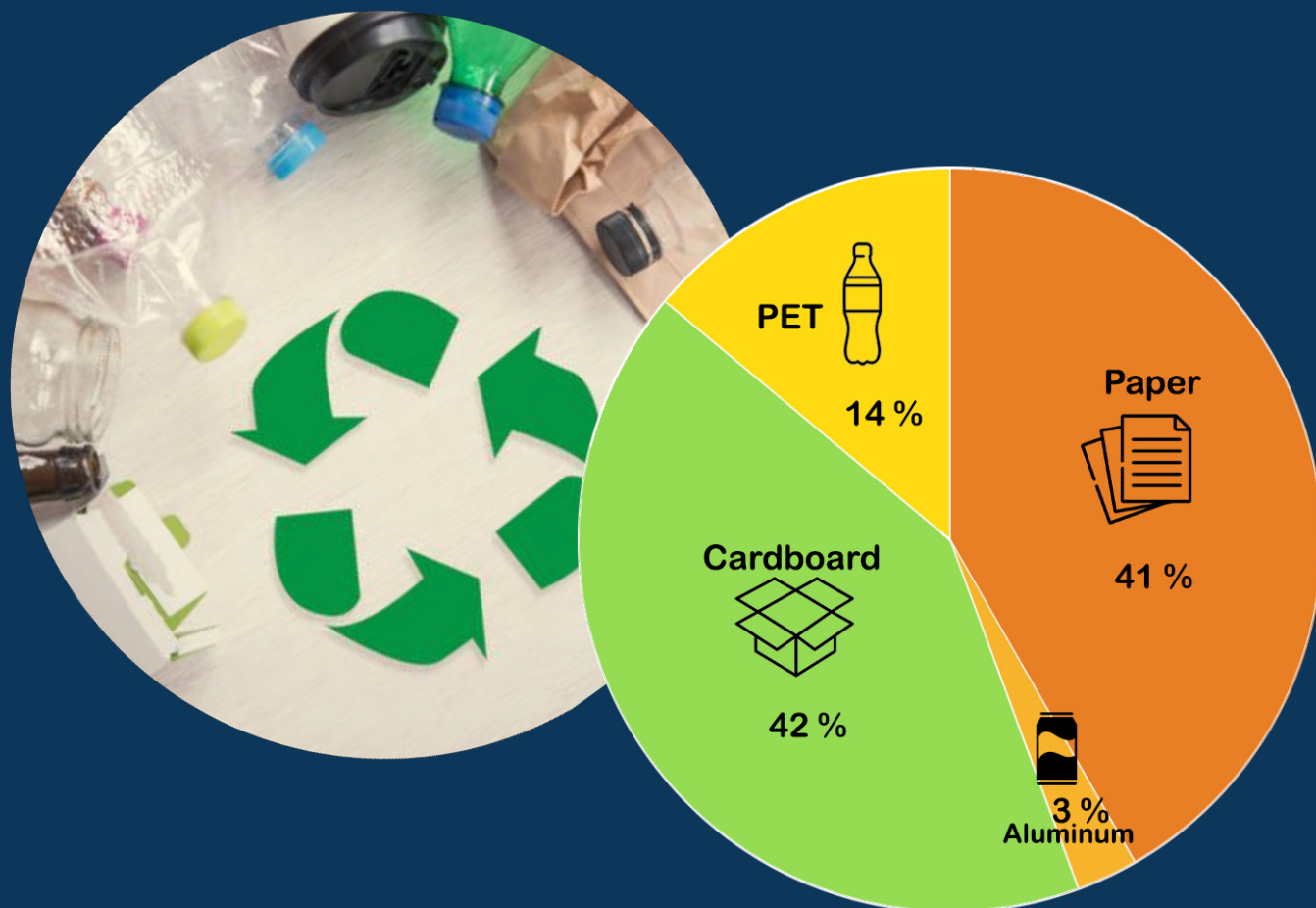
In order to maximize the use of MSW and prevent or reduce negative impacts on the environment, the UANL initiated in February 2013 the **Waste Separation and Recycling Program (PROSER)**. Currently, the program operates in the different UANL departments, where each one of them segregates recyclable waste (cardboard, paper, aluminum and PET) in containers intended for this purpose. The collection, recycling, and transformation of recyclable materials is supported by several local companies, which send this waste to third parties and/or incorporate it into their processes as raw material for making new products such as cardboard boxes, recycled paper, aluminum cans, and PET bottles. As a result, MSW with recyclable characteristics generated at UANL follows a circular economy model as established by the General Law of Circular Economy recently issued in our country. Once the recycling process is completed, a report is generated in which the environmental benefits obtained with the quantities of recycled material are reported.

Currently in the UANL **62 dependencies (41 academic dependencies and 21 central dependencies)** have a recycling program on a permanent basis and/or carry out collection campaigns of recyclable materials (paper, cardboard, aluminum and PET) on a systematic basis.



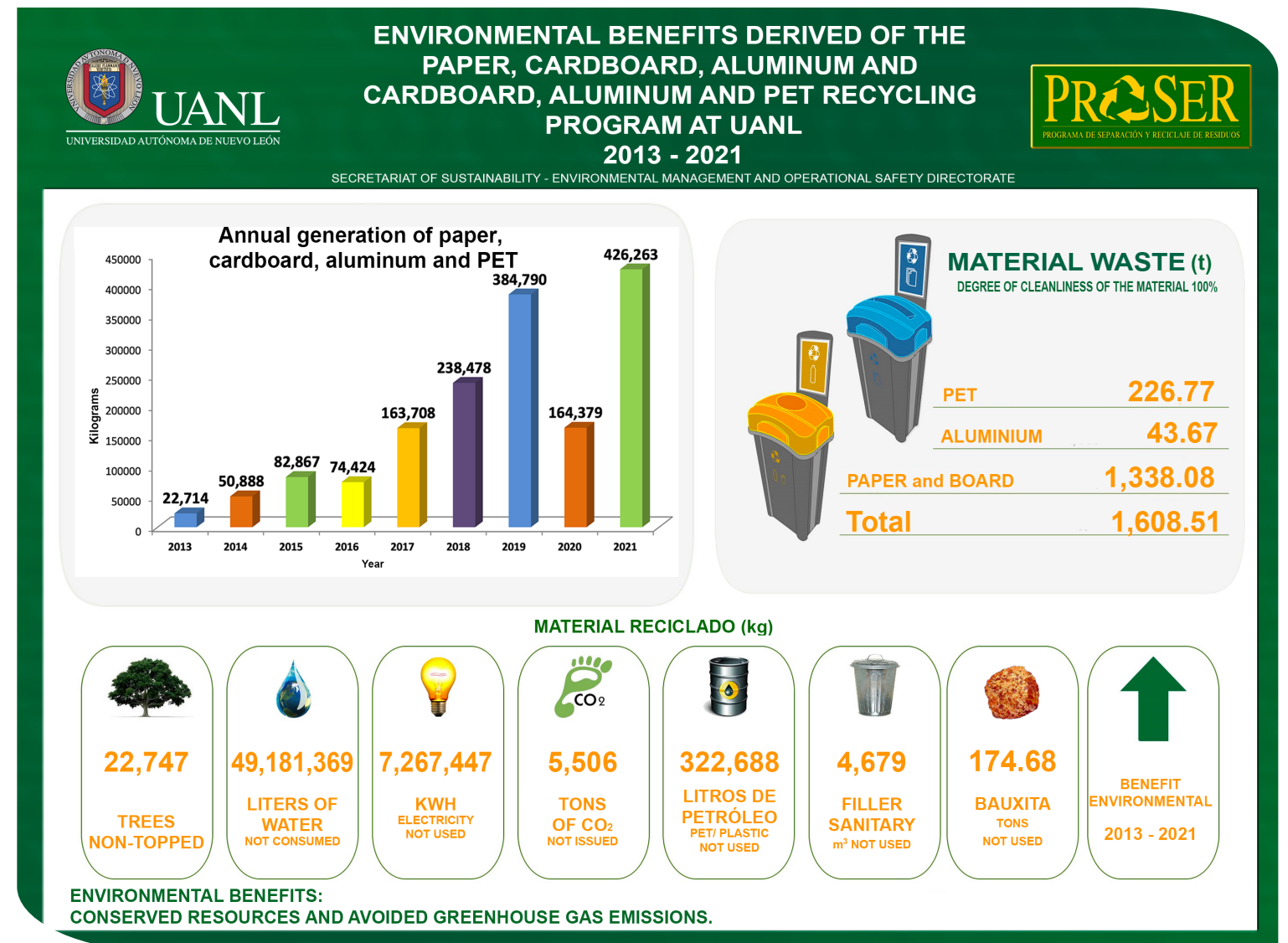


Characterization of recyclable material 2013-2021



Within the period February 2013 to December 2021, a total of **1,608.51 tons** of recyclable material was collected.

With the above, significant environmental benefits have been obtained, including energy savings of **7,267,447 kWh** and **49,181,639 L** of water, among other benefits as shown in the following graph:



Technical guidelines for waste handling and management

The UANL Secretariat for Sustainability, through the Directorate of Environmental Management and Operational Safety, formulated technical guidelines for:

- The handling and management of urban solid waste with recyclable and special handling characteristics.
- The handling and management of hazardous waste generated within the different university campuses, as well as the sustainability guide for workshops and laboratories.

These contain information for university departments on the correct management of waste generated within the different university campuses. In addition to the sustainability [guide for workshops and laboratories](#).

Consumables return and recycling program

During the year 2021, the campaign to collect empty toner cartridges from all university departments under the responsibility of the UANL General Store continued. In this campaign, **1,183.22 tons** of toner cartridges were collected and disposed of through the HP Planet Partners program. The empty toner cartridges are sent to HP's facilities in the United States of America and undergo a recycling process where they are transformed into raw materials that can be used to manufacture new plastic and metal products, such as cartridges. Through this program, 100 % of the original toner cartridges and 80 % of the original ink cartridges are made from recycled material, thus contributing to the circular economy model.



HP Inc. MÉXICO

Reconoce a:

UNIVERSIDAD AUTONOMA DE NUEVO LEÓN

Por su participación en HP Planet Partners, programa de devolución y reciclaje de Cartuchos de Tinta Originales HP y Cartuchos de Tóner Originales HP.

MX268428809Q

2056 Cartuchos de Tóner HP

403 Cartuchos de Tinta HP

88 Toner Samsung





Responsible Consumption

Responsible consumption is that which promotes a way of consuming goods and services that favors environmental conservation, social equality and the welfare of workers. This type of consumption is based on two premises: consume less and in a sustainable way.

The consumption of bottled beverages causes various health problems for the population, since in many cases they are sugary beverages that contribute to increase the rate of overweight and obesity, causing the emergence of cardiovascular diseases and diabetes, but also causes problems for the environment as they are one of the main causes of waste generation, especially plastics.

In order to replace the consumption of bottled beverages, the Universidad Autonoma de Nuevo Leon (UANL) created the Drinking Water Drinking Fountains Program, which in 2021 had 30 drinking fountains located on the campus of Ciudad Universitaria, although most of these remained inoperative, due to the low number of people on university campuses caused by the COVID-19 pandemic.



Drinking fountains installed per floor

- | | | |
|--|--|--|
| <p>1</p> <ul style="list-style-type: none"> • Provost Office Building • School of Architecture • School of Mechanical and Electrical Engineering • School of Civil Engineering 1 and 2. | <p>2</p> <ul style="list-style-type: none"> • Sports stadium Gaspar Mass 1 and 2 • Dressing rooms and football field • Athletics track and basketball court • Fast football soccer field. | <p>3</p> <ul style="list-style-type: none"> • C. Biological • C. Chemic, • Civil Engineering • Bank Afirme • Bookstore 1 y 2 • Metro 1, 2 y 3 • Accounting School • Todd Building 1, 2 and 3 • Water Park • Sunken Park • Chico Rivera Stadium 1, 2 and 3. |
|--|--|--|





“Drinking Water Drinking Fountains” Program

Economic benefits	Year		
	2019	2020	2021
Average L of water consumed annually	2,469,293	1,290,133	607,555
Number of bottles (500 ml) not consumed annually	4,938,586	2,580,266	1,215,110
Annual savings for to the users of the drinking fountains by not buying bottles (500 ml)	\$ 2,121,171.00 US Dollars*	\$ 1,108,250.00 US Dollars*	\$ 521,902.00 US Dollars*

*Considering the price of the 500 ml bottle at ¢ 0.429 US Dollars.

Environmental benefits	Year		
	2019	2020	2021
Water consumed (L) in drinking fountains at CU	2,469,293	1,290,133	607,555
Equivalence in bottles (500 ml)	4,938,586	2,580,266	1,215,110
Ton PET not used	26	31	15
Energy not consumed (kWh)	130,178	155,993	73,461
Water not consumed (L) (in the production of PET)	1,033,568	1,238,528	583,253
CO ₂ not issued (ton)	43.90	52.60	24.80
Unused landfill (m ³)	140	168	79
Oil saved (L)	36,769	44,061	20,750

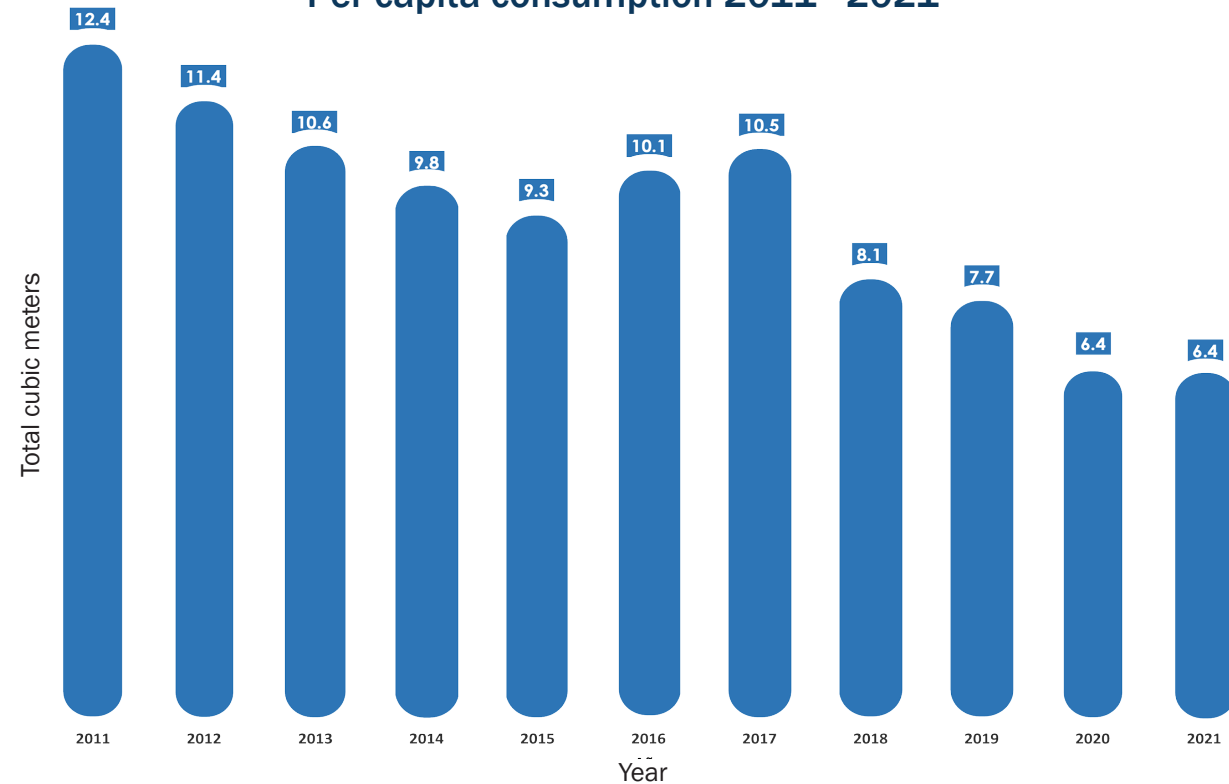
During 2021, the consumption of **1,215 million bottles of water was avoided**, generating savings to users of more than **505,306.00 US Dollars**.



Efficient use of water



Per capita consumption 2011 - 2021



Line of action	Actions
Policy design and application	Aimed at improving the facilities and equipment used to conduct and distribute water on university campuses.
Installation and / or replacement of equipment	Use of efficient water devices (drinking fountains, toilets, among others).
Implementation of permanent programs	Leak detection and control
Education and change of culture of water use	Awareness of the proper use of water by users



100 % of the green areas of the Ciudad Universitaria campus are irrigated with treated wastewater, generating significant economic savings because the price of wastewater is **82 %** lower than the price of drinking water.

“Zero Water Leaks” Program

Through the operation of the permanent “Zero Water Leaks” program, UANL performs early detection and correction of faults in the water conduction and distribution network. In addition, water consumption is monitored monthly in all university facilities, whose records feed a computerized database that allows detecting “unusual” water consumption in specific sites, which generates inspection visits to verify if there are failures in the operation of the distribution network or inappropriate use of this precious liquid, which allows taking actions to correct the problems detected.

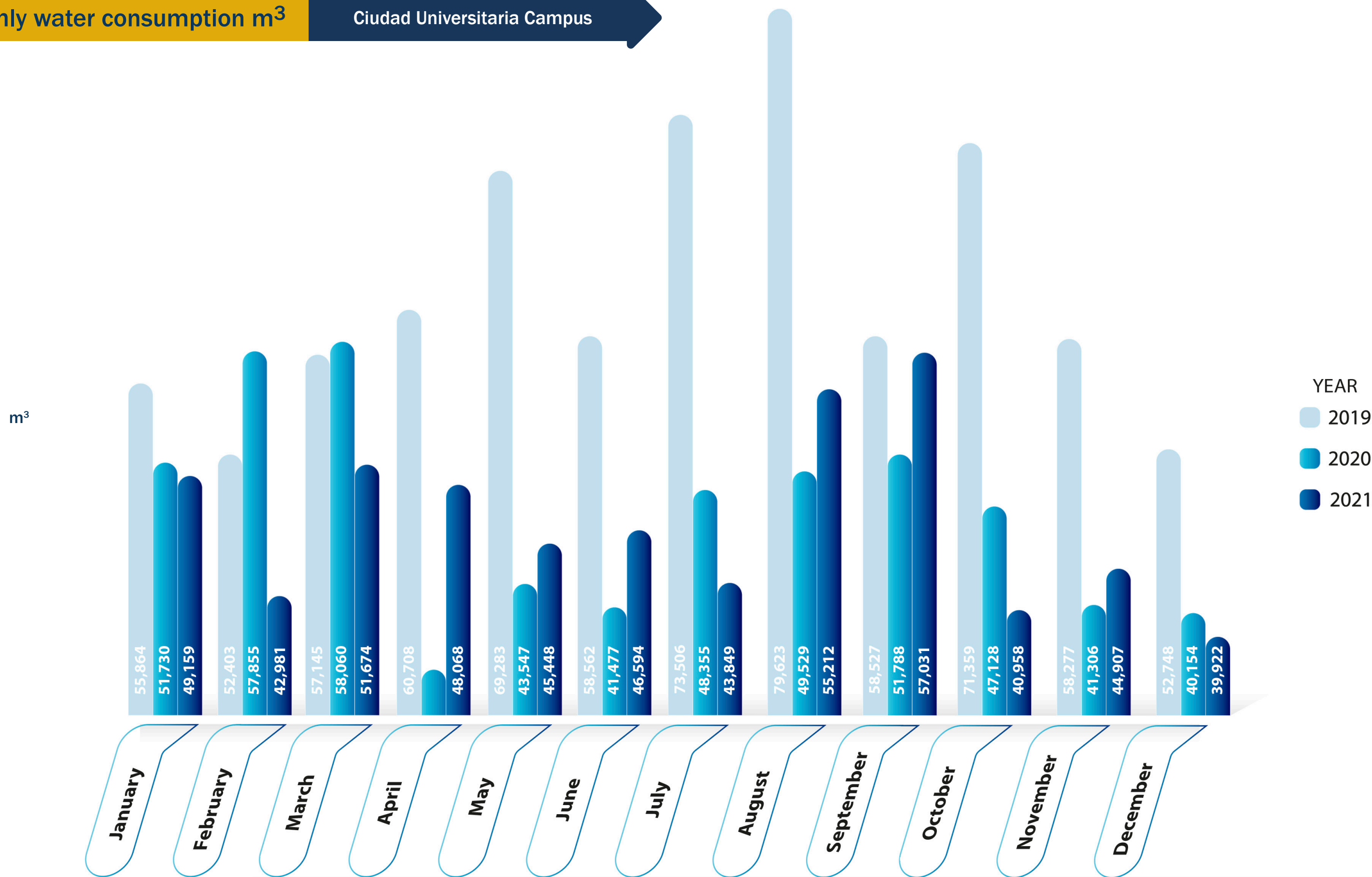
In 2021, a total of **1,406,636 m³** of water was consumed, which meant a decrease of **40,398 m³** with respect to the water consumption recorded in 2020.



This is equivalent to a **daily saving of 110,679 liters** of water throughout the year.

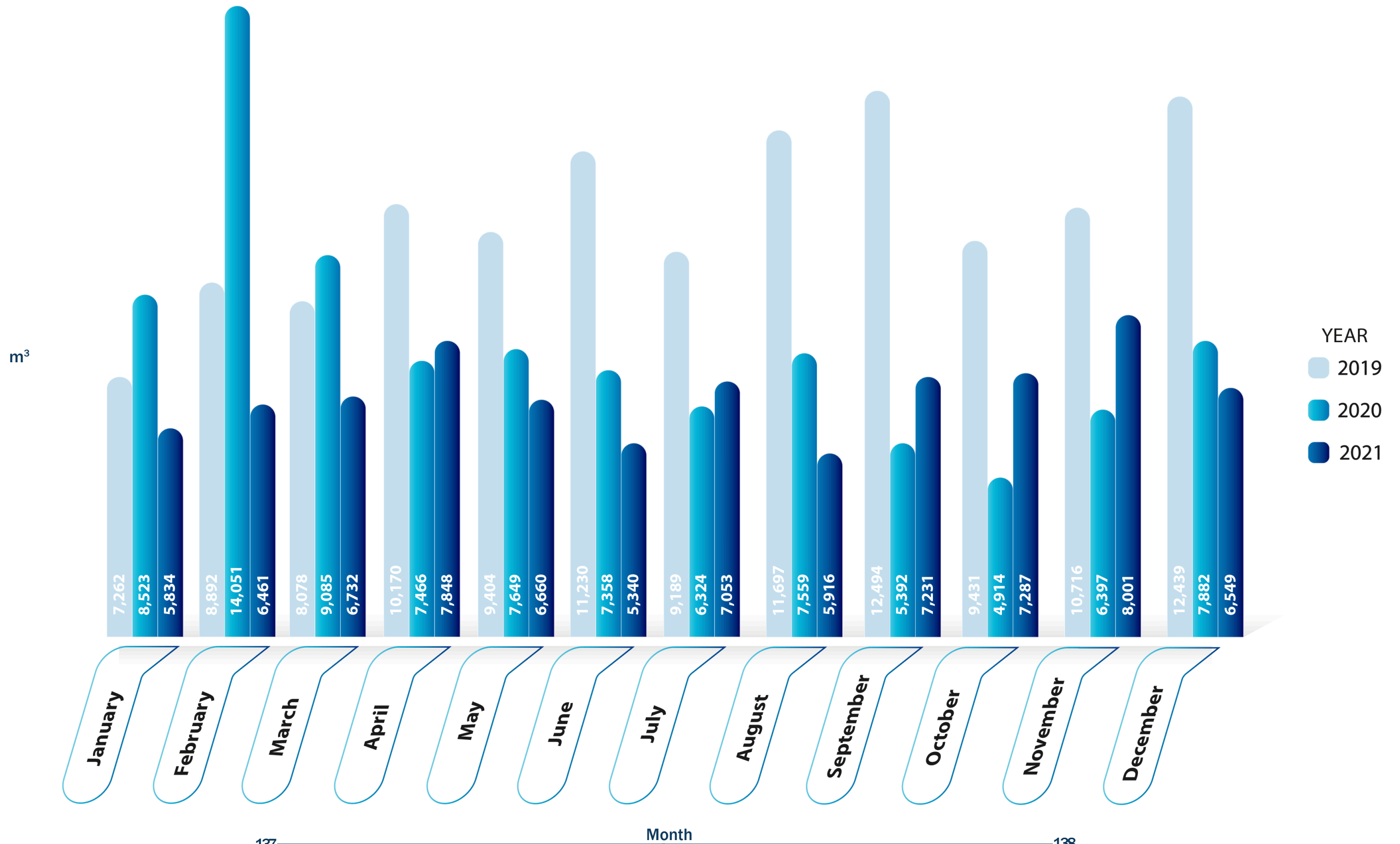
Monthly water consumption m³

Ciudad Universitaria Campus



Monthly water consumption m³

Mederos Campus

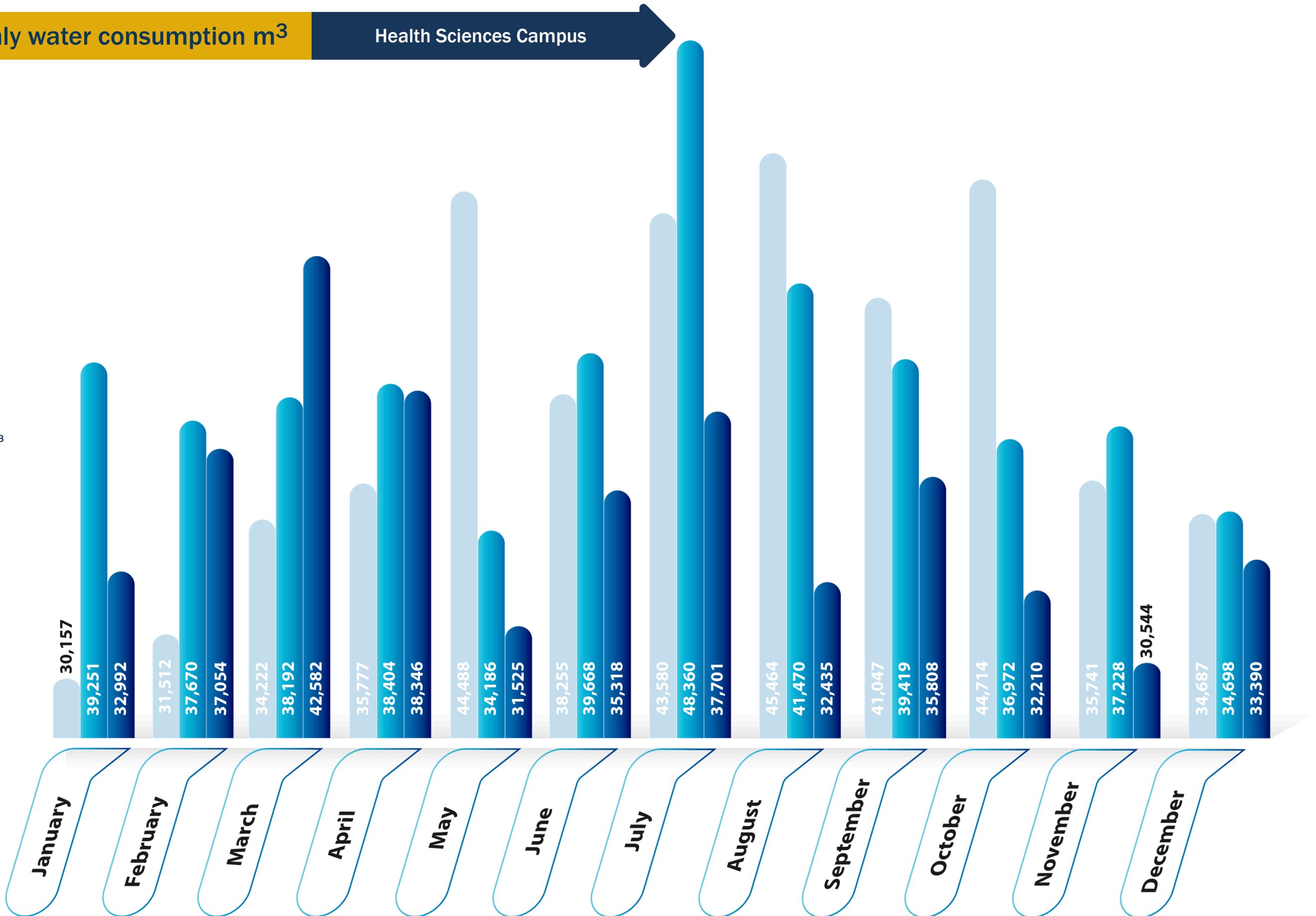


Monthly water consumption m³

Health Sciences Campus

m³

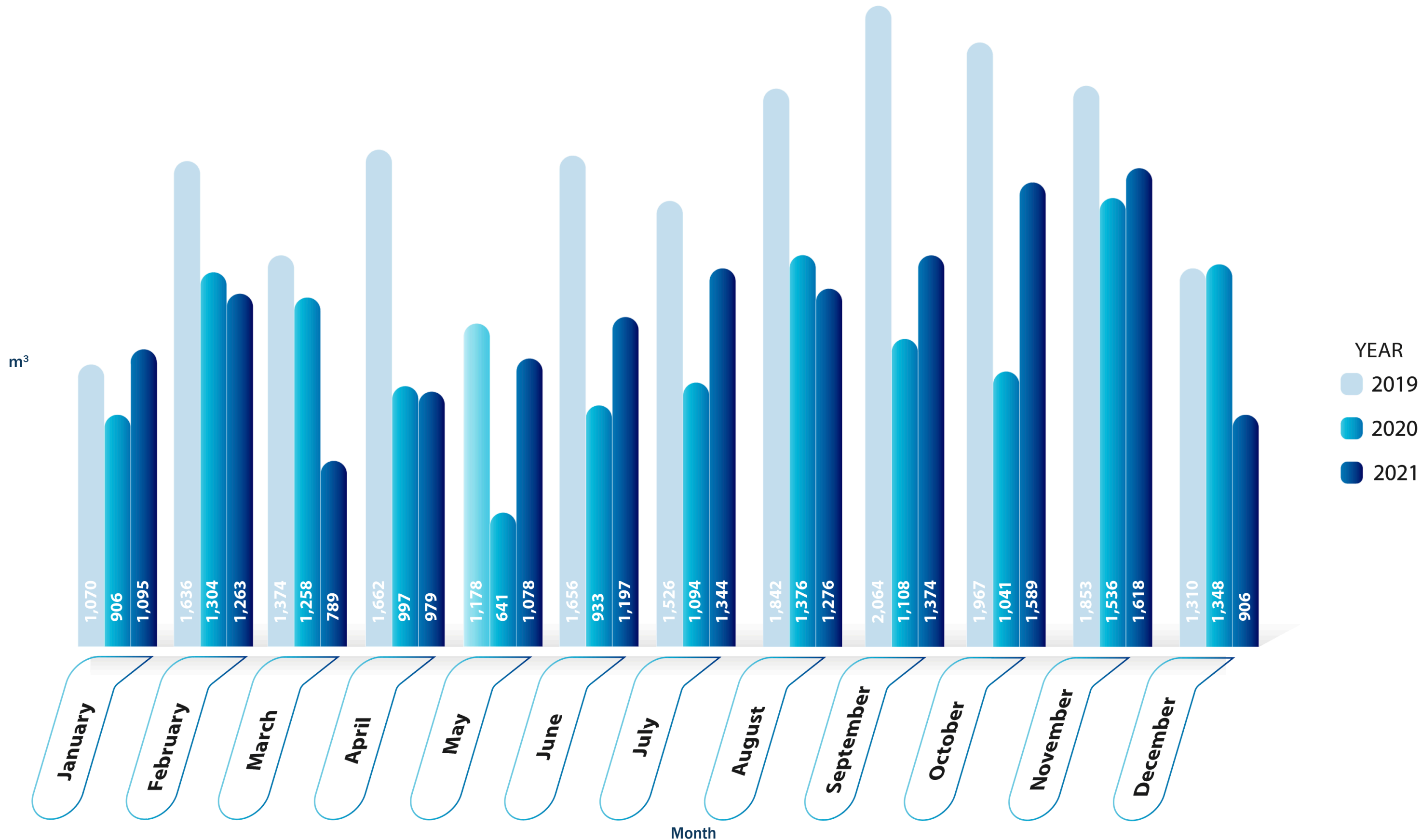
YEAR
 2019
 2020
 2021



Month

Monthly water consumption m³

Agricultural Sciences Campus



“Huella conCiencia” Program



In order to raise awareness among the UANL community about the sources of emissions and problems that cause the release of Greenhouse Gases (GHG), particularly carbon dioxide CO₂, the electronic survey “Know your CO₂ Footprint” was designed.

The questionnaire is available to all members of the university community through the SIASE system of the UANL, during the months of February to May each year and its purpose is:

- To know the personal carbon footprint and provide information to calculate the carbon footprint of the UANL.
- Design and implement mitigation strategies against the effects caused by climate change.
- Inform each university unit about the average energy consumption of its students and professors.
- Issue recommendations to members of the university community for efficient use of water and energy.

	Participants	
	Students	Professors
High School:	72,280	2,856
Faculty:	131,948	6,011

University departments that implement programs for efficient water use:

- High School 1 Apodaca
- Linares High School 4
- High School 6
- High School 12
- High School 13
- High School 16
- High School 21
- Industrial and Technical High School “Pablo Livas”.
- Medical Technical School and High School
- School of Biological Sciences
- School of Nursing
- School of Veterinary Medicine and Animal Husbandry
- School of Social Work and Human Development
- School of Visual Arts
- School of Earth Sciences





Sustainable Mobility

Sustainable mobility is a model of displacement characterized by low carbon consumption, contrary to traditional mobility systems which involve a high consumption of fossil fuels, which in turn provoke the release of high amounts of pollutants into the atmosphere.

This type of mobility not only offers great environmental benefits, but also promotes healthy lifestyles and contributes to improving the quality of urban areas and collective well-being.

Due to the significant growth that urban areas have experienced in the world in recent years, the mobility of people in urban spaces has increased, which is mainly done through the use of motor vehicles that use fossil fuels that are responsible for causing much of the air pollution, besides being a major source of noise in large cities globally.

Sustainable mobility contributes to mitigating the negative effects of traditional mobility; it is a healthy transportation model that allows people to move around in a safe, efficient, accessible and equitable manner.

On university campuses located in urban areas, large numbers of people are concentrated daily, performing academic or work activities, causing the concentration of large amounts of public and private transport, causing an increase in noise and environmental pollution, and congestion at the time of entry and exit of academic and work activities.



Sustainable Mobility Master Plan

In order to promote sustainable mobility on the campuses and departments that are part of the institutional structure of the Autonomous University of Nuevo Leon (UANL), the Sustainable Mobility Master Plan (PMMS) was formulated with the objective of reinforcing the principle of equity and ensuring that members of the university community move to and from campus using sustainable and efficient alternatives under a sustainable mobility scheme.

Through the PMMS, the UANL promotes the implementation of different sustainable mobility actions such as the following:

- Promote non-motorized movement of people on campus, through the construction and equipment of pedestrian corridors and bicycle lanes.
- Replacement of motor vehicles with electric vehicles.
- Implementation of strategies to improve connectivity between university campuses and population centers, using public transportation.
- Actions that promote the shared use of private automobiles or discourage their use.
- Strengthening of the free university public transportation system “TigreBus”.
- Installation of signage that promotes non-motorized travel on and around campus.
- Reduce parking areas through the operation of the CONECTA UANL program.
- Improve social integration, quality of life and productivity.



CONECTA UANL Phase I (Ciudad Universitaria)

This is the most important project of the PMMS and its objective is to promote sustainable mobility schemes in the campus of Ciudad Universitaria to guarantee road safety for pedestrians and cyclists, reduce travel times and promote the creation of public spaces that encourage coexistence, cultural expressions and recreation among university students.

Thanks to the implementation of CONECTA Phase I, the pedestrian areas in Ciudad Universitaria were increased by more than 16,700 m² including **3,327.28 meters** of tactile footprint and the construction of 26 access ramps at changes in level, in addition



The management of the campus parking lots and the planting of more than **1,100 trees** in common areas.



to the operation of **3.2 kilómetros**, bike path, accompanied by a program to improve pedestrian accessibility. 2 kilometers, accompanied by a public bicycle program, an integrated multimodal mobility system, the organization of public transportation concessions, improvements in the management of parking lots on campus and the planting of more than **1,100 trees** in common areas.

CONECTA UANL is not only a project, it is an institutional platform that proposes a paradigm shift in university mobility policy, which promotes the transformation of the current model, allowing humanizing and improving the quality of university spaces.



Ciudad Universitaria Campus	TigreBus	
	2020	2021
Number of daily trips	423	17
Total annual services	362,626	* 3,878
Savings to users (Considering a fee of ¢ 0.37 US Dollars applicable to students)	\$ 135,412.00 US Dollars	\$ 1,448.00 US Dollars

* For most of 2021, TigresBus service was suspended due to the pandemic caused by COVID-19.



TigreBus

Interconnection service between campus

Home campus	Destination campus	Schedule	Total runs
Ciudad Universitaria Campus	Agricultural Sciences Campus	06:15	1
Ciudad Universitaria Campus	Health Sciences Campus	06:15	1
Ciudad Universitaria Campus	Mederos Campus	06:15	3
		11:00	2
		16:00	1
Mederos Campus	Ciudad Universitaria Campus	13:00	2
		18:00	2
		21:15	3
Agricultural Sciences Campus	Ciudad Universitaria Campus	20:30	1
Health Sciences Campus	Ciudad Universitaria Campus	21:15	1
Total			17

Type of vehicle	Institutional Vehicle Park		
	Central office	Faculties	Total de units
Cars	13	44	57
Trucks	86	203	289
Motorcycles	8	6	14
Buses	1	11	12
Loading trucks	9	13	22
Electrical cars	2	1	3
Total			397



Sustainable Mobility Campus Mederos

Sustainable mobility is currently referred to as a way of moving in a responsible manner, avoiding as much as possible the emission of pollutants, and protecting the integrity of pedestrians.



It is estimated that the Mederos Campus receives daily traffic:



95 % are students

+ More than 17,694 people:



5 % corresponds to teaching and administrative staff

Pedestrian walkways

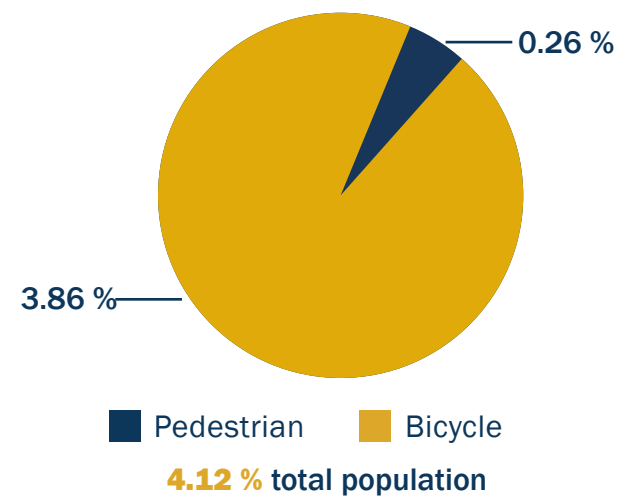
Pedestrian walkways are those spaces intended for the free transit of pedestrians; according to the level of user flow, number of incidents and length, the walkways are classified as **main** and **secondary**.

Within the Mederos Campus, main and secondary pedestrian walkways and paths were identified.



Non-motorized Mobility

Non-motorized mobility in Mederos Campus.



Non-motorized mobility is defined as the displacements or modes of transportation carried out exclusively by our own body, that is to say, that, to carry it out, does not require a motor.

The data obtained from the population that uses this means of mobility indicate that **4.12 %** of the total population that goes daily to the Mederos Campus, does so by non-motorized means of mobility; when this percentage is disaggregated, **3.86 %** moves in a pedestrian manner, while **0.26 %** does so through the use of bicycles.

Source: Directorate of Planning and Management of University Spaces and Buildings, 2018.

Conecta UANL



Since 2017, in order to encourage non-motorized mobility trips and thus contribute to urban sustainability, the UANL has been implementing the CONECTA UANL project.

For the case of the Mederos Campus the CONECTA UANL program is in a phase of Diagnosis, Documentation and elaboration of Intervention Projects; It has been identified that the transfer of the student population is done mainly by public transport, and the percentage of population that moves in a pedestrian and bicycle way is low, with the implementation of CONECTA UANL it is achieved to modify the modal split, a necessary condition and that requires the generation of appropriate conditions to promote it.



Motorized Mobility

Motorized mobility is that which is necessarily produced by a means of transportation that requires a motor for its displacement.

The data obtained from the modal distribution on the Mederos Campus indicate that **25.49%** of the population that enters the campus uses its own vehicle to get to the campus, while **61.94%** uses public transportation. Some **5.46%** use the Tigrebus route from the Ciudad Universitaria Campus to travel to the Mederos Campus

Type of mobility used by the population to get to Mederos Campus

Mobility	Students
Non-motorized means (pedestrian and bicycle)	4.12%
Public Transportation	61.94%
Vehicle	27.38%
TigreBus	5.46%
Other means	0.58%
Total	100%

Source: Directorate of Planning and Management of University Spaces and Buildings, 2018.

The university population that uses public transportation systems mainly uses urban bus lines (61.19%) and rented vehicles (2.29%). A small group uses the Metrorrey System (0.75%). While 0.19% opt for the use of motorcycles.

Mobility by motorized means in Mederos Campus

Motorized mobility	Total
Urban bus lines	61.19 %
Metrorrey Mass Transit System	0.75 %
Rental cars (cabs, Ubr, DiDi, Cabify, Beat, etc.)	2.29 %
Automobile	25.49 %
Motorcycle	0.19 %
TigreBus	5.46 %
Total	95.37 %

Source: Directorate of Planning and Management of University Spaces and Buildings, 2018.



Public Transportation

In the specific case of public transportation, there are **17 routes** that provide service around the Mederos Campus.

The urban truck routes that currently circulate along Eugenio Garza Sada, Lazaro Cardenas and Paseo del Acueducto Avenues are as follows:

Public transportation routes

- R-405 Félix U. Gómez Station - Estanzuela.
- R-301 Revolucion - Mercado Juárez - Civic Tower.
- R-203 Santa Catarina - Punta de la Loma
- R-97 Satélite
- R-27 Valle Verde - Punta de la Loma
- R-206 San Bernabé - Punta de la Loma
- R-5 Estanzuela
- R-5 Estanzuela - Cristales
- R-112 República
- R-114 Burócratas
- R-115 Sierra Ventana
- R-209 Escobedo - Punta de la Loma - Bosques
- R-209 Escobedo - Punta de la Loma - Renacimiento - Olivos
- R-350 El Barro - Félix U. Gómez
- R-300 El Barro - Mederos
- R-Transportes Azules y Amarillos General Terán - Monterrey - Central
- R-Álamo Santiago - Monterrey - Central

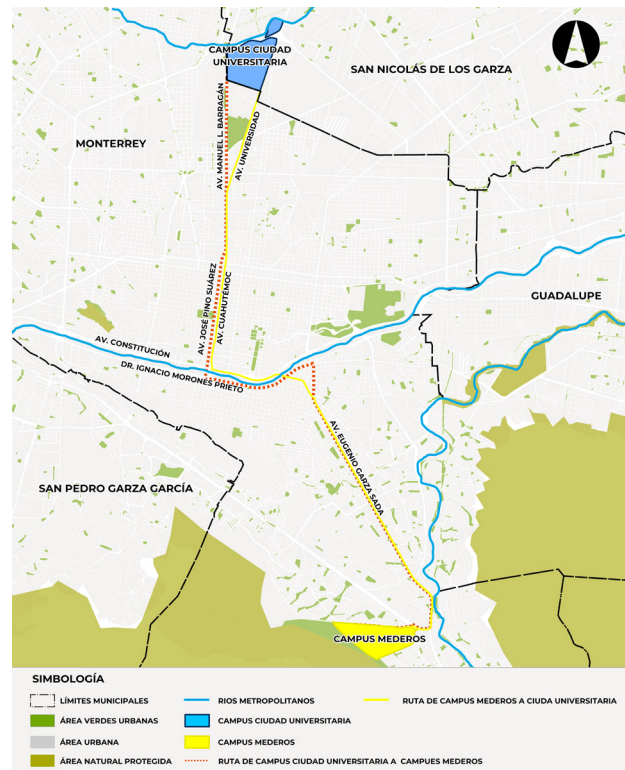
Source: Directorate of Planning and Management of University Spaces and Buildings, 2018.

In addition to public transportation routes that arrive and travel around Campus Mederos, there is a connection with the Metrorrey Collective Transportation System (Sistema de Transporte Colectivo Metrorrey). Route 405 Félix U Gómez - Estanzuela, which starts its route at the metro station with the same name and makes a stop at Walmart Las Torres.



TigreBus

In the case of Campus Mederos, internal routes run every 15 minutes, starting at the School of Communication Sciences and connecting externally with Walmart Las Torres.



To facilitate student mobility, in the morning, at around 6:15 a.m., Tigrebus routes depart from Ciudad Universitaria to Campus Mederos and two other routes are made, at around 11:00 a.m. and 4:00 p.m. There are also Tigrebus routes from Campus Mederos in the afternoon.



Promotion of sustainable mobility

This program includes proposed projects whose priority is the safe transit of pedestrians and users on **bicycles, scooters and non-motorized vehicles**, adhering to the guidelines of the inverted pyramid of mobility and in line with global, national, state and local guidelines for sustainable mobility.



Safe Crossings

Safe crosswalks consist of at-grade crosswalks with pavement markings that delimit priority pedestrian crossings. The Mederos campus lacks safe crossings; therefore, the implementation of **19 safe crossings is proposed.**



Ascent and descent bays

These are spaces designated on the sides of vehicular roads for the safe boarding and alighting of passengers to and from public and private transportation units. The Mederos campus lacks loading and unloading bays; therefore, the implementation of **3 bays is proposed.**



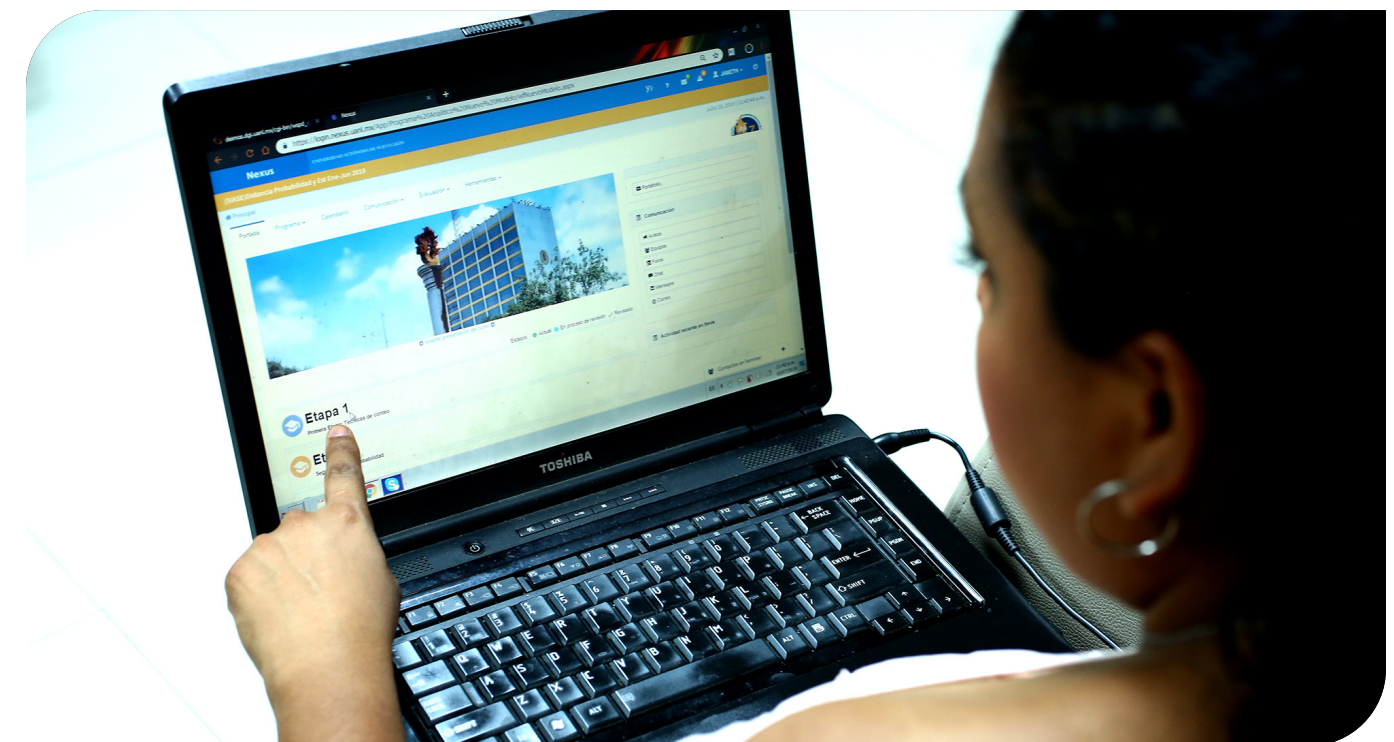


Digital strategy

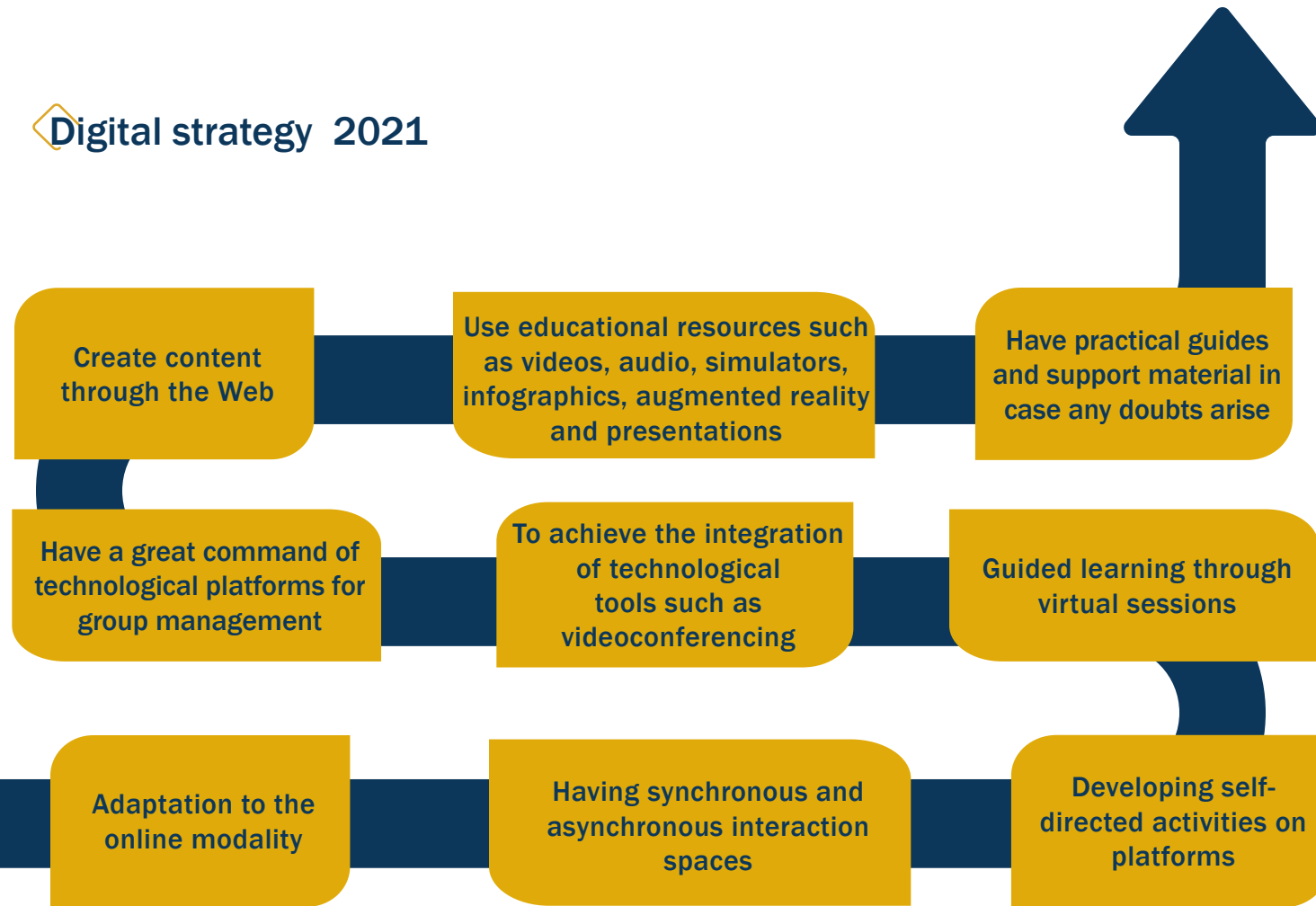


In 2021 the Universidad Autonoma de Nuevo Leon implemented a safe and gradual return to classes using the digital strategy as its main ally, which was implemented due to the pandemic caused by COVID-19, in order to give continuity to the academic activities of the educational programs at the High School, Undergraduate and Graduate levels.

In accordance with the provisions made by the Special Commission for the Prevention and Attention of COVID-19, during the second semester of 2021 a gradual resumption of academic activities in face-to-face mode was carried out, however, most academic activities continued to be carried out online due to the prevalence of the health contingency.



Digital strategy 2021



Source: UANL Science Magazine

In 2021, educational services were provided to 215,000 students and more than 7,000 professors, for which a total of 166,500 virtual classrooms were enabled through Microsoft Teams.

In addition, various digital educational resources were shared to support academic activity.

Administrative activities throughout the year were carried out in face-to-face mode following the protocol for safe return. In the academic field, classrooms and laboratories were set up to give way to a hybrid classroom model where 30 percent of the class would attend in person and the rest would participate virtually.

The students followed the Israeli 4-10 model, in which, after attending a class, they must wait between 4 and 10 days of quarantine to return.

The spaces were equipped with cameras, surround sound systems, high-speed Internet, omnidirectional microphones and interactive whiteboard, projector, central computer, among other technological equipment.



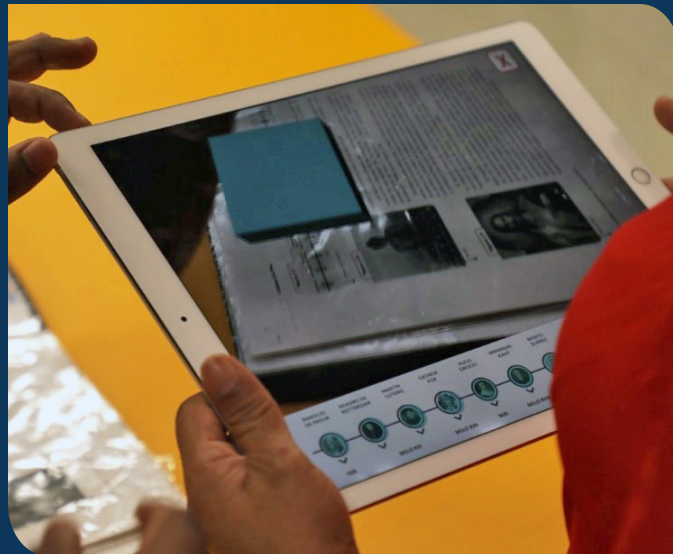
The fiber optic and interoperability and scalability improvement service was carried out to improve the operation of the current network and the operation of the Data Center, in order to obtain the ICREA Certification.



Fitting out venues for the digital strategy

School of Mechanical and Electrical Engineering	Opening of the Digital Production and Animation Center	3-D content production and digital animations
School of Mechanical and Electrical Engineering	Hybrid classrooms	Fully operational and ready to conduct classes in hybrid mode
School of Law and Criminology	Hybrid classrooms	Fully operational and ready to conduct classes in hybrid mode
School of Chemistry	Hybrid laboratories pilot plan	Internships in Analytical Instrumentation, Analytical Chemistry, Organic and Inorganic Chemistry laboratories.
High School 16	Hybrid classrooms	Fully operational and ready to conduct classes in hybrid mode

Source: Report of activities carried out at UANL for the year 2021.



Conditions that allowed the August-December 2021 semester to be carried out in hybrid modality guided by a flexible approach that was organized as follows:

- Combination of strategies, methods, resources and best practices of online and face-to-face modalities.
- Flexibility and adaptability to the specific needs of students and the requirements of each educational program.
- Incorporates virtual classroom sessions through institutional platforms and face-to-face practices that are considered essential for each educational program.
- Teacher Training Program.



Digital educational resources to support academic activity:

- 101 videos on YouTube with 928,343 thousand views
- 40 digital academic events
- 16 Webinar Series
- 20 eventos en el marco de UANL IT Summit
- 12 more events as part of the first anniversary of the Digital Strategy
- Which add up to a total of 47 thousand participants.



Source: Report of activities developed at UANL corresponding to the year 2021.





Education and research

The university is an ideal educational space for the formation of agents committed to sustainability, so incorporating this paradigm in the teaching, learning and research processes is one of the fundamental tasks to respond to the social, environmental and economic needs we are currently facing.

Sustainability has a direct impact on the roles played by each of the educational actors, an aspect that the Universidad Autonoma de Nuevo Leon recognizes and has taken the necessary measures and actions that allow it to be at the forefront of education, ranging from educational offerings, sustainability in the university curriculum, academia, events, publications, digital education, student participation, research and innovation, among others. This allows it to go beyond theory, putting sustainability into practice to achieve the integration of a sustainable campus whose central axis is learning.

The incorporation of sustainability in the institutional policies of the UANL has been one of the key actions to achieve academic sustainability in such a way that in order to provide a comprehensive education to its students, the Institutional Development Plan 2022-2030 establishes the guiding axis on institutional development and sustainability whose objectives are focused on the university community to adopt sustainability through the incorporation of the Sustainable Development Goals in the formation of its students through formal and non-formal education. This shows the commitment of the Maximum House of Studies to continue working for education for sustainability in the university environment.





Recently, the UANL reiterated its commitment to sustainability by incorporating in its Institutional Development Plan 2022-2030 a guiding axis on institutional development and sustainability, with the objective of making sustainability work as a transversal axis in all its activities, in addition to incorporating the Sustainable Development Goals, promoted by the United Nations, in the training of its students through the implementation of formal and non-formal education actions, calling all members of the university community to join the process of change towards sustainability, through which the institution and the society around us are currently going through.



During the year 2021, the actions carried out by the UANL to continue incorporating sustainability in its teaching-learning model were affected by various circumstances derived from the pandemic caused by COVID-19; however, thanks to the great institutional effort that was carried out in terms of updating the Information and Communication Technologies, it was possible to give continuity to the primary functions that the Maximum House of Studies of the State of Nuevo Leon performs daily, in favor of its student community and society.



University Academy for Sustainable Development

The academic staff that is part of the Higher Education Institutions is the main inductor agent of sustainability in the integral formation of students.

Due to this situation, the Sustainability Secretariat of the Universidad Autonoma de Nuevo Leon (UANL), through the Project Development Department, promoted the creation of the University Academy for Sustainable Development (AUDS), a space formed by professors from different areas of knowledge and academic departments of the UANL, where the exchange of learning and teaching experiences that promote the



incorporation of the principles, values and tasks of sustainability in educational processes is encouraged.

In the year 2021, the AUDS was formed by 120 specialists from different disciplines, who carried out various actions to promote the updating of formal and non-formal education activities provided by the UANL to its students, incorporating sustainability criteria.

In 2021 the number of activities decreased due to the suspension of face-to-face activities caused by the COVID-19 pandemic.



AUDS activities in the 2021

46 academic events broadcast through various digital platforms, due to the sanitary restrictions imposed by the COVID-19 pandemic

More than 3 thousand participants

Participation of 64 national and international experts

Academic programs addressing sustainability issues

In 2021, the UANL offered 23 undergraduate and 80 graduate degrees related to sustainability issues.

Undergraduate:

- Energy Management and Sustainable Development
- Biology
- Biotechnology Genomics
- Food Science
- Social Responsibility Management
- Veterinary Medicine and Animal Science
- Nutrition
- Bacteriological and Parasitological Chemistry
- Pharmaceutical Chemistry and Biology
- Social Work and Human Development



Engineering programs:

- Agronomy
- Agribusiness
- Environmental
- Biomedical
- Biotechnology
- Civil
- Forestry
- Geophysicist
- Geologist
- Geologist Mineralogist
- Food Industries
- Natural Resources Management
- Petroleum

Masters degree:

- International Management Speciality in Sustainable Business
- Animal Science
 - Food
 - Urban Affairs
 - Molecular Biology and Genetic Engineering
 - Medical Entomology
 - Environmental Engineering
 - Biosystems Engineering
 - Food Industry Engineering
 - Immunobiology
 - Wildlife Management and Sustainable Development
- Science with Orientation in:
 - Plant Resource Management and Administration
 - Microbiology
 - Applied Microbiology
 - Medical Microbiology
 - Nutrition and Food Technology for Aquatic Organisms
 - Sustainable Processes
 - Biomedical Chemistry
 - Chemistry of Natural Products
 - Environmental Chemistry and Technology
 - Social Work

- Engineering Sciences Speciality in Thermal and Renewable Energies
- Engineering Sciences Speciality in Nanotechnology
- Engineering Sciences Speciality in Energy Technology
- Social Sciences with a focus on Sustainable Development
- Sciences in Nutrition
- Agricultural Production Sciences
- Public Health Sciences
- Forestry Sciences
- Geological Sciences
- Conservation, Wildlife and Sustainability
- Law Speciality in Constitutional Law and Governance
- Master's Degree in Constitutional Law with orientation in Human Rights
- Energy Law and Sustainability
- Human Rights
- Medical and Veterinary Entomology
- Gender in Public Policy
- Hydrogeology
- Engineering with Orientation in Environmental Engineering
- Engineering with Orientation in Traffic and Roadway Engineering
- Management and Integral Use of Biotic Resources
- Regulation with Orientation in Energy
- Regulation with Orientation in Regulatory Improvement
- Ecological Restoration
- Psychology with Orientation in Gender Violence
- Social Work oriented Social Projects



Doctorate:

- Agricultural Science
- Animal Science
 - Food
 - Molecular Biology and Genetic Engineering
 - Biotechnology
 - Medical Entomology
 - Pharmacology and Toxicology
 - Immunobiology
 - Natural Resource Management
 - Wildlife Management and Sustainable Development
- Science with Orientation in Plant Resource Management and Administration
- Science with Orientation in Microbiology
- Science with Orientation in Applied Microbiology
- Science with Orientation in Nutrition and Food Technology for Aquatic Organisms
- Science with Orientation in Sustainable Processes
- Science with Orientation in Biomedical Chemistry
- Science with Orientation in Materials Chemistry
- Science with Orientation in Chemistry of Natural Products
- Science with Orientation in Environmental Chemistry and Technology
- Earth Sciences
- Social Sciences with Orientation in Sustainable Development
- Conservation, Wildlife and Sustainability
- Law with Orientation in Constitutional Law and Governance
- Philosophy with a Speciality in Architecture and Urban Affairs
- Engineering with a Speciality in Environmental Engineering
- Management and Integral Use of Biotic Resources
- Medicine
- Social Work with a focus on Social Projects



Speciality in:

- Conservation, Wildlife and Sustainability
- Medical and Veterinary Entomology
- Epidemiology
- Integral Management and Use of Biotic Resources
- Sustainability of Petroleum Processes



Diagnosis on the incorporation of sustainability in the UANL academic programs.



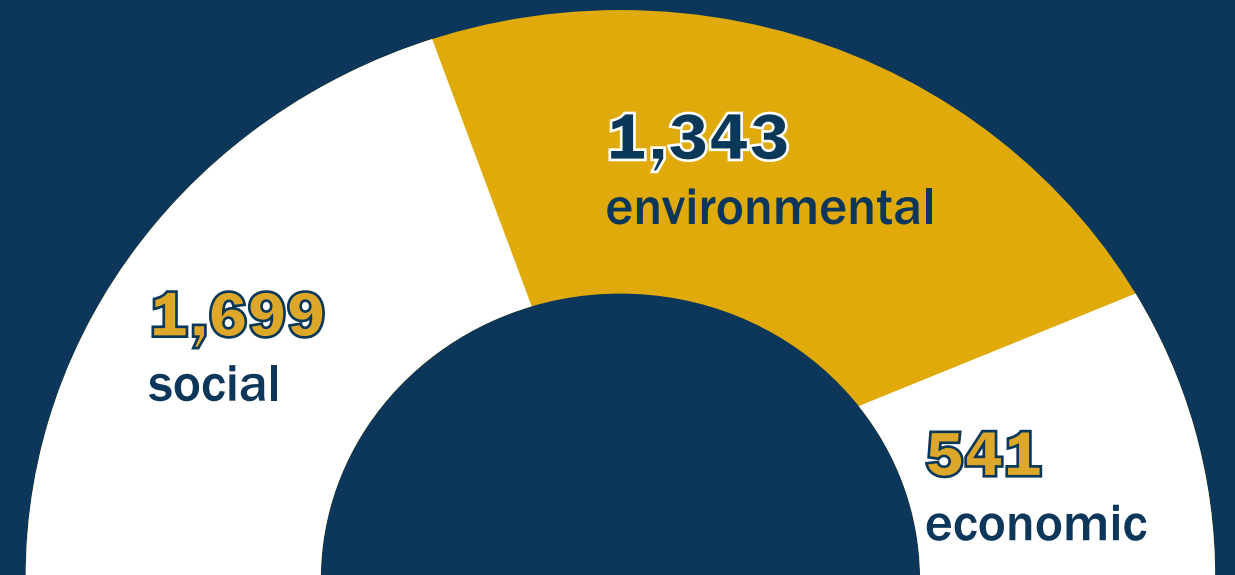
composed of **84 undergraduate degrees** in which they were taught with a total of **7,575 Learning Units (LU)** were taught.

In the year **2021**

the **26 faculties** that are part of the Universidad Autónoma de Nuevo León offered an academic offer

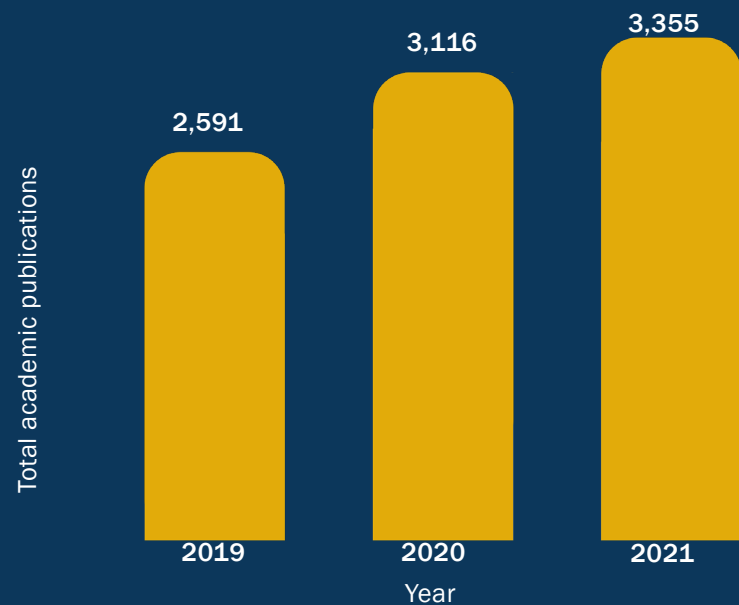


of which **3,583** are linked to sustainability issues:

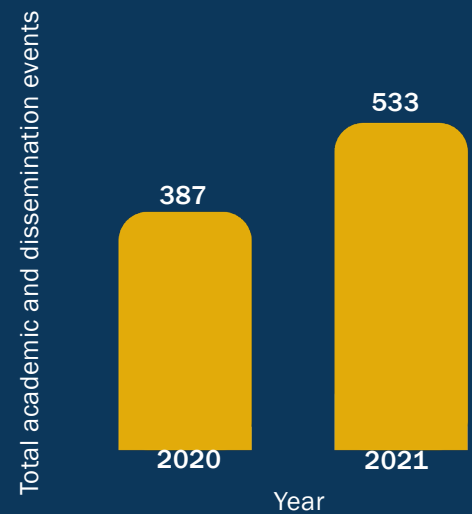


Research and scientific dissemination and sustainability research

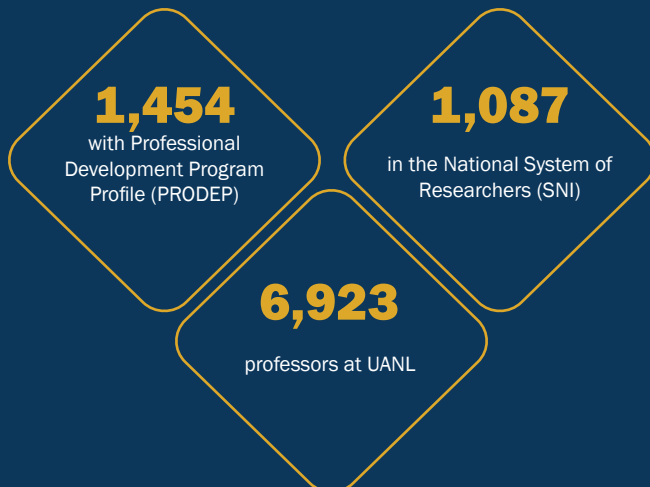
Dissemination academic publications related to sustainability



Academic and outreach events related to sustainability



Recognition of Academic Staff



Digital Education Program

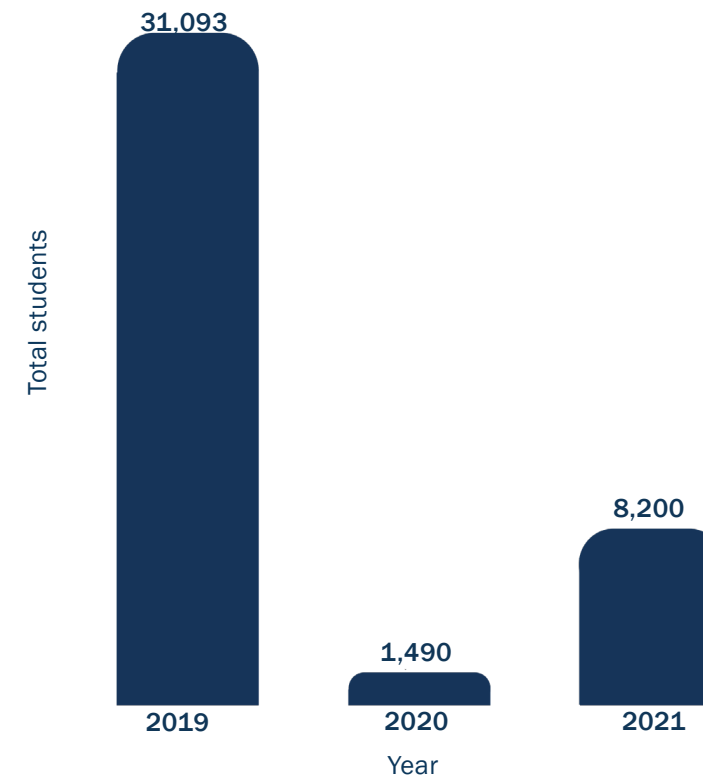
The Digital Education (DE) program at UANL promotes the incorporation of Information, Communication, Knowledge and Digital Learning Technologies (TICCAD) in the teaching and learning processes, in such a way that it transforms educational practices such as the use of space and technology, synchronous and asynchronous work, among others, which favors the development of digital competencies.

Due to the pandemic caused by COVID-19, digital education played a key role in providing continuity to the educational process in a context where there were restrictions on

mobility, in addition to generating various social benefits such as the expansion of school supply, especially in vulnerable social sectors, and other benefits such as environmental ones, through the reduction of Greenhouse Gas (GHG) emissions, due to the limited use of fossil fuels in the transfer of people to university campuses.

In 2021, through the UANL DE program, the emission of **2,486,063 kg of CO₂ equivalent** was avoided, due to the fact that **8,200 students** from 16 faculties participated in educational programs in distance modalities.

Students enrolled in digital education programs (non-formal mode)



*In 2021, enrollment in non-school enrollment showed an improvement compared to 2020, due to the partial reactivation of distance education systems during the year.

Due to the impossibility of carrying out academic activities in person due to the COVID-19 pandemic, in 2021 the Universidad Autónoma de Nuevo León (UANL) continued its educational services in the school-based modality through the Digital Strategy, enabling **75,136 groups in the online modality**, benefiting 382,298 students.

Students and groups enrolled in degree programs provided through the Digital Strategy

Digital education programs at the undergraduate level by educational modality 2021				
	February - June		August - December	
	Students	Groups	Students	Groups
Non-school-based modality	732	35	808	48
Mixed mode	115	6	124	7
School-based modality (Digital strategy)	124,471	22,458	130,051	25,368

Source: Directorate of Digital Education.

Students and groups enrolled in postgraduate programs offered through the Digital Strategy

Programas de educación digital a nivel posgrado por modalidad educativa 2021				
	February - June		August - December	
	Students	Groups	Students	Groups
Non-school-based modality	338	61	386	65
School-based modality (Digital strategy)	4,052	495	4,454	578

Source: Directorate of Digital Education.

In 2021 the UANL provided online educational services to **382,298** students.

Educational platforms used at UANL

VIRTUANL

Online learning system that allows students to choose between different modalities during their university career, combining in the same semester face-to-face, blended or online learning units, according to their needs and preferences.



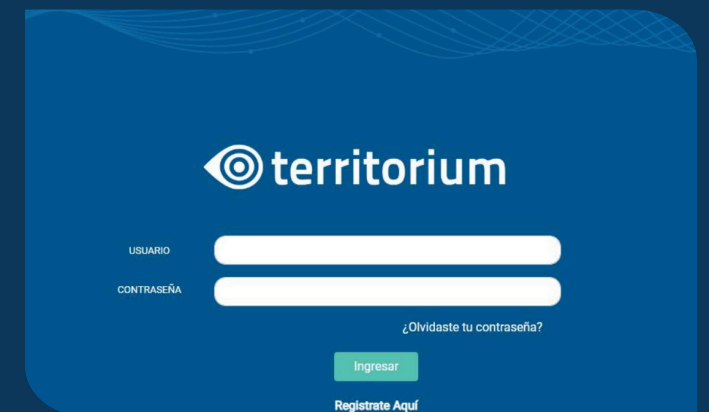
Sistema de administración de bibliotecas para la gestión y el desarrollo de catálogos.

CÓDICE

Electronic catalog of libraries integrated by 68 UANL agencies.

TERRITORIUM

It is a collaborative platform for education, designed by educators and developers that allows students to progress in various skills, it can be considered a private social network for learning, for its ease of use.



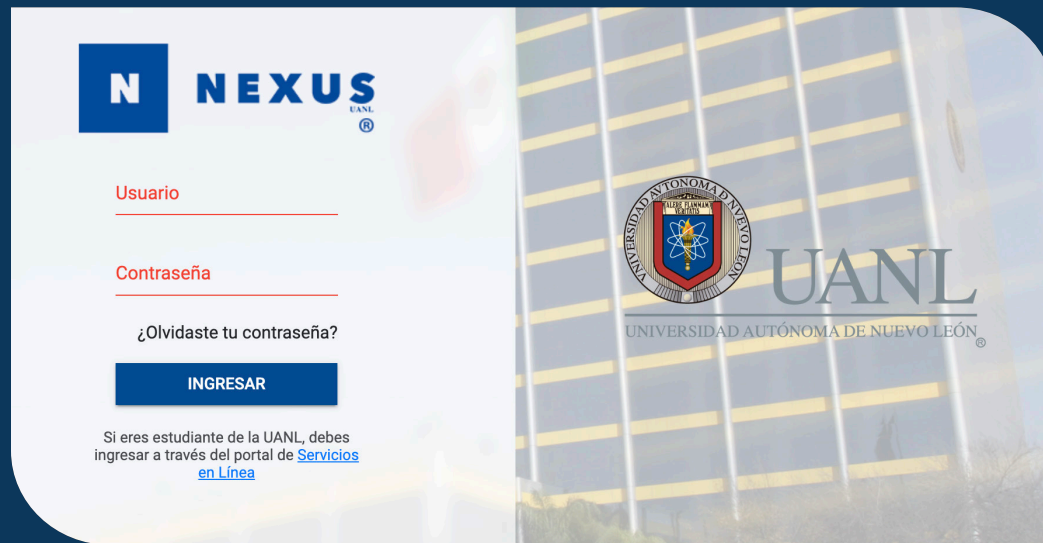
MOODLE

It is a platform that allows the creation and management of online learning and teaching spaces adapted to the needs of teachers, students and administrators.

Educational platforms used at UANL

NEXUS

Institutional virtual platform that facilitates collaboration between students and teachers in the teaching and learning process in face-to-face, distance and blended modalities.



SIASE

Supports and optimizes the administration processes of the departments in the educational institutions such as School, Human Resources, Finance, among others, to obtain information in a timely and reliable way for decision making.



Sistema Integral de Administración de Servicios Educativos





Innovation and entrepreneurship for sustainability



With its mission to promote the development of innovative solutions that improve the level of human development, Universidad Autonoma de Nuevo Leon (UANL) through its Department of Innovation and Entrepreneurship, six finalist projects proposed by students, academic and administrative staff were selected in the year 2021 through the Tiger Tank program, which supports high-impact ventures that have the condition to influence the fulfillment of at least one of the Sustainable Development Goals of the United Nations.



TIGER TANK 2021 Finalists

In the 4th edition of the Tiger Tank program there were 6 finalist projects and 3 winners, which are:

Project 1: EVA PERIODS

- School:
- School of Physical and Mathematical Sciences
 - Faculty of Medicine
 - Faculty of Psychology

Details:
The first 100% Mexican menstrual cup, helping the environment by eliminating plastic.

Project 2: AGACEL

- School:
- School of Mechanical and Electrical Engineering

Details:
Reducing child obesity by producing flours with higher protein and lower starch.

Project 3: ANANÁ

- School:
- School of Public Health and Nutrition

Details:
Pineapple-based gel food supplement, designed to cover nutritional deficiencies in patients with intestinal problems.



Through the CREALTII program (Creation of High Impact Companies by Researchers), the UANL seeks to identify research projects that are capable of operating in the commercial sphere, being profitable and having a growing market in order to generate economic development and social welfare.

In the last year 87 entrepreneurs registered, 36 projects were carried out and 16 were incubated.

Of these, **6 projects** related to sustainability were selected and are described below:



1

School or Office:
Center for Research and Development in Bilingual Education
School of Dentistry

Project linked to sustainability:
AMARISMA: personal hygiene products of natural origin, specialized in the care of your skin, hair and body health. They are made from vegetable oils, SCI, SCS, sodium hydroxide, BTMS, butters and essential oils.

2

School or Office:
School of Mechanical and Electrical Engineering

Project linked to sustainability:
SUSTAINABLE EGG PRODUCTION: to provide rural communities in conditions of energy and food poverty with an energetically sustainable backyard poultry production system. This is achieved through an egg incubator that works with solar thermal energy and photovoltaic energy. Since it does not require electricity from the CFE, meat production is not affected by the failure or absence of electricity obtained from fossil fuel sources.

3

School or Office:
School of Public Health and Nutrition

Project linked to sustainability:
FOOD BY-PRODUCTS AS FUNCTIONAL INGREDIENTS: pithaya peel rich in fiber and polyphenols, which have antioxidant, anti-inflammatory and hypoglycemic activity and are therefore proposed as a supplement for lower body weight gain.

4

School or Office:
School of Biological Sciences
School of Medicine

Project linked to sustainability:
DERMOPROTECTOR NANOTECNOLÓGICO: nanotechnological dermoprotectant formulated with carvacrol (NP-CVR), a natural antioxidant. Nanoparticles of 160 nm were prepared with 14% carvacrol. The permeation study showed that the NP-CVRs were deposited on the skin surface and favored the retention of the antioxidant agent.

5

School or Office:
School of Medicine
School of Civil Engineering

Project linked to sustainability:
LIFE COMPASS: life compass, a software capable of synchronizing traffic lights and ambulances through a GPS network in order to provide a fast and safe route to emergency vehicles and thus shorten the transfer times of the vehicles so that they can provide assistance faster and more efficiently.

6

School or Office:
School of Public Accounting and Administration

Project linked to sustainability:
MICRO-ENTERPRISE ACCELERATION: Multi-platform digital tool with a simple interface that provides customers with product availability and sale in controlled times.



Integrantes:
Jimena Michelle Garza Reyes
Guillermo Cruz Palma
Myriam Angélica de la Garza Ramos
Roberto Piñeyro Luna

Student participation

The student community is a key element in promoting the process of transformation towards sustainability in university environments, so that the environmental, social and economic problems they identify in the reality in which they live, are a motivation to try to achieve their solution using the knowledge and experiences acquired in the classroom under the approach of sustainability.

During the year 2021, the Universidad Autónoma de Nuevo León (UANL), provided educational services to more than 215 thousand students in the different levels that integrate its educational offer and with whom it has the commitment to form competent professionals who in turn are active and committed citizens in the creation



of sustainable societies. Young people are the generation facing the effects of climate change, a situation that has led university students to recognize that they are not only an important part of the future of society, but also of the present, a condition that makes them aware of the need to incorporate sustainable practices in their daily and student life in such a way that they become active agents to promote sustainable development and thus contribute to achieve social change and economic growth while taking into account the conservation of the environment.

We are in the Decade of Action for Sustainable Development Goals (ODS) proposed in the United Nations Agenda 2030 so that its incorporation in Higher Education Institutions becomes a guide for action for student groups at UANL who have managed to incorporate it into their objectives and thus contribute to its achievement.

Student participation in the university context has an educational, social and integral approach that allows them to put into practice the knowledge, skills and attitudes with which they are being formed, taking an important place in the development of sustainable communities.

The UANL is distinguished for being an institution that recognizes the importance of student participation in the creation of sustainable universities; therefore, there are central dependencies that support the extracurricular intervention of students. In the case of sustainability is no exception, because the Secretariat of Sustainability, through the Project Development Directorate has a strategy that allows the linkage between these student groups which has led them to create a

community and in turn promotes actions such as workshops, dynamics, virtual conference cycles, meetings, fairs, among others, which are carried out both inside and outside the Maximum House of Studies of the State of Nuevo León.

During the year 2021, student groups linked to sustainability issues registered a lower activity due to the restrictions imposed by the COVID-19 pandemic; however, despite



DIRECCIÓN DE SERVICIO SOCIAL Y PRÁCTICAS PROFESIONALES



the circumstances, 112 student groups keep their activity through digital platforms promoting various activities related to the three dimensions that integrate the concept of sustainability: social, economic and environmental.

112 student groups keep their activity through digital platform.

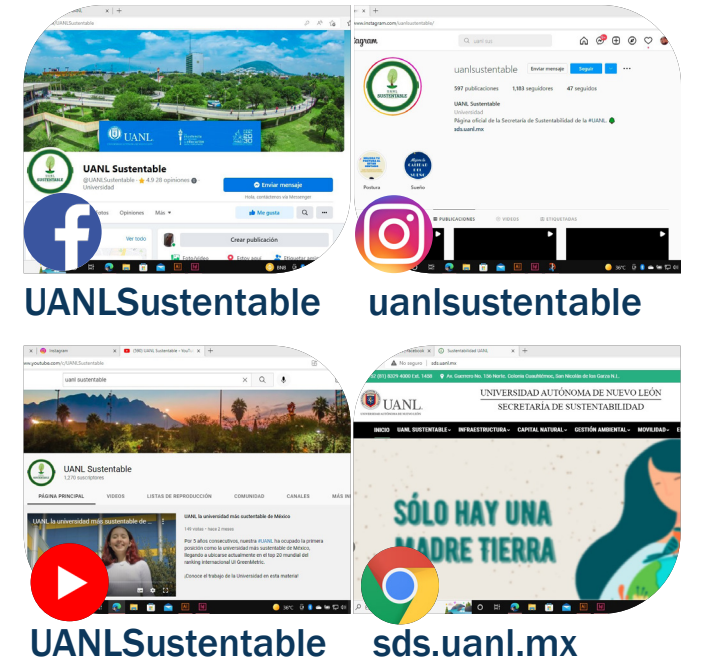


Communication

Program of Communication and Dissemination for Sustainability

Communication fulfills three fundamental functions: to inform, educate and entertain, in addition to being an effective tool to induce substantial changes in society and its development. Therefore, communication is currently considered a fundamental axis in the processes of change in development, especially in the construction of sustainable societies.

Currently, communication for sustainability promotes a constant exchange of knowledge and principles on environmental, social and economic issues associated with development, in order to generate a new vision of the world from the perspective of sustainability.



In this context, the Sustainability Secretariat of the Universidad Autónoma de Nuevo León (UANL), through the Project Development Department, coordinates the communication and dissemination program UANL Sustentable, which aims to achieve the involvement and collaboration of the members of the university community in the transition process towards sustainable development that the UANL is currently undergoing.

The Sustainable UANL program promotes the principles, values and tasks of sustainability through various media and communication strategies such as social networks and web page, the design and dissemination of printed materials, audiovisual productions and the organization of forums, seminars, courses, workshops, conferences, publications, contests, among others.

Mundo Sustentable television programs produced and broadcasted

14

41

online conferences on topics related to sustainability

videos produced and posted on social networks

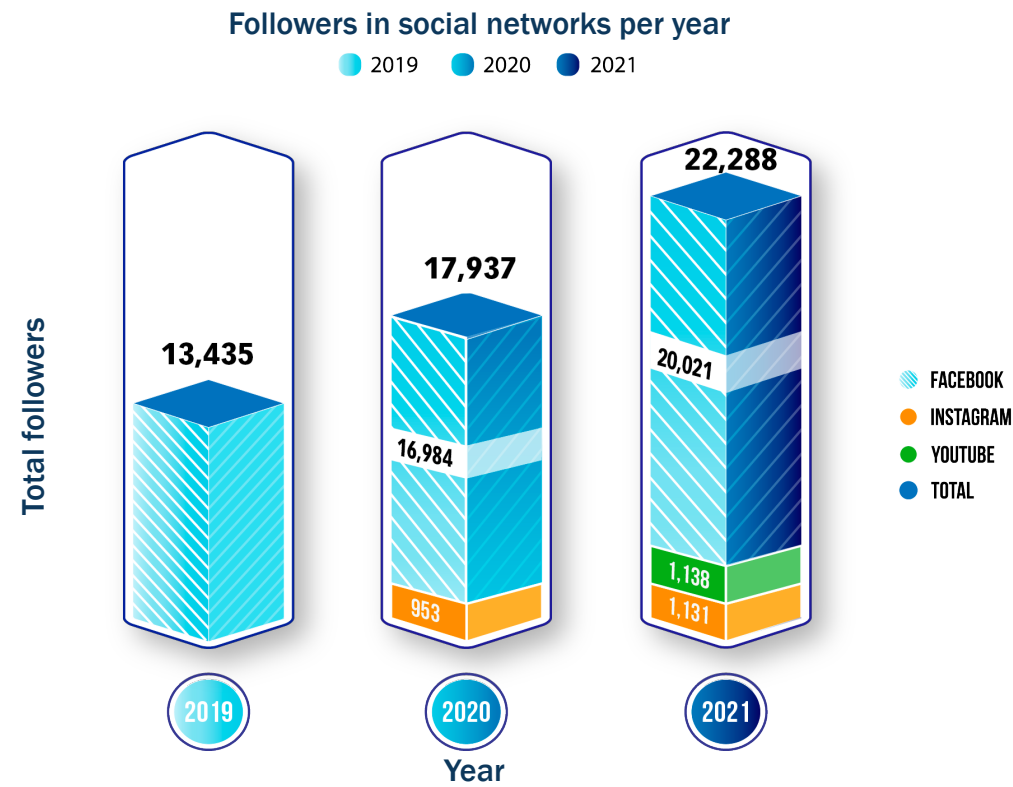
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48

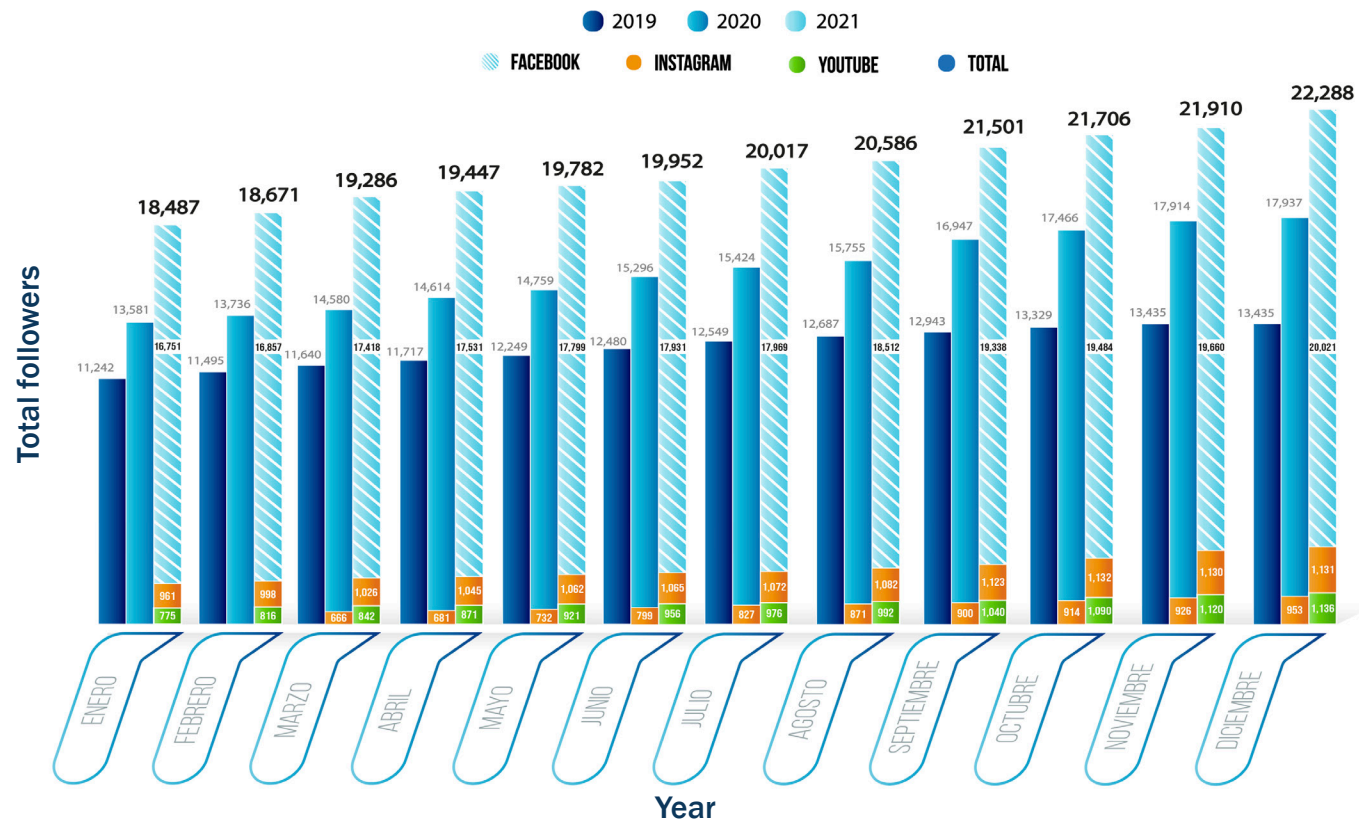
weekly virtual conferences on topics related to sustainability

Results of social networks and web page obtained in 2021.

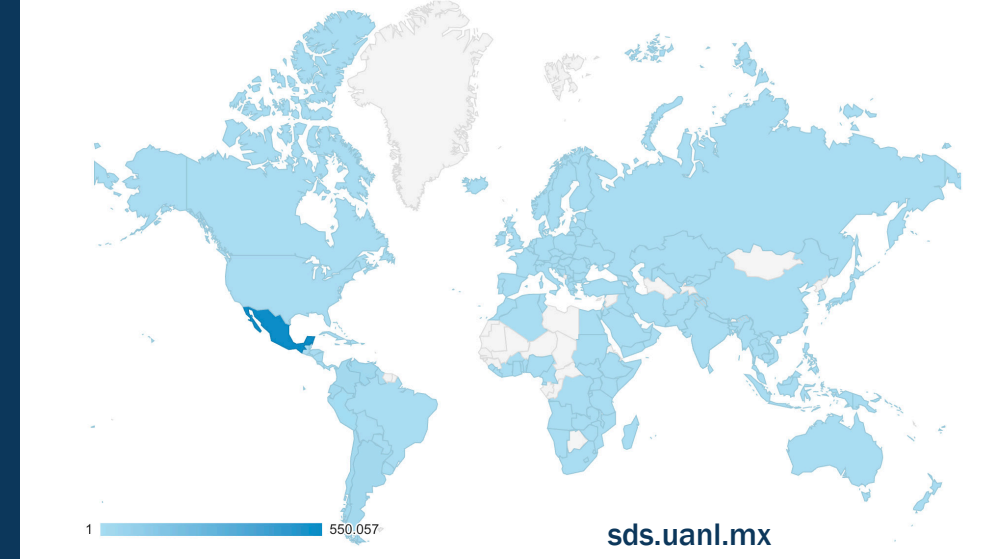
Monthly growth of followers in social networks UANL Sustentable during 2021



Seguidores en redes sociales mensual



Countries that visited the website in 2021



Annual website and social media outreach



2021

Reproductions of videos published on UANL Sustentable's social networks



2021

Mundo Sustentable

Mundo Sustentable, the television program in charge of the Department of Sustainability, through the Project Development Department, emerged in 2015 as a cultural project on television to disseminate the actions and projects carried out at the Autonomous University of Nuevo Leon (UANL) to promote sustainable development in university environments and the social environment that surrounds them, in addition to provoking the involvement of viewers in sustainable lifestyles.

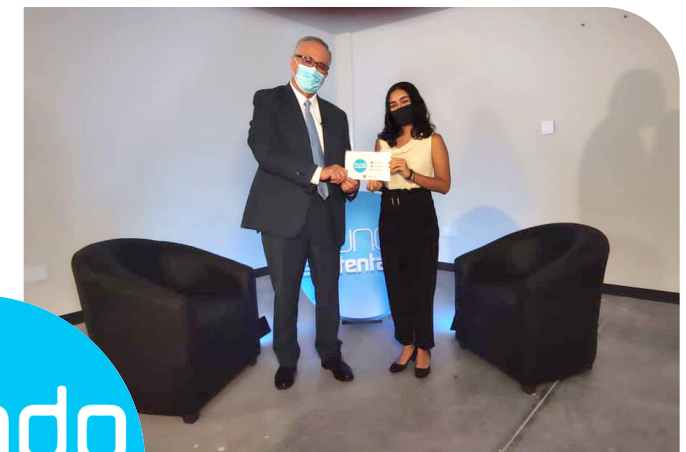
From the beginning, Mundo Sustentable has worked to become a local and national public television referent, and in the 11 seasons that have been broadcasted to date through the open signal of Channel 53 (university radio and television), a space of expression has been generated in which prominent members of the academic and scientific community, society, private initiative and representatives of various authorities have been able to show the activities they carry out to support the transition process towards sustainability of the society in which we live.

Over time Mundo Sustentable has managed to adapt to the new forms of consumption of television content via the Internet and maintain the validity of its television proposal, thanks to its transmission through multiple social networks.

In the almost seven years of existence of Mundo Sustentable, around 200 programs have been produced and broadcasted uninterruptedly in eleven seasons, with the participation of more than 300 guests who have addressed various topics related to the main axes of sustainability: environmental, social and economic.

On the UANL Sustainability website (sds.uanl.mx) the 188 programs from the 10 seasons of the program are available, including the 14 that were made in 2021.

During the year 2021,
14 programs
of the Sustainable
World Series were
produced, which meant
84 hours of
production and
editing.



**mundo
sustentable**



Culture and sustainability



With the aim of visualizing sustainable practices carried out inside and outside university campuses to raise awareness among members of the university community and the surrounding society, the Sustainability Secretariat of the Universidad Autonoma de Nuevo León (UANL) through the Project Development Department has been promoting the “In the Sight of Sustainability” photography contest since 2015.

In 2021, the seventh edition of the contest was held with the theme **“Actions for sustainability in times of pandemic”** in which **332 students**, from **14 university departments** participated, resulting in three winning entries and 14 with honorable mention.



7th Edition 2021

“Actions for sustainability in times of pandemic”



332 students participated in **14** university departments



Guidelines

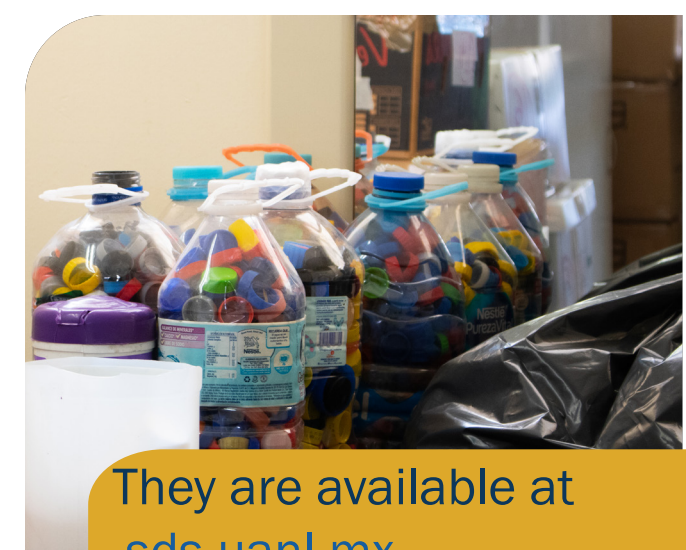


With the objective of inducing changes in attitude and operation in the activities carried out by the members of the university community in the field of environmental management, efficient use of energy, water and responsible consumption, the Universidad Autónoma de Nuevo León, through the Sustainability Secretariat, has developed and published the following guidelines applicable to all university departments:

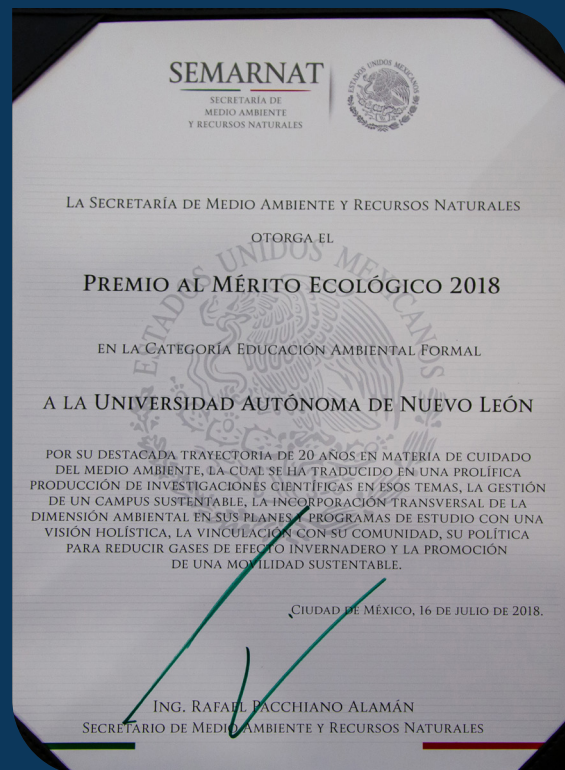
- Technical guidelines for adequate thermal insulation of buildings.
- Technical guidelines for green construction.
- Technical guidelines for the efficient use of water for irrigation.
- Technical guidelines for sustainable mobility.
- Technical guidelines for the efficient use of water.
- Regulations for the acquisition of air conditioning equipment.
- Technical guidelines for the use of potable water and treated wastewater.
- Sustainability guidelines for workshops and laboratories.



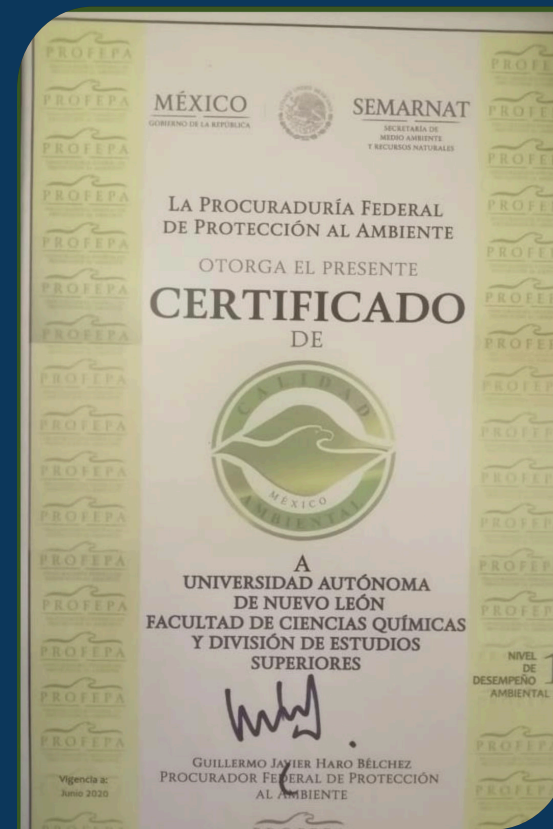
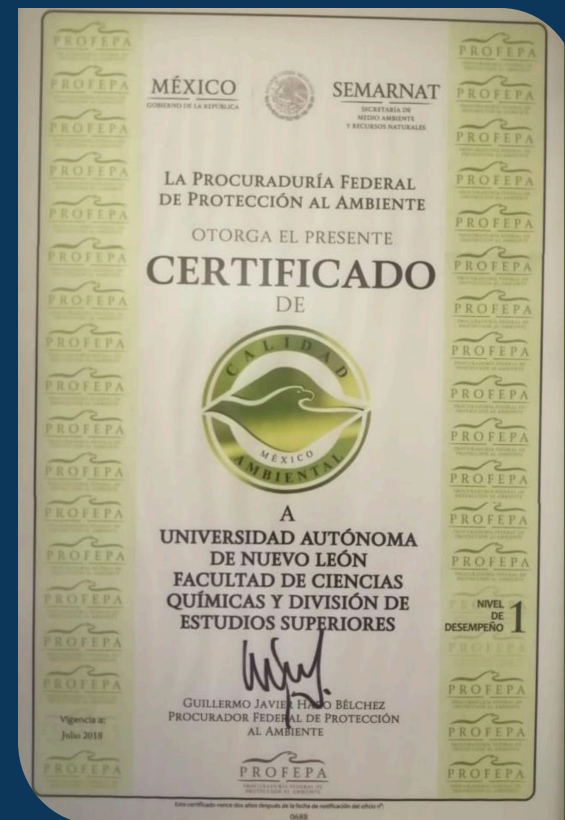
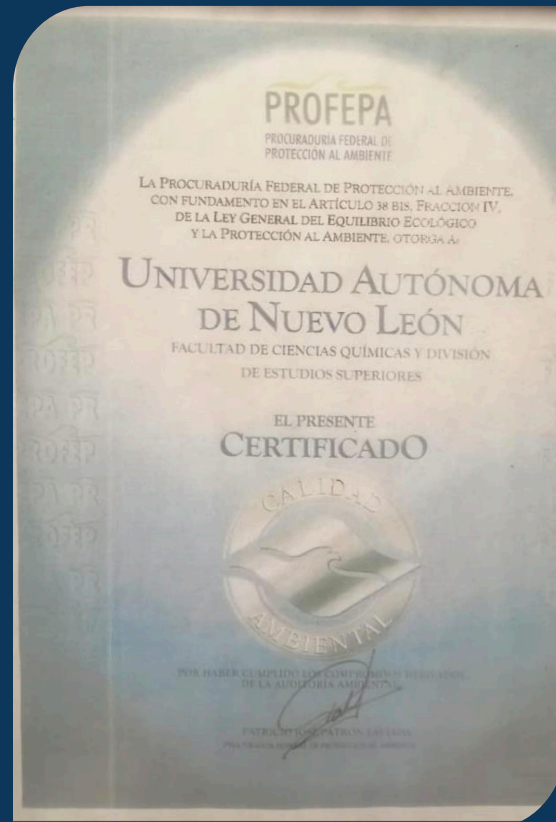
- Technical guidelines for lighting equipment in classrooms.
- Technical guidelines for the acquisition of products to improve the efficiency of air conditioning equipment.
- Technical guidelines for the acquisition of goods and services, green procurement.
- Technical guidelines for operational safety.
- Technical guidelines for responsible consumption.
- Technical guidelines for the handling and management of urban solid waste with recyclable and special handling characteristics.
- Technical guidelines for the handling and management of hazardous waste.
- Institutional policy for the incorporation of good sustainability practices at UANL.



They are available at sds.uanl.mx



Acknowledgments





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