THE CONTRIBUTION OF HIGHER EDUCATION INSTITUTIONS TO SUSTAINABLE CITIES AND COMMUNITIES

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Executive Summary

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Today, more than 80% of the global GDP is generated in cities and, by 2050, 68% of the World population is expected to live in cities. The rise in urban population will increase the demand for resources as well as services and infrastructure. This higher pressure on resources will also have an environmental and social impact, underpinning the vital role cities play in the pursuit of sustainable development.

The United Nations' Sustainable Development Goal (SDG) 11 – Sustainable cities and communities – calls for more inclusive, safe, resilient and sustainable cities and human settlements. Particularly, this requires intelligent urban planning that facilitates opportunities for all, with access to basic services, energy, housing, transportation and green public spaces, while reducing disaster risks as well as resource use and environmental impact.

SDG 11 targets actions towards creating more sustainable cities and communities, but this goal does not exist in isolation. Cities can be hubs of culture, industry and innovation (SDG9). They can also be places unequal places (SDG10) where hunger (SDG2) and poverty (SDG1) are most concentrated. Cities and communities require clean water and sanitation (SDG6) along with affordable and clean energy (SDG7). They are linked to life on land (SDG15) and potentially life below water (SDG14); and the interactions between them will be further pressed by climate change (SDG13), unless urgent and sustainable actions can be taken.

Higher Education Institutions (HEIs), such as universities, can play an important role by collaborating with governments, local stakeholders and citizens to tackle these issues. HEIs can do so by providing human capital, capacity building, research, innovation, enterprises, infrastructure and specialized services, amongst other engagement activities.

In this context, this report examines how HEIs across the globe are contributing towards SDG 11 from different perspectives which are leading on this work in their respective regions. It includes a review of the government policy contexts that affect HEIs in their efforts to contribute to SDG11 and a review of initiatives that HEIs can do to contribute to SDG11, ranging from strategies to supporting mechanisms or activities, along with the analysis of quantitative indicators on how a sample of universities around the world are

performing in this area. This is complemented by five good practice cases of HEIs worldwide. The report concludes with key insights and recommendations for HEIs and policymakers.

Some of the main findings of this report are summarised in the following paragraphs:

RELATED TO TRANSPORTATION

City governments can improve the integration of the campus into the city by providing affordable and frequent public transportation between the campuses and the rest of the city, as well as linking them with cyclist and pedestrian access. They can also subsidize transportation for students. HEIs should vouch for this.

HEIs have an important role to promote sustainable transportation of students and staff in order to reduce their carbon footprint Across all world regions, around 60% of HEIs declared to take concrete actions to promote sustainable commuting, such as walking, cycling, and mass transit. However, only around half of them had quantitative targets on sustainable commuting. This suggests that many universities may be promoting sustainable commuting to some extent, but these initiatives are often not part of a comprehensive institution-wide strategy with the necessary monitoring and time-bound benchmarks.

Globally, around 40% of the institutions claimed to have a pedestrian priority campus, with Oceania standing out of this average and reaching close to 80%. However, examples from the reviewed HEI initiatives and the case studies show that these internally walkable campuses may not be accessible by foot or bicycle when commuting from the city.

RELATED TO HOUSING AND INFRASTRUCTURE

Some governments have specific regulation regarding student housing to improve its attractiveness for developers and investors as well as their affordability for students. Some governments also provide scholarship schemes for housing purposes, relieving some of the economic pressures that commuting or moving to the city for education implies.

HEIs can also grant their own housing scholarships for the most vulnerable students as well as provide affordable housing for their students and staff.

Around 70% of HEIs globally provided at least some evidence of offering affordable housing to their students. However, the regional averages varied widely from close to 100% in in Oceania, and over 80% in Europe and North America and East and Southeast Asia, to less than 50% in Latin America and the Caribbean (LAC).

Comparatively, all regions had much lower percentages of universities providing affordable housing to their employees, with around 40% of responding HEIs globally showing some evidence in this domain, and with the LAC region again having the lowest rate, around 10%.

Beyond housing, around 40% of participating universities reported to follow some sustainable construction standard for their new buildings. In this, Oceania again stood out with above 70% of their institutions providing specific evidence on what was implemented. Building on brownfield sites was considerably less frequent, with just slightly over 20% of universities declaring to use this approach, and with two regions (Central and South Asia and North Africa and Western Asia) reaching half of that or less.

RELATED TO SERVICES OFFERED TO THE COMMUNITY

HEIs can improve the quality of life of the local community by providing free or subsidised access to basic services such as health care, psychological attention and legal aid, if the institution counts with the expertise of its staff and students, as well as their infrastructure.

As part of their communities, HEIs can support the intangible human assets by strengthening and providing access to local culture and heritage as well as by maintaining the historical buildings they might be located in. Globally, around two thirds of participating universities had some form of contribution to the arts and heritage through performances and programmes, with over half of them providing specific evidence. Similarly, around 60% of them conduct activities to record and preserve cultural heritage. In both cases, Central and South Asia was the only region falling significantly behind the global average, reaching only 20% in each. The provision of access to university infrastructure varies considerably, with libraries and museums opening to the public more frequently than other buildings or campus' green spaces.

RELATED TO TEACHING, LEARNING AND RESEARCH

Through teaching and learning, HEIs can develop human capital, building the capacity of graduates who understand and can make meaningful contributions to sustainable urban development. HEIs can also design a curriculum that enables or mandates practical student projects focused on real-life local social and sustainability-related issues, leading to both valuable experiential learning and concrete positive impact in the community.

Moreover, through their research, HEIs can contribute to a better identification and understanding of urban sustainability issues and opportunities, from technological solutions to the efficient use of resources and the smart management of key services and infrastructures. HE campuses can be testbeds for piloting innovative solutions in these areas which, if successful, can be replicated into wider smart city projects. This report utilizes both indicators of research volume and quality as proxies of the potential impact of their research in topics relevant for SDG 11.

Governments can enable and promote both of these areas through their policies and funding but can also greatly benefit by incorporating the resulting expertise into their policymaking and service management.

RELATED TO PARTNERSHIPS WITH DIFFERENT STAKEHOLDERS

Partnerships and collaboration between HEIs and local or national governments, as well as private stakeholders and the broader community, are needed to reach the full potential of higher education's contribution towards SDG 11.

Globally, around a quarter of all institutions declared to work with local authorities on urban planning and development, with only two regions reaching 20% of institutions providing specific evidence for this. Through these partnerships, HEIs can provide capacity building to civil servants, support the design and implementation of policies through consultancy services or coordinate local public services with campus services in areas such as transportation, cultural activities, lifelong learning provision or access to open green spaces.

HEIs can also kickstart or be part of geographies of innovation, supporting local sustainable business, start-ups and research spin-offs, transferring knowledge and building capacity.

Institutional Practices:
What can HE institutions do to contribute to sustainable cities and communities (SDG 11)

2.1

INTRODUCTION

Nowadays, more than 80 per cent of global GDP is generated in cities and this concentration of economic activity is expected to grow as 68% of the world population is projected to live in urban areas by 2050. This will increase their demand for resources (e.g., water, energy, food), infrastructure and services, as well as their environmental impact (e.g., waste, pollution, CO2). This underpins the central role that cities play in the pursuit of sustainable development, an importance reflected in the UN's Sustainable Development Goal (SDG) 11, on sustainable cities and communities.

Higher education institutions (HEIs) can play a key role to achieve SDG11. By connecting and adapting their teaching and learning, research, engagement, and administration to reactively align with or proactively shape their local and regional environments. HEIs are in a unique position as they can be local and regional hubs for human capital development, innovation and community building, which are essential for economic development, social mobility and the training of the professionals which will provide all essential social services. HEIs as organizations can also pioneer new sustainability and community engagement policies and activities, operating as 'living laboratories' that can serve as a model for cities and other organizations and sectors of the economy.

This section addresses the impact that HEIs across the globe can and do have on SDG 11. The focus is on what HEIs can do to contribute to the cities and communities that they co-exist with, not just to the internal community of students and staff. Therefore, important HEIs' policies and issues affecting students and staff will be referred only to the extent that they have an impact on the population living outside the campus. For example, the availability and affordability of student housing, which can impact SDG 1 (on poverty) and SDG 10 (on inequalities), will only be addressed regarding their impact on the housing market of the city as a whole - in terms of gentrification, densification, etc. However, it will only be covered in this report in relation to its impact on the neighbouring population outside the campus.

The goal of this section is not to provide a definitive or comprehensive compendium of all the academic knowledge in this area, but to provide an overview of the key areas in which HEIs can and do have a concrete impact on SDG 11, with illustrative examples from all the world regions. This will contextualize the later sections of the report and encourage further discussion on the topic.

URBAN PLANNING

The physical location and interconnectedness of HE campuses and buildings with cities can have a major impact on its housing market, its mass transit needs and its overall economy. Furthermore, campus infrastructure and/or services shared with the neighbouring community can be key assets for the city. To fully harvest this potential, HEIs need to partner with urban planning authorities in order to consider the location and integration of campuses within their urban environment. This will in turn determine whether they become open or closed campuses.

The concepts of open campus (with free borders) and closed campus (autonomous, self-sufficient), refer to their degree of integration within the city no matter their physical location (though this can of course have an impact). An open campus in the city's outskirts may be better integrated in the city than a gated campus at its centre. The extent to which the campus' premises and activities are open to external directly impacts the social vitality of the city, and – even more so – the direction of its urbanization and growth processes, as well as the balance between the different types of land usage (residential, commercial, etc.). Gated campuses can have the additional negative effect of increasing inequalities through spatial segregation, particularly when this is linked to a limitation to public transportation options for students.

Together with its openness, the campus location and accessibility are key to its integration within the city. Accessibility is relative to where students and staff live, which in turn will affect the demographics of the city neighbourhoods. The creation and expansion of HE campuses has been linked with studentification, youthification, and urban density, but its extent and consequences depend on the actions taken at the local and institutional level, and accessibility is a key aspect. While these effects of localized youthification can be considered as positive or negative in different parts of the world depending on local factors, integrating campuses with the city is generally associated with positive outcomes, particularly in terms of opportunities for the students. For instance, if the campus is accessible, students can find accommodation in other parts of the city, while less accessible campuses (whether that may be due to a remote location, a poor transportation infrastructure, or a combination of both) may have a sharper impact on the

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densification (in population per km^2) and youthification (as percentage of the area residents of young age) process of their surrounding residential areas, as the proximity of accommodation becomes more important, and students may then prefer to live near to their campus.

These demographic changes can have a clear effect in the local housing market. The demand for thousands of student accommodations can be a source of revenue for the local property-owners, but also, depending on local conditions, raise average rent prices in a process often referred to as gentrification or simply

An additional urban planning aspect in which new campuses, as any other large redevelopment project, can have a positive impact in a city's urbanism is the repurposing of previously unused or underused public land or buildings, particularly historical buildings fallen into disrepair, or those closed down due to inactivity or structural deterioration. For example, in Spain, the University Carlos III of Madrid renovated and repurposed old military barracks into buildings for its main campus, and Pompeu Fabra University's main library is based on a repurposed of a XIX century water storage infrastructure. The University Yachay Tech in Ecuador was built in a repurposed sugar factory and warehouse that stopped operating in the 90s. Campuses and technology parks can be also built on brownfields, where prior industrial activities filled the land with rubble or pollution, normally requiring an expensive renewal process before any new use. For example, Godwin University (US), Pittsburgh Technology Center (US) or Campus Condorcet (joint project for several Paris universities, France) were built on brownfields from former industrial sites.

HOUSING

Building student residences or dormitories are a common HEI policy to increase the affordability of accommodation for students and moderating their impact on the local private housing market. Funding formulas to support such efforts include the following: incentivising the private sector to increase aggregate offer (for example making more land available); price control agreements with private providers; direct accommodation management by public or non-for-profit entities; progressive rental prices by which lower income students pay lower or no fees. Whichever the policy approach, providing below-market price accommodation to students can be essential for low-income students. For example, students moving from rural areas where there are no HE options or from countries with lower living costs may partly or fully rely on these resources. For example, the International University City in Paris is a century-old complex of residences for international students providing subsidized accommodation thanks to funding from different national governments who sponsor their own residences as well as philanthropic donations.

What will ultimately determine the impact of HEIs on their city's housing market is the aggregated demand for accommodation outside student residences. In the so-called university-cities, where a significant share of the population is made up of students and HEIs' staff, the housing policies of the HEIs can impact the local housing market. Some universities opt for increasing their residential infrastructure to minimise this impact. For example, in Alice (South Africa), where students of the University of Fort Hare represent a significant part of the city population, the university has progressively increased its residential infrastructure and today accommodates 70% of the students within the campus. An extreme case is UC Louvain, in Louvain-La-Neuve (Belgium), where approximately 50% of the 21,000 inhabitants are university students, and even more are daily commuting from surrounding towns. The university limits the speculation with housing prices by directly owning all the land - a policy choice made at the foundation of the city in the 1960s. All properties on private hands are part of time-bound leaseholds, at the term of which the property returns to the university.

Whichever the policy approach, providing below-market price accommodation to students can be essential for low-income students

2.4

TRANSPORTATION

Besides its interaction with campus accessibility and the local housing market, the transportation to, from, and within campuses is also an area of local environmental impact. HEIs are large complex organizations with potentially large carbon footprints and should therefore address sustainability in terms of internal policies and practices. Increasingly, HEIs are more conscious of their environmental impact and include environmental sustainability within HEIs core organizational policy and programme commitments.

As with any organization with hundreds or thousands of daily commuters, transportation is one important part of this footprint. The impact of these commuters can be considerable if they rely on single-occupant fossil-fuel vehicles, with the associated carbon footprint, air pollution, car queues entering HEIs at peak hours wasting time from students, staff and neighbours alike, and lack of parking availability, amongst others. Air pollution can be reduced if the use of electric cars is incentivised, by providing charging stations or preferential access to parking space. In the UK, for example, the electric charging infrastructure provider, EO Charging, plans to install 2,000 EV charging units in schools, colleges and universities by the end of this year with a long-term plan of 50,000 charge points for electric vehicles installed by 2030.

This would not solve the other aforementioned issues, like commuting time, which can be an important barrier for students wanting to shift travel modes from cars to walking or cycling as students can be very sensitive to time and cost of travel. Students from the American University of Beirut in Lebanon expressed that taxi sharing or shuttle services could be promising strategies to switch modes of transport and use public transport instead.

Transportation in HEI campuses depends on their location. While some HEIs are completely integrated with urban areas, other campuses are more isolated and more automobile dependent. When campuses are spread out, students and staff might need to travel significant distances with tight schedules. In this respect, for example, the University of Costa Rica has a free shuttle service for its students and staff to move around the campus, whose status can be checked in real-time through an application. In 2015, this service was used by 70% of the university population. Similar initiatives have been undertaken in

México, where the Autonomous University of Nuevo Leon (UANL) in Monterrey provides an internal bus called the Tigrebus, and, in Mexico City, the Autonomous National University of Mexico (UNAM) offers the same service through its Pumabus.

US college students share 'generational characteristics' like a preference for mixed-use urban environment and a distaste for automobile ownership, and most students who use alternative transport (walk, bike, bus) to campus do so because they desire a particular lifestyle more than because of environmental concerns. Conversely, students' demand and decision to study at an Australian HEIs is increasingly influenced by the perception of environmental sustainability commitment. Nonetheless, affordability and feasibility remain key drivers of transportation preferences, which in turn depends on the affordability of accommodation within walking distance, and the costs of private vehicle ownership and mass transit. This is even more relevant today, with a larger share of population enrolled in university worldwide, including a rise in the share of low-income students (though still widely underrepresented).

Furthermore, the availability and affordability of transportation for students can be a reason to enrol or not at that university. Low-income students might not be able to afford accommodation in or near the campus, making the price and length of the commuting a barrier. This can be of particular concern for those who study and work at the same time, students who are also parents, and those coming from rural communities. Conversely, fast and cheap public transport options can disperse geographically the youthification and studentification impact that universities can have on the local housing market.

HEIs can be significant drivers of change in achieving sustainability within campuses and beyond. They are also privileged places to communicate sustainability and reshape transportation patterns. To achieve this, the involvement of several university stakeholders, including students, is vital.

Promoting cycling within campuses has been the go-to solution of many HEIs. In the USA the League of American Bicyclists have given Bike-Friendly designations to more than 220 HEIs. This recognition is given to HEIs that are making special efforts to introduce more bikes on campus with bike-sharing programmes, free bike repairs, infrastructure innovation oriented to bikes, amongst others. Encouraging active modes of transportation can have health benefits for students as well.

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2.5

OPEN SPACES, SERVICES AND CULTURE

The management of and access to spaces and services offered by and within universities, as well as the promotion and protection of cultural heritage can also affect HEIs´ contribution to SDG11. As cities become larger and enrolment increases, it is crucial to guarantee that HE and surrounding communities can benefit from the unique infrastructures and knowledge developed within and around HEIs. In the past, HEIs used to be considered differentiated spaces from their surrounding neighbourhoods. However, this differentiation has become more complex and fluid, rising opportunities – and sometimes barriers – for HEI to engage with cities, while also hosting vibrant communities of their own. Despite the role HEIs can have in achieving SDG 11 beyond the physical space where they work, HEIs in some cities continue to look inwards when it comes to spaces and services – mostly directed to students and staff. Thus, it becomes instrumental to understand what HEI can do in these areas to contribute to SDG 11.

OPEN SPACES

SDG target 11.7 aims at providing access to safe and inclusive green and public spaces. HEI campuses often include infrastructures, open spaces and green areas that could be made available to the surrounding communities. Since the enjoyment of a university park, museum or library by additional people does not entail a significant increase in its maintenance cost, public access can maximize public good for the campus' neighbourhood at minimal cost. Furthermore, the impact physical spaces can have to create a sense of community, belonging and safety for people engaging with them is a key consideration when organizing spaces within and around HEIs. Public spaces intentionally shaped to promote social interactions, learning experiences, and general recreation can nourish emotional connections such as pride and can foster community engagement. This is particularly important when university buildings include historical landmarks of the city or are the only green spaces in that neighbourhood.

COMMUNITY SERVICES AND ACTIVITIES

Two aspects of target 11.B involves working towards inclusion and resource efficiency in cities and communities. Through their engagement mission, HEIs

Public access can maximize public good for the campus' neighbourhood at minimal cost

can directly contribute to this target by providing services to external communities. Additionally, some HEIs combine such services with their pedagogical objectives through service-learning methodologies, allowing students to acquire practical knowledge by engaging as volunteers and / or interns in activities that benefit the community. Volunteering students and academic staff working pro bono can provide specialized professional services to those who could not afford them or would not know how to access them otherwise.

For example, at the University of Bucaramanga (Colombia), legal clinics have been instrumental in responding to the legal needs of female immigrants who often lack the knowledge and resources to access legal services elsewhere. At the University of Glasgow (UK), students and staff volunteer in homelessness prevention activities, such as providing free legal advice to tenants at risk of eviction. Similarly, university hospitals and clinics can provide healthcare services, history students can work in archaeological sites uncovering the city's heritage, and training can be offered to and through local NGOs, companies and governments, from gender equality and human rights to energy efficiency and circular economy.

Besides offering a tangible support to historically excluded and underserved groups, HEIs can contribute to creating a sense of community as well as help in the social, economic, and physical preservation of cities, particularly in those where local governments struggle to provide key services and activities. Conversely, a decline in HEI's capacity and services can be related to a city's social and economic decline.

While HEIs can carry out some of these initiatives with their own material and human resources, some are created thanks to partnerships with other HEIs, local government and/or the private. This is particularly useful for initiatives in which HEIs are providing a free or subsidized public service thanks to dedicated funding from public administrations or NGOs. For example, the Technical University of Ambato[1] (Ecuador) has an interinstitutional agreement with the city's administration to finance an entrepreneurship lab to develop skills and business ideas of local residents through free workshops.

Another positive synergy can be the collaboration of several HEIs from the same city in order to share resources and make joint investments, particularly in infrastructure. In the city of Gothenburg, Sweden, universities have partnered with NGOs, IT community networks, and entrepreneurs to co-deliver 25 student-run, social impact projects in support of refugees and unemployed residents. In addition to co-delivering services, the projects are financed through government grants, private sector investments and, if needed, affordable service fees.

HEIs can also rent laboratories and scientific research infrastructure and equipment to external researchers and local companies. While this can help

Volunteering students and academic staff working pro bono can provide specialized professional services to those who could not afford them

universities compensate the typically high purchasing and maintenance costs, it is also a way for independent researchers and local companies to innovate and have a local impact that would be otherwise unaffordable for them. These services can also help attract innovators to the city. For example, Continental University in Peru allows the general public (including local start-ups) to access technological equipment, training and services through the Fab Lab network, available in four city campuses. Similarly, in 2014 four universities in Amsterdam (University of Amsterdam, Amsterdam University of Applied Sciences, Vrije Universiteit Amsterdam and Amsterdam UMC) created a joint knowledge transfer office, Innovation Exchange Amsterdam, which assists local organizations in navigating the academic landscape to find a solution or spot an opportunity.

On the domain of security within and around campuses, and depending on national legal frameworks, specific agreements may be reached between the HEI's and their local law enforcement, delimitating the competences of the local or national police and those of the HEI private security personnel. Sometimes, through such agreements, the role of the private security forces is extended beyond the campus to include part of the city where they are expected to reinforce or complement the local police force. For example, the private security of three universities in Bogotá (Colombia) reached an agreement with local law enforcement to patrol public spaces outside the campus. In the main streets connecting the campuses with the nearest public transportation hubs, university private security can deter crime, and retain criminals until the arrival of the police. For instance, in the US, 95% of four-year HEI had a campus police department or law enforcement agency, whose sworn officers had "arrest (86%) and patrol (81%) jurisdictions that extended beyond campus boundaries" (most of which included areas outside the immediate surrounding of the campus). 70% of these agencies had a formal agreement with external law enforcement agencies. However, while this may increase the safety of the students within their most frequented areas, this does not mean that the overall criminality in the city is reduced, as it may simply be pushed to other parts.

PROMOTION AND PRESERVATION OF CULTURAL HERITAGE

Target 11.4 calls for the protection of the world's cultural and natural heritage. As historical, lifelong learning spaces and knowledge producers, HEIs can contribute significantly to the understanding, protection and dissemination of natural and cultural heritage. Through their teaching and research missions, HEIs can actively work to meet this target. Furthermore, public activities and community initiatives are key to engage citizens in the protection of cultural and natural heritage. For example, the Forum UNESCO - University and Heritage International Network connects over 400 HEIs around the world to co-organize and deliver international seminars, organizing thematic

sub-networks, and disseminate activities on the protection, enhancement and conservation of cultural and natural heritage.

Universities often also have their own cultural agenda, ranging from art exhibitions to concerts or theatre plays. These activities can be open to the public but also the physical spaces that the institution may own could be shared, at low fares, for use in externally organised activities. The Autonomous National University of Mexico (UNAM), for example, developed the project CulturaUNAM which elevates the importance of the arts and culture to create a fair, critical, and forward-looking society. Through this initiative, UNAM collaborates with the local government to deliver more than 10,000 events each year including learning, research and artistic activities open to all city residents and surrounding communities.

However, protecting cultural heritage also involves increasing access, monitoring, restoring, and reconstructing heritage sites. The damage to cultural and natural heritage not only deteriorates urban landscapes in a tangible form but it can be also amplified by the historical, political, and emotional meaning attached to it. Some of the HEIs buildings are very valuable, sometimes heritage-protected places that are expected to be taken care of and be open to the public (as mandated by local, national or UNESCO heritage regulations). Among those, there are XI-century castles (e.g., Durham Castle at Durham University in the UK), XVI-century palaces (e.g., Archiginnasio Palace at Bologna University in Italy), XIII-century chapels (e.g., San Miguel Chapel at Coimbra University in Portugal) or XVI-century royal hospitals (Hospital Real at University of Granada in Spain). The protection of heritage is especially relevant in cities affected by crisis or conflict where HEI can also contribute. For example, the University of Manitoba in Canada has been directly involved in reconciliation processes by educating the public about indigenous cultural heritage and creating historical records on the impact of residential schools in local communities through the National Centre for Truth and Reconciliation.

The physical spaces that the institution may own could be shared, at low fares, for use in externally organised activities

2.6

THE ENGAGEMENT OF UNIVERSITIES WITH LOCAL/ REGIONAL ACTORS

The collaboration of HEIs with their social and economic ecosystems has become increasingly relevant for the strategic development of cities, regions, and countries. Through their engagement with other stakeholders, HEIs have the capacity to promote economic growth, and technological and sustainable development. In this context, an increasing number of HEIs have adopted a proactive role in partnering with business and governments to develop, validate, and transfer knowledge that addresses major social needs and urban challenges in cities.

UNIVERSITY ENTERPRISES AND CAMPUS AS TESTING GROUNDS FOR URBAN AND COMMUNITY DEVELOPMENT

HEIs can also promote the sustainable development of the cities by introducing student and academic competitions that address the main problems of cities in terms of mobility, infrastructure, pollution, and housing. Some examples of these initiatives are the Sustainable Cities Competition of the University of Lima (Peru), the Tec Social Lab developed by Tecnológico de Monterrey (Mexico) and the Tech Challenge of the Polytechnical University of Bucharest (Romania).

These types of initiatives have the potential to become a launch pad for the development of start-ups and spin-offs that contribute to tackle key urban problems of cities. For example, in 2015 some students from the Polytechnic University of Valencia (Spain) won the SpaceX Hyperloop Pod Competition, an international contest supported by Space X and The Boring Company, with their university project 'Hyperloop UPV'. In 2016, with the support and advice of the university Entrepreneurship Unit, the project was transformed into Zeleros, a company that designs and develops new sustainable transport technologies.

Other HEIs have committed themselves to the sustainable development of cities and communities by turning their campuses into testbeds for the development of prototypes that have an impact on the sustainable development of cities. For example, the University of Lille (France), through the SunRise project, created a simulator for the operation of smart cities

within its campus. The initiative aims to replicate on a smaller scale the dynamics of a smart and sustainable city to minimise risks and facilitate the implementation of this model in other spaces. A similar initiative is the partnership between Dublin City University, Arizona State University, Croke Park Stadium (Dublin) and Intel Corporation to co-develop and test internet of things solutions, using the large stadium as testing ground for technologies that could have smart city applications, from predicting traffic flows, to the real-time monitoring of services and facilities usage.

At the same time, research and management decisions on HEIs' campuses' sustainability can serve as small-scale urban models from which valuable lessons can be extracted for later use on cities. Given that some campuses are effectively small cities in their own, the learnings obtained from HE campuses as urban planning laboratories have the potential of feeding evidence-based policymaking. From illustrative examples or proposals of what is technically possible, to innovative approaches on environmental awareness raising within a community (e.g., the so-called 'living laboratories'), to the testing of technology and tools that can be used at city-scale, HEIs' can, with their own sustainability initiatives, spearhead a larger change in government policies and programmes that might then, in turn, incentivize further good practices at HEI level.

PARTNERSHIPS WITH LOCAL GOVERNMENTS AND NGOS

Besides functioning as testbeds, HEIs can collaborate with other organizations in the design and implementation of projects for the improvement of urban spaces. These partnerships can in turn form part of national or international good practice-sharing networks, such as the Educational Partnerships for Innovation in Communities – Network (EPIC-N), which showcases examples from tens of university-city partnerships from across the world.

One key area of collaboration is the use of the university's technical expertise in the design or improvement of government interventions. For example, in Ethiopia, Addis Ababa University partnered with the city government to participate in the project to improve the transport system. The university oversaw the design of the artwork of Le Gare junction, and the impact assessment of the project. Over 50 students from different faculties participated in the process.

Another example of university cooperation with governments for urban topics is the Mistra Urban Futures Knowledge Transfer Programme. The programme offers academics at the University of Cape Town the opportunity to develop research to supports policymakers in designing urban development policies. The International Research Institute of Disaster Science at Tohoku University in Japan has signed agreements with 11 local governments of cities that were affected by the Great East Japan earthquake

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to contribute to their recovery and build back better. Even international research partnerships can focus on topics of mutual local concern, as many local challenges – from air pollution to water scarcity – might be shared by many cities with common characteristics.

Other forms of collaboration with ecosystem actors include the cooperation of HEIs with non-profit organisations to preserve and protect the cultural heritage of their cities. In Canada, the University of Montreal and the Atikamekw Nation Council have created a workshop to promote the development of knowledge and skills among artisans in the villages of Manawan and Wemotaci in Quebec. Through this initiative, the university shares contemporary design techniques that the artisans combine with their traditional creative styles to create products. In addition to training, the programme offers a space to sell the products, contributing to the social and economic development of these villages.

GEOGRAPHIES OF INNOVATION

When HEIs are geographically close to other innovative organizations, and interact and exchange knowledge with each other, collaborative innovation spaces emerge around the HEIs, generally known as geographies of innovation. These are "planned and actively managed spatial clustering of a wide range of innovative organizations and intermediaries to undertake collaborative innovation activities". Some examples of geographies of innovations are science parks, technology parks, innovation hubs or innovation districts.

Geographies of innovation can play a unique role in promoting economic growth and sustainable development. The exchange of knowledge and technology between academia, industry and other organizations that takes place in these spaces also facilitates the development of start-ups and new products that stimulate the social and economic growth of their surroundings. From the perspective of sustainable urban development, geographies of innovation can dynamize spaces, create new residential models, improve the use of transport, and repopulate moderate or low-income urban cores.

For example, in Colombia, the creation of the Medellín Innovation District, led by the city government and Ruta N Business and Innovation Centre, has transformed the northern neighbourhoods of the city. The district has generated an environment of innovation where companies, cultural institutions, universities, and research centres are closely interconnected in four neighbourhoods. For each of them, Ruta N has created a strategic urban development plan that includes mobility, green spaces, and sustainable housing. As part of this initiative, HEIs such as the University of Antioquia have promoted the development of science and technology to foster innovation. Currently, Ruta N and the University of Antioquia are working together to shape the Software Valley.

Some examples of geographies of innovations are science parks, technology parks, innovation hubs or innovation districts.

Another recent example in which the university is contributing to the development and transformation of urban spaces is the Diagonal-Besòs Campus led by the Polytechnic University of Catalonia. This knowledge hub, still under development, seeks to become a strategic area for the economic development of the region. This knowledge and innovation ecosystem is composed of different educational and cultural spaces that aim to promote university-business collaboration for the development of technology that benefits society. Currently, it is home of the University's engineering school, several research centres, and a modern student residence.

In Australia, the Melbourne Innovation District is a partnership between the city government and two of the city's leading universities, RMIT and the University of Melbourne. The two HEIs strategically interact in the north of the city's central business district, where 21% of the city's knowledge sector jobs are concentrated. Both universities provide platforms and digital access to technology creators; offering opportunities to foster the creation of start-ups that develop innovative technology in the field of renewable energies, transportation, and housing.

In Latin America and the Caribbean, the University of Vale do Rio dos Sinos (UNISINOS), through the Sao Leopoldo science park 'Tecnosinos', promotes the development of companies focused on the development of green technologies. The park offers incubation services, co-working spaces, and laboratories for the development of technologies. Tecnosinos has a GreenTech programme that offers companies based in the park support to increase their sustainability and reduce their environmental impact. From the start of its operations, the space has become home to 96 national and international companies, increasing the attractiveness and the economic development of the city of Sao Leopoldo.

2.7

DEVELOPING CITIES AND COMMUNITIES THROUGH RESEARCH

HEI research can contribute to SDG 11 either by directly addressing the topics most closely related to this SDG or by integrating local issues and urban perspectives into other lines of research. Either way, research targeting urban challenges can benefit from its narrower geographical scope in order to capture the attention of local policymakers, having a direct impact on the needs of a concrete population, while still contributing to global knowledge as many of these challenges are shared across territories.

Regarding the research to address topics related to cities and communities, HEIs are increasingly creating research institutes, inter-institutional research networks and departments with long-term research lines in areas relevant to cities, such as urban planning, integrating food security into urban planning, smart cities and the use of big data in urban analytics, urban energy efficiency and generation, efficient urban water management and waste management, detecting and reducing urban pollution, climate change adaptation for cities, sustainable urban adaptation to high temperatures, natural disaster risk reduction, promoting local and regional innovation ecosystem, affordable quality housing and housing policies, gentrification and urban displacement, living urban transportation and mass transit in particular, or the preservation of local physical and cultural heritage.

While SDG 11 is by its own nature cross-cutting into a wide range of topics and academic disciplines, some initiatives exist in order to systematize the categorization of SDG-related academic and scientific publications. Elsevier's methodology, which uses a large database of keywords (last updated in 2020) as the reference for an AI classification algorithm, is the most comprehensive one to show the increasing interest of this topic from a research perspective.

In addition, the sustainable development of cities can also be supported by integrating local urban problems and challenges into applicable research, particularly - but not exclusively - the concerns of the local environment in which the HEI is located. For example, research on climate change adaptation can go beyond national policies and be focused on the specific challenges of a coastal city, a large metropolitan area, or an isolated community. The same can apply to other fields; for example, a public health research may choose to focus on the epidemiology dynamics in a particular

The sustainable development of cities can also be supported by integrating local urban problems and challenges into applicable research

city, taking into account its demographics, socioeconomic variables, environmental context and infrastructure.

An example of both approaches described above is the Amsterdam Institute for Advanced Metropolitan Solutions, founded in The Netherlands in 2014 by three universities: Delft University of Technology (TU Delft), Wageningen University & Research (WUR) and Massachusetts Institute of Technology (MIT). This applied research centre aims to connect science to societal challenges and create sustainable metropolitan solutions in close collaboration with public and private partners.

2.8

TEACHING AND LEARNING TO DEVELOP CITIES AND COMMUNITIES

Many HEIs also contribute to SDG11 by offering courses and programmes that cover SDG 11-related topics, and integrating local issues into the curricula across disciplines, as well as adopting pedagogical methods that allow students to interact with and learn from the local community.

HEIs can ensure that the curricula, alongside with theoretical content, also provides the knowledge and skills demanded by the local community needs. For example, the curricula might need to reflect whether civil engineering students will probably develop their careers in an urban context where a part of the population still lacks basic infrastructure such as sanitation or flood control, or in a city where energy or water are scarce and there is a special focus on resource efficiency and sustainability.

Besides the teaching of these contents, students can be incentivised to put their knowledge into practice benefitting the community in the process. For instance, required essays, course projects, or Bachelor's and Master's thesis may be focused on local or regional issues, using the "capstone" project approach or even asking local stakeholders (governments, companies, NGOs, etc.) to provide real-life challenges for the students to research. This generates a mutually beneficial experience in which students access first-hand information and orientation while the organizations receive tailored research.

An increasing number of these projects are designed including students from different disciplines. For example, a student project researching on the local social services may want to combine sociological, legal, healthcare and labour market perspectives. HEIs can further promote experiential learning by offering activities, such as compulsory or incentivised visits, volunteering and internships for students with local entities, which may be related to their respective academic fields or simply focused on raising awareness amongst the students about real-world issues with a local perspective.

Many universities provide urban planning courses, typically at Master's degree level, and in many cases this is explicitly linked to sustainability, such as the Master in Sustainable Urban Planning and Development at University of Johannesburg (South Africa). Urban Planning programmes also exist at Bachelor's level, for example at the School of Planning and Architecture Delhi

Students can be incentivised to put their knowledge into practice benefitting the community in the process

(India), or PhD level, such as the [Doctoral Programme in Urban and Regional planning](#) at Badung Institute of Technology (Indonesia). Beyond the provision of knowledge in this general area, HEIs can aim at a higher impact on SDG 11 if they connect those contents with the reality of their respective urban environments, with their particular needs and opportunities.

These programmes can also target specific local or regional contexts; for example, University Centre of the Westfjords (Iceland) offers a Master's degree focusing on [coastal communities](#), and the University of Buenos Aires (Argentina) offers a [Master in Urban Studies and Housing in Latin America](#).

More programmes are also specialising in SDG 11-related areas such as urban transportation, and its impact on sustainability, or local cultural heritage management. For example, the [EIT Urban Mobility Master School](#) (a collaboration of several European universities) offers a Master in Sustainable Urban Mobility Transitions; the SS (Argentina) offers a [Masters in Comprehensive Urban Solid Waste Management](#); the UniLaSalle Polytechnique Institute (France) offers a Master of Science [Urban Agriculture and Green Cities](#); ReCity (Italy) offers a Master in [City Regeneration in Circular Economy](#); the Canterbury University (New Zealand) offers a Master of [Urban Resilience and Renewal](#); the University of Melbourne (Australia) offers a Master of [Urban and Cultural Heritage](#).

Alongside the more academic and policy-oriented programmes, such as those on urban studies, and those more closely linked to architecture and urbanism, HEIs can also contribute through programmes with an information and communications technologies orientation. For example, Torino Polytechnique (Italy) offers [Masters in Digital Skills for Sustainable Societal Transitions](#), including computer programming oriented at sustainable and smart mobility, industry 4.0, or digital urban heritage. Likewise, in Israel, the Hebrew University of Jerusalem offers a Master of Arts in Urban and Regional Studies: [Smart Cities and Urban Informatics](#).

Some universities offer programmes on several of these complementary areas at the same time; for example, [Nova University Lisbon](#) (Portugal) offers master's degrees on Sustainable Urbanism and Spatial Planning, Territorial Management, Conservation and Restoration, Museology, and Cultural Heritage, as well as post-graduate degrees in Smart Cities.

Government Policies

What can governments do to support HEIs contribution to sustainable cities and communities (SDG 11)?

3.1

INTRODUCTION

While the previous section has reviewed the contributions of HEIs to their local and regional sustainable development, this section provides an overview on how governments can help HEIs increase this impact. Be it through regulations, funding or dedicated partnerships, local, regional, national and international authorities can create the conditions for the HEI's initiatives to succeed, as well as incentivize new ones and support their continuity or expansion.

At the national, regional and local level, government policies can impact how universities and other higher education institutions engage with the sustainability agenda, including SDG 11. Policies can enable, promote or mandate the implementation of sustainability and engagement initiatives at HEI level, as well as set national benchmarks to evaluate and monitor their contribution to specific priorities.

Internationally, as part of the New Urban Agenda adopted as a result of global dialogues at the United Nations Conference on Housing and Sustainable Urban Development (Habitat III), participating Member States, local and regional governments committed to 'shaping organizational and institutional governance processes' to enable effective participation of academic and research institutions in decision-making processes about urban and territorial development.

POLICIES ON URBAN PLANNING

The choice of location for HEIs can have a clear impact on its integration in the urban area. This often depends on local government's decisions on the grant of public land and the legal framework for private land's possible uses. Beyond campus location, urban planning should also account for the campus' ecosystem (social and ecological), and the possibility of creating shared campuses for more than one HEI.

However, regardless of the HEI location, city governments can always improve this integration by providing affordable and frequent public transport between the campuses and the rest of the city, as well as linking them with pedestrian and cyclist access. Some campuses can find themselves surrounded or split by highways while others have safe pedestrian crossing points and separated cycling lanes going beyond the campus' immediate surroundings, creating continuous lines from the campus to the center of the city and other nearby residential areas. Access to campuses can be also constrained by other urbanistic barriers, such as train tracks, which can also limit – and therefore concentrate – the students' accommodation demand, if not provided with convenient crossing points.

Additional government strategies include the control and supervision by municipalities of campus plans (e.g., Washington D.C. requires all HEIs in residential areas to submit to the D.C. Zoning Commission their decade campus plan for approval). Also, some municipalities involve HEIs in the development of their urban planning policies, as well as their participation as members of urban planning committees. For example, the city of Merida (Mexico) created a working group to design the city's plan for sustainable urban mobility, which included the participation of three HEIs. In Greece, as part of the process of developing Heraklion as a smart city, the local government established a commission for the development of common objectives and the coordination of strategies. The commission considers the participation of HEIs, urban transport organizations and chambers of commerce.

Access to campuses can be also constrained by other urbanistic barriers, such as train tracks, which can also limit – and therefore concentrate – the students' accommodation demand

POLICIES ON HOUSING

Local and regional governments in many countries have housing policies (e.g., quality standards, limitation in rental licenses) aimed at increasing the offer in the market – be it by private or public providers – or controlling its growth and affordability. Even when these are often aimed at the general population or at all young people, higher education students are also directly affected by them.

However, some municipalities also have their own specific policies for student accommodation. These can be the compliance of the accommodations with certain rules (e.g., The Glasgow City Council (UK) has rules for the development of student accommodation such as its distribution among city areas, the need of considering built heritage in the design process or a mixed-tenure requirement), the prohibition of student housing in specific areas (e.g., Philadelphia (US) prohibits all student housing is a specific area surrounding Temple University to control rental costs in the area), a limitation in student occupants per house (e.g., a limit of three student occupant per house is applied in Rhode Island (US)), the establishment of a minimum distance between student rentals (e.g., several cities in Pennsylvania (US), such as State College), or of certain conditions for developers (e.g., The Nottingham City Council (UK) requires developers that a certain percentage of Purpose Built Student Accommodation is used towards affordable housing).

A more targeted policy are scholarship schemes including accommodation stipends for lower income students who are studying outside of their hometown or with limited income. These allowances, depending on the country, can be provided by local (e.g., Paris), regional (e.g., Canary Islands) or national (e.g., New Zealand) governments. Apart from granting some low-income students housing allowance, the Amsterdam municipality also grant some of them the exemption of the payment of municipal taxes.

Governments should also consider the impact that student housing supply may have on the local housing market. In order to do so, governments (be it at national or local level, or with the help of NGO and researchers) should gather data and monitor evictions, homelessness and residential property prices in order to identify any possible local (or even neighborhood-level) trends, and any correlations between those variables in the surroundings of HE campuses and student housing resources and policies.

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POLICIES ON TRANSPORTATION

3.4

Transportation policies have a key impact on HEIs. For instance, the lack of means of transportation can be a barrier to access higher education, especially for students from disadvantaged backgrounds. Moreover, public transportation policies have the potential to reduce greenhouse gas emissions and thus, contribute to sustainability.

Some countries, especially in the Global North, have legal requirements to implement employment trip reduction programmes to reduce air pollution, energy consumption, and traffic congestion. However, the main variables remain accessibility for pedestrians and cyclists, which can promote or deter depending on urban design choices, and availability of affordable and timely mass transit, which depends on local and regional policies.

The most significant service-oriented policy regarding transportation and affecting students has been demand-side subsidies benefitting specific groups. At national level, the Philippines introduced a "Student Fare Discount" policy in 2019, granting a 20% fare discount to Filipino students at all levels of education. In Panama, students have 50% discount on the metro lines and in Malaysia the 50% fare discount is for all public transport. In the emirate of Ajman (UAE), students are granted a 30% discount on public transport while, at city-level, London offers a 30% discount with the 18+ student oyster photocard. In Turkey both students and teachers are granted a 20% discount in public transportation.

In countries such as Chile and Mozambique, these subsidies were fought for by student activism. In Chile, the increase in transport fares for students in 2019 caused nation-wide protests that demanded the government to develop policies towards equality. Nowadays students benefit from discounted fares in public transportation in Chile. At local level, the Authority for Urban Transport in Lima of Lima (Peru) grated students a 50% discount on public transport. In 2019, New Delhi (India) made buses free for female university students in order to prevent dropout rates.

Other policies to enhance sustainable transportation are related to active means of transportation like bicycles and walking. By ensuring direct access to HE campuses by bike or foot (and diversifying intermodality commuting options), local governments can not only reduce traffic congestion and

By ensuring direct access to HE campuses by bike or foot, local governments can not only reduce traffic congestion and pollution around these areas, but also increase the affordability of higher education, reducing students´ transportation expenses

pollution around these areas, but also increase the affordability of higher education, reducing students´ transportation expenses. In Costa Rica, a national policy to de-carbonize the country by 2050, offers tax incentives to the private sector to promote the use of bikes by their staff, thus, private HEIs can benefit from this initiative. In 2020, the city of Bogotá (Colombia) approved a law giving cycling a priority status in mobility plans in the city and grant bicycle users specific safety guarantees. The city also offers private businesses a tax discount if they provide bicycle parking spaces within their premises.

Besides these incentives, physical infrastructure, such as separated cycling lanes and pedestrian access (across busy roads and other major urbanistic obstacles) remain essential. A study undertaken in the Barcelona (Spain), where most university campuses are accessible by bicycle from the city center, showed that the main limitation for changing travel modes are the lack of infrastructure and the still marginal role of cycling as a means of transportation.

Public bike-sharing policies (PBSP) have been implemented in urban areas of Western cities (Europe) for a long time. Other regions are also adopting PBSP, for example, the BikeSampa programme in Sao Paolo (Brazil), which operates with normal and electric bikes. This network has 18 stations within the University of San Paolo. Unfortunately, most policies that promote cycling or bike sharing in Latin America and the Caribbean do not count with impact assessments yet.

Another set of policies within transportation focuses on electric vehicles and electric charging points with the aim to reduce urban pollution and CO2 emissions. In this sense, the British government wants to increase the number of public charging points for electric vehicles to 300,000 by 2030 making colleges and universities part of the implementation of this policy. Similarly, Barcelona has sustainable mobility policies that include electric mobility. With such network already in place, the universities in the city, have included public parking space with charging points for electric vehicles in several of its campuses, for their community or exclusively their faculty. Pompeu Fabra University, for example, offers a shuttle service between its campuses run entirely by electric vehicles and hosts an electric scooter sharing station.

Other support mechanisms for HEI involvement in the sustainable development of cities include the development of funds for the operation of projects that promote sustainable mobility and green technologies. In Uruguay, the government, in collaboration with the University of the Republic of Uruguay, launched the Maggiolo fund to promote the development of research to solve the main mobility problems of Montevideo.

At the regional level, the Inter-American Development Bank operates Cities lab an initiative that promotes the participation of students and academics in the development of solutions to main urban challenges in cities.

POLICIES ON OPEN SPACES, SERVICES, AND CULTURE

Regarding the influence over HEIs open spaces, services, and cultural contribution, policies can be classified by their geographical impact and HEIs´ accountability to the policy at stake.

International agreements and collective action plans have created a starting point for the countries, cities, and other stakeholders involved. For instance, the Urban Agenda for the EU embraces collaboration through action partnerships that lay out and work on priorities, objectives and steps that urban stakeholders can consider for the future design of green spaces, integration and poverty reduction services, and cultural initiatives. For example, the specific action plan for Culture/Cultural Heritage calls for direct involvement of universities to identify research needs in the area of cultural services and culture for social inclusion through EU funded research projects, and to guarantee that the results are used at the local level. Although non-binding, these types of supranational commitments set the agenda that guide governments to work closely with local stakeholders such as HEIs, to respond to the needs of their urban ecosystems, aligned with larger societal goals.

At the country level, over 120 countries have developed a national urban policy and frameworks India's Urban Outcomes Framework, for example, sets specific indicators to monitor cities' sustainability performance such as compliance with national green building rating systems, which include regulations on open green areas, energy efficiency, learning and dissemination activities This type of policy has already been implemented at various HEI campuses across India. For example, the Manipal University Jaipur was granted a 5 star rating in the Green Rating for Integrated Habitat Assessment for reducing buildings' resource consumption, waste generation, and overall ecological impact against nationally established benchmarks. This included reducing physical barriers for people with disabilities and redesigning spaces towards a more environmentally friendly campus, among other initiatives. Beyond the localized environmental and social benefits of such efforts, their impact can be further reaching if serving as a benchmark or inspiration for other infrastructure building - or owning - actors with an urban footprint.

At the same time, national and international institutions can set up or support programmes to encourage collaboration between universities and local governments in order to better address urban sustainability and adaptation issues.

Local governments and universities can also collaborate in the management of green spaces. While HEIs tend to have autonomy over the use of their institutional land and buildings, governments can provide additional land or resources for its maintenance, as shared spaces between the campus community and the local population. A clear example of this is the planned expansion of open greenway areas that connect HEIs with neighbourhoods and the rest of the city in Vancouver, and their collaboration in the protection of cultural heritage (some of which is in HEI's land) as proposed in the Vancouver Plan 2050.

Nonetheless, policies on open spaces, services, and culture rarely consider HE as key actors. Contrary to national and local governments that are directly responsible to meet citizens' needs, based on the policies reviewed, HE engagement with the community in these areas is not seen as instrumental to achieve SDG 11. However, existing initiatives show the potential contribution of HE to create more sustainable cities beyond the physical campus. Public policies should capitalize on existing infrastructures and collaborate with HEIs to strengthen their contribution to the global sustainability agenda.

In this line, the political will of national and local governments is key for the successful involvement of HEIs in SDG 11 initiatives. The evaluation of the Erasmus + CityLab project for sustainable cities involving 80 universities across Latin America and Europe shows how the impact of university-government cooperations changes depending on if, how and when governments include universities in the decision-making process, especially when city administration face capacity barriers to respond to challenges on their own. For example, when universities are involved in the planification stages of urban innovation initiatives, it increases the likelihood of HEIs, students, teachers and researchers to participate in the implementation phases.

3.6

POLICIES ON COLLABORATION AMONG LOCAL STAKEHOLDERS

The human capital, research capacities and specific know-how of HEIs have been harnessed by local and national governments to develop and improve sustainable development strategies for cities. Among the main policies implemented to promote the participation of HEIs' research in local and regional development of cities are: i) the design of innovation plans, programmes or strategies, ii) the creation of support structures such as agencies or departments to foster innovation, iii) applied research funding schemes, and iv) the creation of smart cities and geographies of innovation such as science and technology parks and innovation hubs or districts.

One of the oldest regional development strategies is the Smart Specialisation Strategy (S3). It was developed by the European Commission as part of its cohesion policy, and seeks to foster knowledge-based growth using a place-based approach, that is, maximizing the added value of geographical proximity of interconnected business and innovation entities. The policy seeks to create local clusters of innovation, giving a special role to HEIs and research centres, providing funding as well as administrative and regulatory frameworks in order to encourage HEIs' participation. Within this strategy, Finland operated the Six City Strategy, to promote the sustainable development of the country's six largest cities. Universities participated in several projects to develop technology that promotes urban mobility, sustainable transportation, and circular economy (the maximization of sharing, reusing and recycling existing materials and products, therefore reducing waste) in each city, among other SDG 11-related topics. For example, Metropolia University of Applied Sciences in Helsinki coordinated the project HIPPA to provide better smart housing services involving users, developers and service providers with the help of technology and data. To secure a long-term impact, the project led to the creation of a permanent network (TUTUnet).

Similarly, Thailand has implemented strategies to promote the development of their regions under a place-based specialization approach. Through Thailand's bio-circular-green economy model, the country promotes the development of four economic corridors focused on strategic sectors (agriculture, health, energy and tourism). HEIs participate in the development of technology that promotes the optimization of waste in production processes, smart agriculture, the use of renewable energies and the development of tourism in cities. To accelerate the

Create local clusters of innovation, giving a special role to HEIs and research centres, providing funding as well as administrative and regulatory frameworks in order to encourage HEIs' participation

implementation of this economic model, the government launched the Thailand Higher Education and Innovation Policy Accelerator, an initiative that supports the design of policies focused on the development of innovation within universities, government, business and civil society organizations.

Other policies that consider the involvement of HEIs for the sustainable development of cities are the strategic plans for the creation of smart cities. Examples of such initiatives include Masdar City in Abu Dhabi. This newly built neighborhood is the result of a planned project led and financed by the government of Abu Dhabi. From its inception, this 'smart city' area was conceived as a research and development hub for the creation of efficient solutions in energy, mobility, sustainable agriculture, water, and environmental building performance. HEIs participate in the development and implementation of research projects within Masdar City. For example, Khalifa University of Science and Technology operates Masdar Solar Hub, an independent solar testing and research hub co-funded by the government of Abu Dhabi and industry partners, to accelerate the development of solar technologies for the city.

Governments have also envisaged the creation of innovation districts, technology parks and research laboratories as strategies for urban development. For example, in South Korea, the government launched a policy to support the development of campus innovation parks in universities. In addition, in 1973, the government of South Korea created a public research district in Daedeok to promote innovation-based economic development in the area. The success of the strategy evolved into a regional innovation cluster called INNOPOLIS in 2005. Today, INNOPOLIS is a set of five regional innovation hubs that promote the interaction between academia, business, and society for the strategic development of cities. Another similar example is the Punggol Digital District in Singapore.

In addition to these innovation spaces, governments have created supporting structures such as innovation agencies and business incubators. In Singapore, the National Research Foundation is responsible for implementing and developing policies for the promotion of research that contributes to the country's transformation into a science and innovation hub. Among the strategies implemented by this agency are the innovation project funds for the development of urban solutions and sustainability.

In Austria, the city of Salzburg has developed an Urban Mobility Laboratory, led by the Salzburg Institute for Regional Planning and Housing and has three research partners: Salzburg Research, RSA iSPACE, and the Department of Geoinformatics of the University of Salzburg. The research developed within the Laboratory has been instrumental in the planning and implementation of urban mobility and logistics in the central area of Salzburg. And in Tunisia, the Agency for Promotion of Industry and Innovation, through the Center for Innovation and Technological Development, has implemented a national programme for the establishment of business incubators involving HEIs supported by the Ministry of Education and the Ministry of Industry.

Governments have created supporting structures such as innovation agencies and business incubators

Analysis

4

How can the contribution of universities to sustainable cities and communities be assessed? The *Times Higher Education* Impact indicators can provide an understanding of how universities set out and demonstrate their commitment to tackling the problems described in the United Nations Sustainable Development Goals (SDGs).

The institutional data for these impact indicators are provided directly by universities, which opt in to take part in the exercise. They can submit data on as many of the SDGs as they are able or interested. The voluntary effort required in gathering and providing the data already suggests that they are committed to taking action to achieve sustainable development in those areas.

The metrics used to evaluate a university's progress in the SDGs involve a self-submission of evidence from the university, usually in the form of a statement, policy or series of documents that can evidence that they are taking action to address the issue in each metric. Universities are scored further for providing evidence to show the existence of policies or measures in these metrics, and further again for ensuring that these are public, accessible and transparent. For research metrics, scores are provided based on document searches in the Scopus dataset directly related to SDGs.

UNIVERSITIES AND SDG 11- THE SAMPLE

For the purposes of this analysis, universities have been grouped geographically according to the official UN SDG regional groupings used in the SDG Report and Statistical Annex. These groupings are:

- Sub-Saharan Africa (SSA)
- Northern Africa and West Asia (NAWA)
- Central and Southern Asia (CSA)
- Eastern and South-Eastern Asia (ESEA)
- Latin America and the Caribbean (LAC)
- Oceania
- Europe and North America (ENA)

The impact metrics and indicators are the only proxies to date that demonstrate universities' contributions to SDG 11 at a global scale. For SDG 11, each university is measured across four different areas. These are:

1. Research (including bibliometric measures around research output and the quality of research on sustainable cities and communities).
2. Support for arts and heritage (including efforts to increase public access and to preserve heritage).
3. Expenditure on the arts and heritage (referring to the overall spend on buildings, spaces and events dedicated to the arts and heritage).
4. Sustainable Practices (analysing university policy and practice on nine metrics related to sustainable commuting, housing, planning, and building).

In total, 860 institutions provided data on SDG 11 in 2023, out of a total of 1625 institutions that submitted to SDG 17 (which is the only compulsory goal that universities must submit). It was the ninth most popular SDG globally in 2023. However, as Figure 1 shows, apart from SDG 17, only SDG 3 (Good Health and Well-Being), SDG 4 (Quality Education) and SDG 5 (Gender Equality) have a significantly higher number of university submissions.
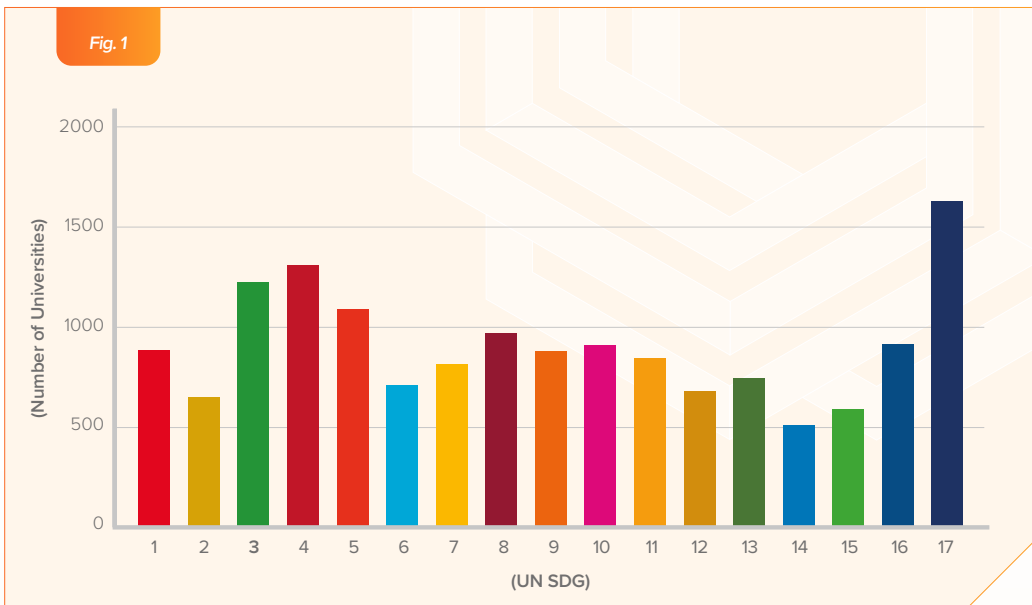
As shown in Figure 2, the overall number of universities submitting SDG data has consistently grown over the last three years (as evidenced by the total number of submissions for SDG 17), and the proportion of university submissions for SDG 11 in relation to the total has been stable between 54% and 58%.
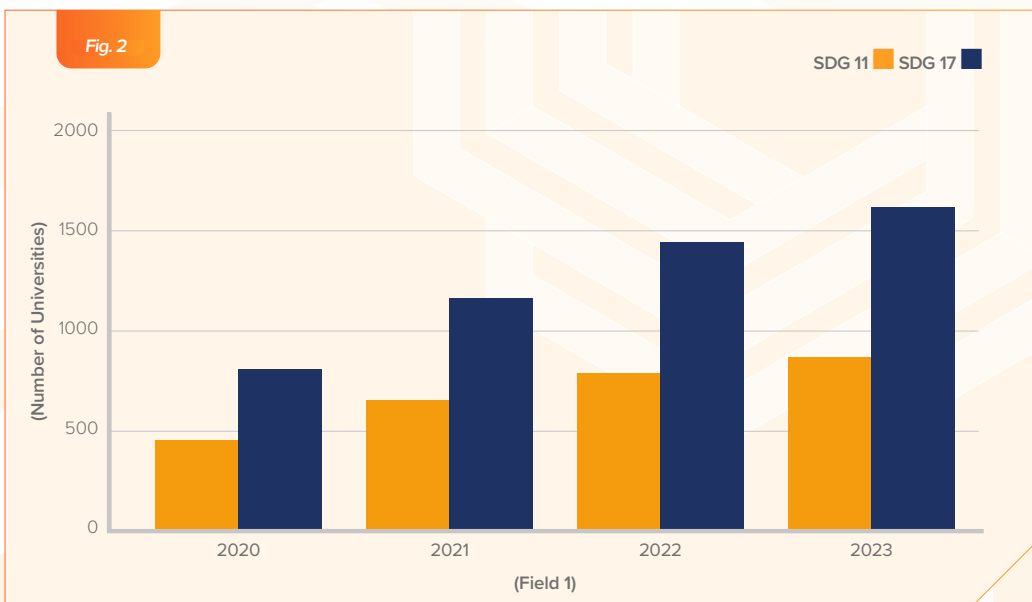
Although 860 institutions participating in SDG 11 represents a very small percentage of the number of higher education institutions worldwide, they represented 89 countries, and 28 of those countries have 10 or more their institutions participating in SDG 11, providing a unique and growing international snapshot of how universities worldwide are attempting to deal with the challenges.

Fig. 3

Italy
14 Universities | 58.7 Average score

France
16 Universities | 56.3 Average score

Canada
22 Universities | 77.8 Average score

United Kingdom
36 Universities | 74.9 Average score

South Korea
16 Universities | 60.2 Average score

Portugal
10 Universities | 56.9 Average score

United States
25 Universities | 71.6 Average score

Malaysia
17 Universities | 57.4 Average score

Spain
28 Universities | 60.2 Average score

Australia
18 Universities | 80.5 Average score
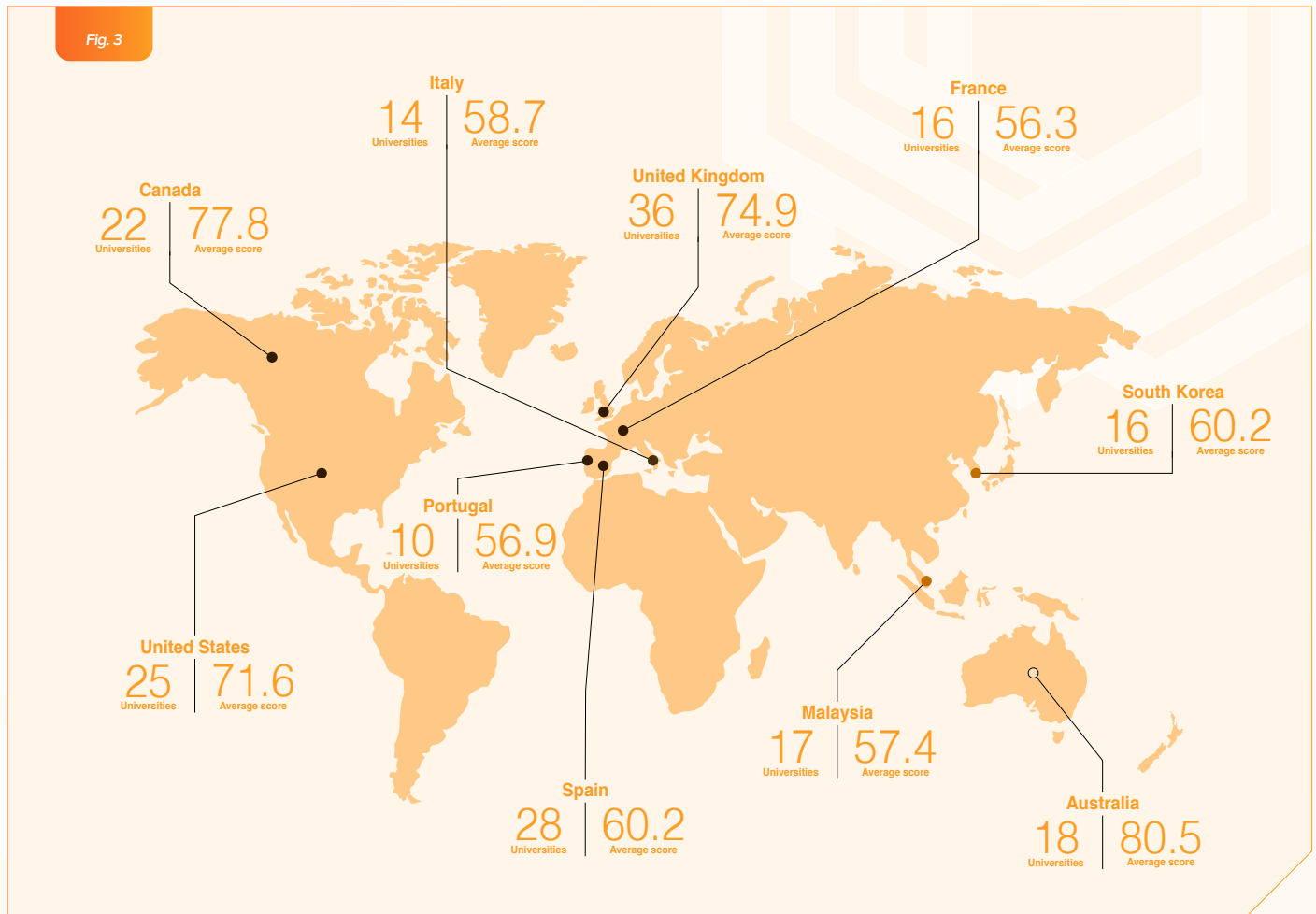
Figure 3 shows the highest average country scored for SDG 11, with countries that have a minimum of at least 10 universities submitting data. Hong Kong, Denmark and Israel have scored above 70 for SDG 11, but with less than 10 institutions submitting data.

As seen in Figure 4 below, by applying a minimum threshold of ten universities submitting SDG 11 data we obtain a list of 28 countries, of which there are ten countries from the ENA region and seven from the East and Southeast Asia (ESA) region. Whilst in general ENA countries would be expected to have more resources to develop policies around sustainable cities and communities, as well as higher research impact and expenditure capabilities in the arts and heritage (due to greater funding and income), universities around the world are attempting to confront the challenges around SDG 11.

Country	Number of Universities	Average Score
Australia	18	80.5
Canada	22	77.8
United Kingdom	36	74.9
United States	25	71.6
Spain	28	60.2
South Korea	16	60.2
Italy	14	58.7
Malaysia	17	57.4
Portugal	10	56.9
France	16	56.3
Japan	58	52.4
Thailand	42	49.9
Poland	11	48.7
Mexico	11	48.6
Egypt	25	47.8
Indonesia	22	44.5
Russian Federation	49	44.1
Turkey	46	43.0
Philippines	10	42.3
India	14	41.8
Pakistan	22	40.4
Iran	11	39.6
Brazil	30	38.9
Iraq	20	31.7
Kazakhstan	11	29.9
Uzbekistan	19	27.5
Ukraine	22	27.5

Legend:
- Oceania
- Central and South Asia
- Latin America and the Caribbean
- East and Southeast Asia
- North Africa and Western Asia
- Europe and North America

In terms of the distribution of the 89 countries represented in SDG 11 data, the Europe, and North America (ENA) region has the highest with 34, with Oceania only represented by two countries. Compared to overall number of countries that could submit, only five countries represent the Sub-Saharan region. Overall, the number of countries being represented within each SDG geographical region does not necessarily correlate to the number of universities within regions submitting data to SDG 11, as shown in Figure 5.

Though the Europe and North America region accounts for approximately 38% of both the number of countries represented and the number of universities that submitted data to SDG 11, other regions have greater divergence. For example, the East and Southeast Asia region (ESA) and the Latin America and the Caribbean (LAC) region each account for 13.5% of the number of countries represented, but almost one-quarter of all universities represented are from ESA, compared to under 10% for LAC. Further down, just seven universities submitted data from four Sub Saharan countries.
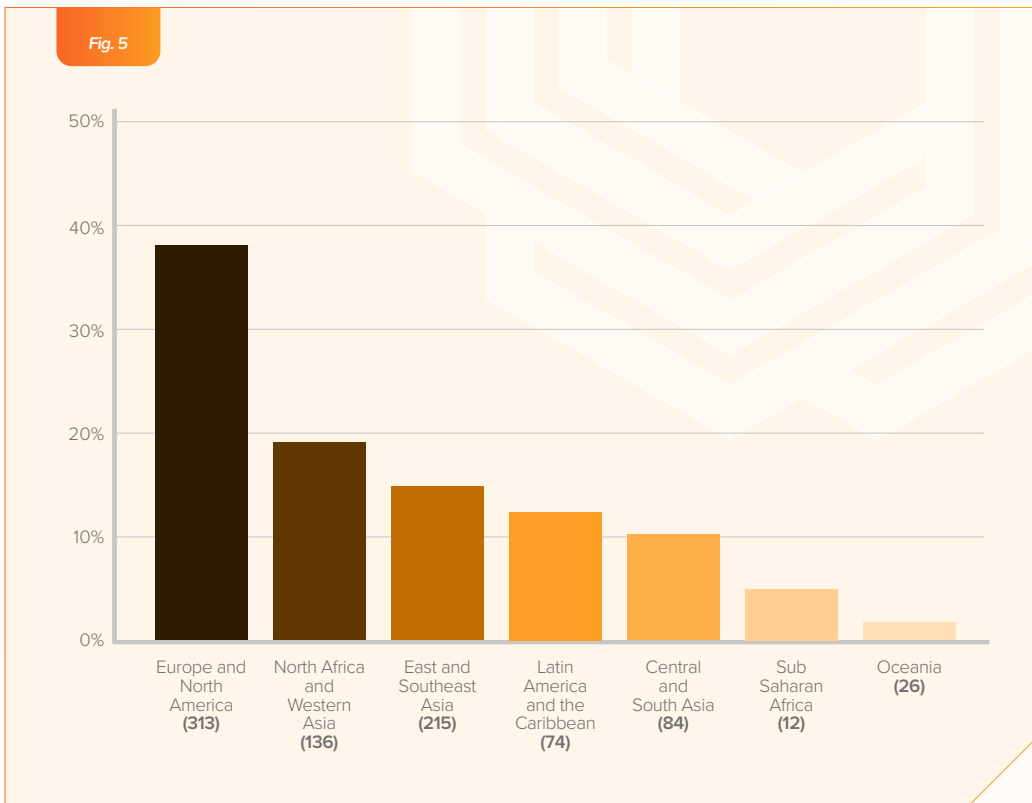
Fig. 5

A key issue is the potential for collaboration. Universities from Sub-Saharan Africa represent slightly above 1% of all the institutions submitting to SDG 11, yet many countries in the region face urgent issues and challenges around sustainable cities and communities. Since expertise has been developed in other regions of the world, the potential to share good practices can be encouraged in the SSA region, where only Kenya, Nigeria, Uganda, South Africa, and Zambia are represented.

At a regional level, the overall average score for each region can be skewed by the relative number of countries that submitted data for SDG 11. As can be seen in Figure 6, Oceania has the highest regional average score for SDG 11 but is represented by just 26 universities and 2 countries. Meanwhile Europe and North America's average score – which contains some of the highest scoring institutions for SGD 11 – is around 11% higher than Sub Saharan Africa. However, the Figure 6 also gives a sense of how variable the scores are between countries within different regions.

Fig. 6
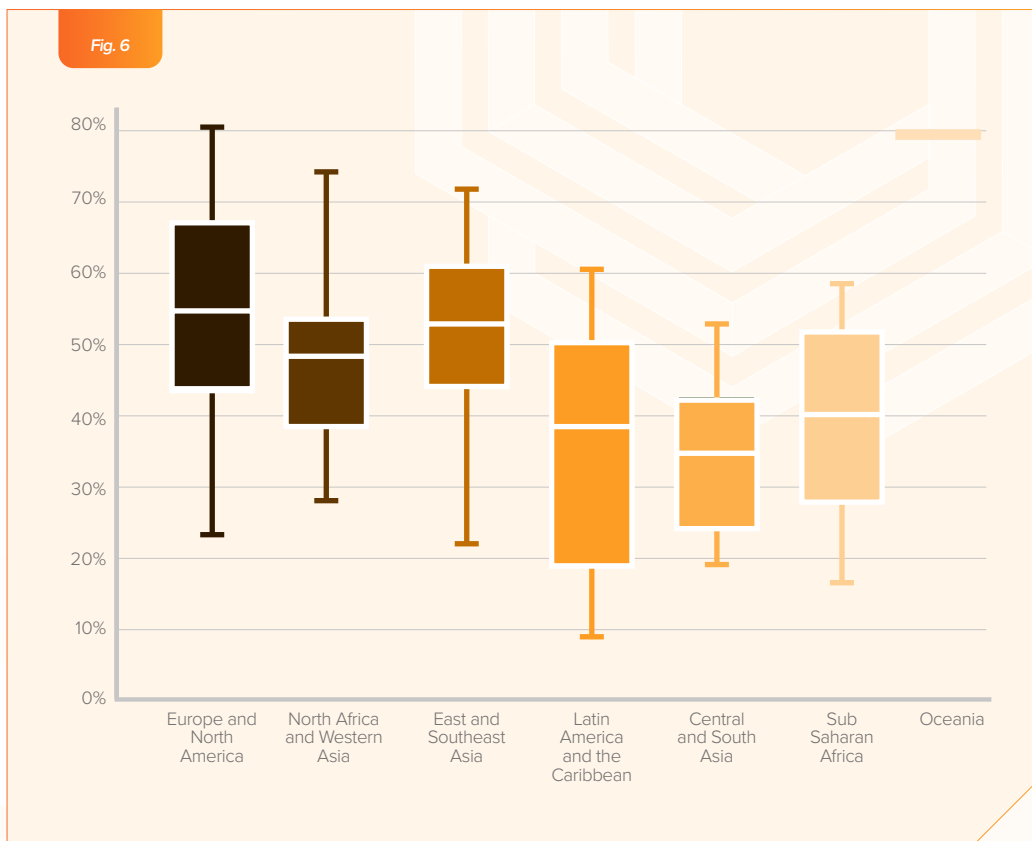
Figure 6: Average Scores for SDG regions submitting to SDG 11.

The regional average scores show some interesting trends, the main one being that whilst there are higher scores in Europe and North America, the regional average is not too far ahead of the East and Southeast Asia, North Africa, and Western Asia regions, and significantly behind Oceania (though, as mentioned, this is a skew due to a lower rate of submissions).

Overall, whilst it is encouraging that there has been a steady rise in the number of submissions for SDG 11 (as well as to the SDGs overall), there is significant variation between the quality of actions being undertaken for SDG 11 (as evidenced by the scores) at an institutional, national, and regional level. The following section will take a closer look at how each region performed on the individual metrics that constitute SDG 11. For the rest of the analysis, the Sub-Saharan African region has not been included, since only 12) universities from the region submitted data for SDG 11.

ANALYSIS OF SDG 11 DATA

4.2

OVERVIEW OF SCORES

This section will provide deeper insight into the trends for institutional performance within SDG 11 metrics. These metrics are grouped in the three areas of Sustainable Practices, Arts and Heritage, and Research. For each of these groupings, the data for underlying metrics is analysed. Sustainable Practices is the largest area, with nine metrics underpinning it. Arts and Heritage has six policy and practice-based metrics, with an additional one on the proportion of institutional expenditure devoted to arts and heritage. Finally, the research-based area has three metrics, evaluating research excellence, quality and output.

The average scores for each region for each metric grouping, and the individual metrics within those grouping, are provided below in Figures 7, 8 and 9. These scores do not represent percentages but are the result of indicator-specific formulas. Figure 10 shows the final global averages.

Regions	sustainable practices targets	promote sustainable commuting	allow remote working	affordable housing for employees	affordable housing for students	pedestrian priority on campus	local authority collaboration regarding planning and development	planning development new build standards	building on brownfield sites	Average score for Sustainable Practices
Oceania	83.33	97.43	94.23	41.89	92.74	80.76	64.09	92.30	71.14	**79.77**
East and Southeast Asia	46.63	71.33	55.67	56.40	70.67	59.09	44.53	54.89	39.70	**55.44**
Europe and North America	53.83	70.67	66.93	32.66	72.83	51.80	43.79	55.22	40.37	**54.23**
North Africa and Western Asia	46.65	59.32	48.88	11.55	37.98	43.98	41.09	44.88	26.44	**40.08**
Latin America and the Caribbean	39.44	52.55	34.66	31.67	46.74	44.58	29.15	40.91	22.90	**38.07**
Central and South Asia	33.50	41.35	29.98	25.91	44.14	40.37	23.32	32.14	21.75	**32.50**
Global Average	**47.71**	**64.83**	**54.44**	**36.38**	**62.53**	**51.44**	**40.06**	**50.70**	**35.33**	**49.27**

Figure 7 shows that globally, the extent to which universities undertake different sustainable practices highly varies. Promoting sustainable commuting is the practice that universities undertake and communicate more often, followed by policies and activities to support affordable housing for students. Building on brownfield sites - the practice of reusing, refurbishing and remaking existing built areas - is the most underperforming practice for universities, with all regions except Oceania scoring below 50. Promoting sustainable housing for employees is also a generally infrequent practice among universities.

By regions, Figure 7 shows that universities from Oceania lead the way significantly across all metrics that underpin Sustainable Practices. These are explored in further detail in figures 11 to 19 below, which show the levels of evidence submitted by universities to demonstrate their policies and activities for each individual metric.

▼ Figure 8: Average scores per region for the Arts and Heritage metrics

Row Labels	public access to buildings	public access to libraries	public access to museums	public access to green spaces	arts and heritage contribution	record and preserve cultural heritage	Average of score number for SDG 11 Arts and Heritage	proportion of expenditure spent on supporting arts and heritage
Oceania	83.00	98.08	94.55	87.81	74.67	91.46	**88.26**	69.08
Europe and North America	62.44	77.91	72.38	60.06	73.71	64.80	**68.55**	42.40
East and Southeast Asia	60.81	78.27	73.94	62.91	66.31	65.18	**67.91**	43.02
Latin America and the Caribbean	62.99	71.55	64.88	48.87	66.88	57.26	**62.07**	27.53
North Africa and Western Asia	42.20	56.36	48.45	41.83	50.72	52.31	**48.65**	42.73
Central and South Asia	35.47	43.41	34.20	31.95	36.16	32.08	**35.55**	43.09
Grand Total	**56.37**	**70.78**	**64.67**	**54.68**	**63.77**	**59.53**	**61.63**	**41.98**

Globally, Figure 8 shows that universities in the sample generally have a higher performance on Arts and Heritage indicators than on Sustainable Practices. What universities do more often is to allow the public to access their libraries and museums and the most uncommon practice is to allow the public to access green spaces.

By region, Figure 8 shows that Oceania scored the highest for arts and heritage, for both policies/activities, as well as expenditure. Central and South Asia underperform in policies and activities, whereas the Latin American and Caribbean region has the lowest proportion of expenditure spent on supporting arts and heritage.

▼ Figure 9: Average scores per region for the Research Metrics

Regions	sustainable cities and communities citescore	sustainable cities and communities fwci	sustainable cities and communities publications	Average of score number for SDG 11 Research
Oceania	75.40	81.21	89.59	**82.06**
Europe and North America	51.50	59.96	60.25	**57.24**
North Africa and Western Asia	41.35	50.87	35.91	**42.71**
East and Southeast Asia	43.10	39.16	45.02	**42.43**
Latin America and the Caribbean	45.09	33.49	47.93	**42.17**
Central and South Asia	28.92	47.28	24.02	**33.41**
Global Average	**45.65**	**50.47**	**48.83**	**48.32**

Regarding the contribution of universities to cities and communities through research, the scores show that there is room for improvement in all regions and metrics. For most regions, scores reflecting research excellence, quality and output were below 50. For the research metrics, Oceania is the highest scoring region, followed by Europe and North America.

▼ Figure 10: Overall Regional Average Scores

Fig. 10

Regions	Oceania	ENA	ESA	LAC	SSA	NAWA	CSA	Grand Total
sustainable cities and communities citescore	75.40	51.50	43.10	45.09	45.30	41.35	28.92	**45.65**
sustainable cities and communities fwci	81.21	59.96	39.16	33.49	63.26	50.87	47.28	**50.47**
sustainable cities and communities publications	89.59	60.25	45.02	47.93	59.49	35.91	24.02	**48.83**
public access to buildings	83.00	62.44	60.81	62.99	29.16	42.20	35.47	**56.37**
public access to libraries	98.08	77.91	78.27	71.55	45.13	56.36	43.41	**70.78**
public access to museums	94.55	72.38	73.94	64.88	32.63	48.45	34.20	**64.67**
public access to green spaces	87.81	60.06	62.91	48.87	39.57	41.83	31.95	**54.68**
arts and heritage contribution	74.67	73.71	66.31	66.88	60.41	50.72	36.16	**63.77**
record and preserve cultural heritage	91.46	64.80	65.18	57.26	43.02	52.31	32.08	**59.53**
proportion of expenditure spent on supporting arts and heritage	69.08	42.40	43.02	27.53	27.76	42.73	43.09	**41.98**
sustainable practices targets	83.33	53.83	46.63	46.65	31.92	39.44	33.50	**47.71**
promote sustainable commuting	97.43	70.67	71.33	59.32	66.65	52.55	41.35	**64.83**
allow remote working	94.23	66.93	55.67	48.88	54.15	34.66	29.98	**54.44**
affordable housing for employees	41.89	32.66	56.40	11.55	47.18	31.67	25.91	**36.38**
affordable housing for students	92.74	72.83	70.67	37.98	46.26	46.74	44.14	**62.53**
pedestrian priority on campus	80.76	51.80	59.09	43.98	44.42	44.58	40.37	**51.44**
local authority collaboration regarding planning and development	64.09	43.79	44.53	41.09	47.20	29.15	23.32	**40.06**
planning development new build standards	92.30	55.22	54.89	44.88	47.20	40.91	32.14	**50.70**
building on brownfield sites	71.14	40.37	39.70	26.44	41.64	22.90	21.75	**35.33**
Average	**82.25**	**58.61**	**56.67**	**46.70**	**45.91**	**42.39**	**34.16**	**52.64**

The overall average score of SDG 11 metrics suggests that there are significant improvements to be made to policies and activities undertaken by universities to reach the standard that is set by Oceania. Arts and Heritage practices tend to get more focus while sustainability practices are less common and the research metrics show the greatest room for improvement The data presented allows a closer look at those individual practices that are particularly underperforming, with four metrics in the Sustainable Practices area and a further two metrics from the Research area averaging below 50.

The data also shows where individual regions can improve. The next section shows the breakdown of each metric in further detail, showing how for each metric in each area, universities are producing evidence to demonstrate how they are achieving targets for SDG 11.
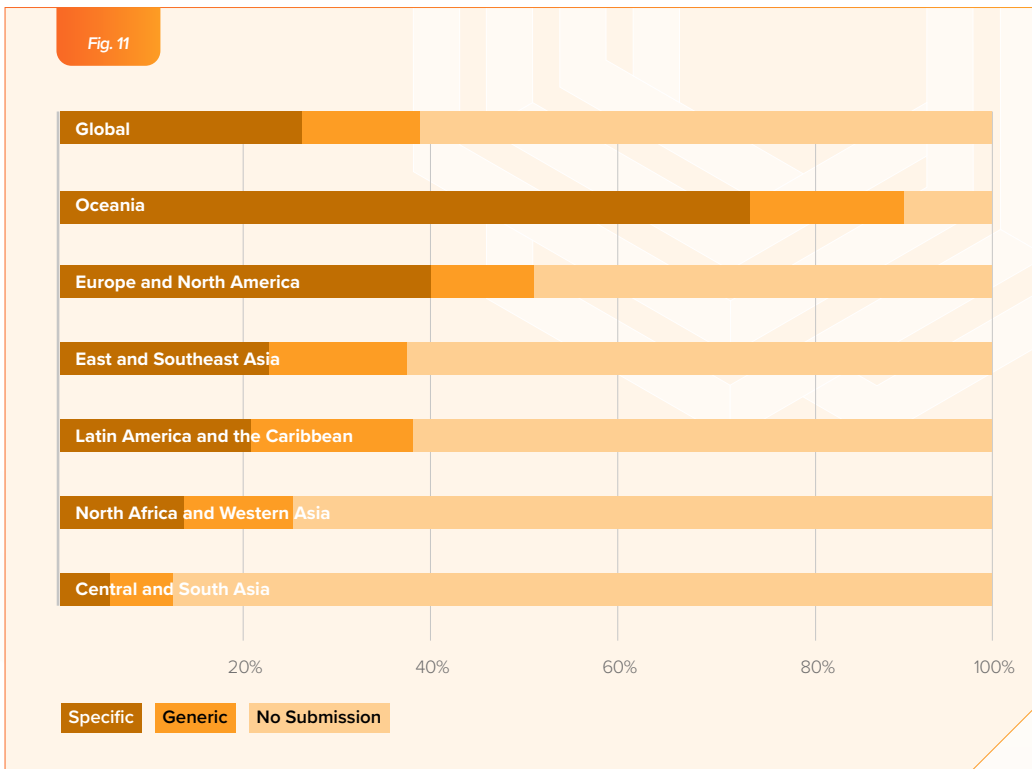
SUSTAINABLE PRACTICES

For this SDG 11 metric area, universities are evaluated across nine different metrics related to university policies for commuting, housing, and the planning and development of sustainable buildings.

The metrics within ´sustainable commuting practices´ show whether universities measure and set targets for more sustainable commuting, including walking, non-motorized transport, electric vehicles, carpools, shuttle buses, and public transportation. Monitoring and evaluating these commuting practices allow universities to gauge the success of schemes designed to promote sustainable commuting, understand challenges that might be preventing further good practices, and create defined strategies to encourage it. Without monitoring, gaps may remain undiscovered, and no informed decision or accountability mechanism will be possible. Without concrete quantitative targets and relying solely in incremental goals based on the high-level wish to "improve", "support" or "increase" sustainable transportation, decisionmakers will hardly feel the pressure to prioritize these goals, which may – in such case – prove to be more narrative than effective.

The figures 11-15 on the following pages show what percentage of institutions in a region submitted evidence of their policies and practices in meeting SDG 11 targets. "Specific" evidence refers to evidenced and transparent policies and practices that fulfil the requirements of that metric. "Generic" refers to where a policy may be in existence, but no concrete examples of practice or impact are provided. This entails a change in the methodology that had been used until 2022.

Fig. 11

Global	
Oceania	
Europe and North America	
East and Southeast Asia	
Latin America and the Caribbean	
North Africa and Western Asia	
Central and South Asia	

20%   40%   60%   80%   100%

Specific   Generic   No Submission

Figure 11 shows whether universities have defined practice targets for more sustainable commuting. This can include benchmarking the share of students and staff walking and cycling for their commute, as well as their use of mass transit, carpools, or electric vehicles.

The data points out that over 20% of universities submitted specific evidence for this metric. By region, 67% of universities in Oceania submitted specific evidence, indicating that universities in the region not only measure and evaluate the extent of sustainable commuting by their campus communities, but also set up quantitative targets in this area. Universities from the European and North American (ENA) region had the second highest proportion, with under 40% of participating universities providing specific evidence. The Latin America and Caribbean (LAC) and the East and Southeast Asia regions both had below 20% of their universities providing specific evidence of these practices and around two thirds of them providing no evidence. Universities from the Central and South Asia (CSA) region had the lowest proportion, followed by North Africa and Western Asia.

Fig. 12

Chart categories (bottom to top):
- Central and South Asia
- North Africa and Western Asia
- Latin America and the Caribbean
- East and Southeast Asia
- Europe and North America
- Oceania
- Global

X-axis: 20% 40% 60% 80% 100%

Legend: Specific · Generic · No Submission
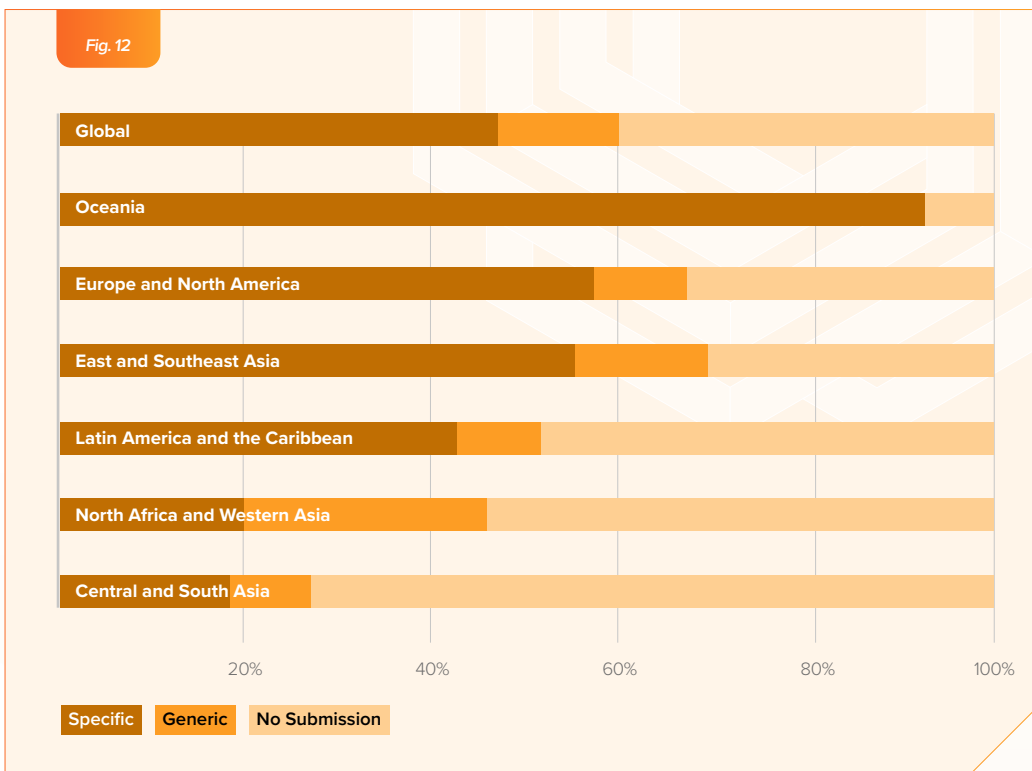
Figure 12: Actions to Promote Sustainable Commuting

Whereas the previous metric shows how universities set targets for sustainable commuting, the data for Figure 12 shows how universities undertake actual actions to promote sustainable commuting (though without describing the extent or the level of ambition of such actions). For Oceania, 25 out of 27 universities submitted specific evidence. This could include policies that offer subsidised public transport (such as the university's own shuttle buses or the provision of scholarships for students to be able to afford existing public transport); creating more cycle lanes and bicycle parking sports to encourage cycling; or creating schemes to encourage private transport sharing. It must also be noted that, while the construction and maintenance of transportation infrastructure and services outside the campus may often fall outside of the remit of universities, this does not mean that these institutions cannot successfully advocate for such resources to be provided by local and regional authorities.

Comparing figures 11 and 12 shows that across most regions, there is a greater proportion of universities submitting 'specific' evidence of actions to promote sustainable commuting than there are for those setting targets to promote sustainable commuting. It suggests that these universities often take actions to promote sustainable commuting, but these may not always take part of a wider strategy involving the monitoring and evaluation of the impact of such actions. While the existence of widespread actions in this area is encouraging, the next step for some universities could be to start integrating those actions into long-term strategic planning or programs gathering success and impact metrics, which are essential for making informed decisions under a continuous improvement framework.

Fig. 13

Global

Oceania

Europe and North America

Latin America and the Caribbean

East and Southeast Asia

North Africa and Western Asia

Central and South Asia

20%   40%   60%   80%   100%

Specific   Generic   No Submission
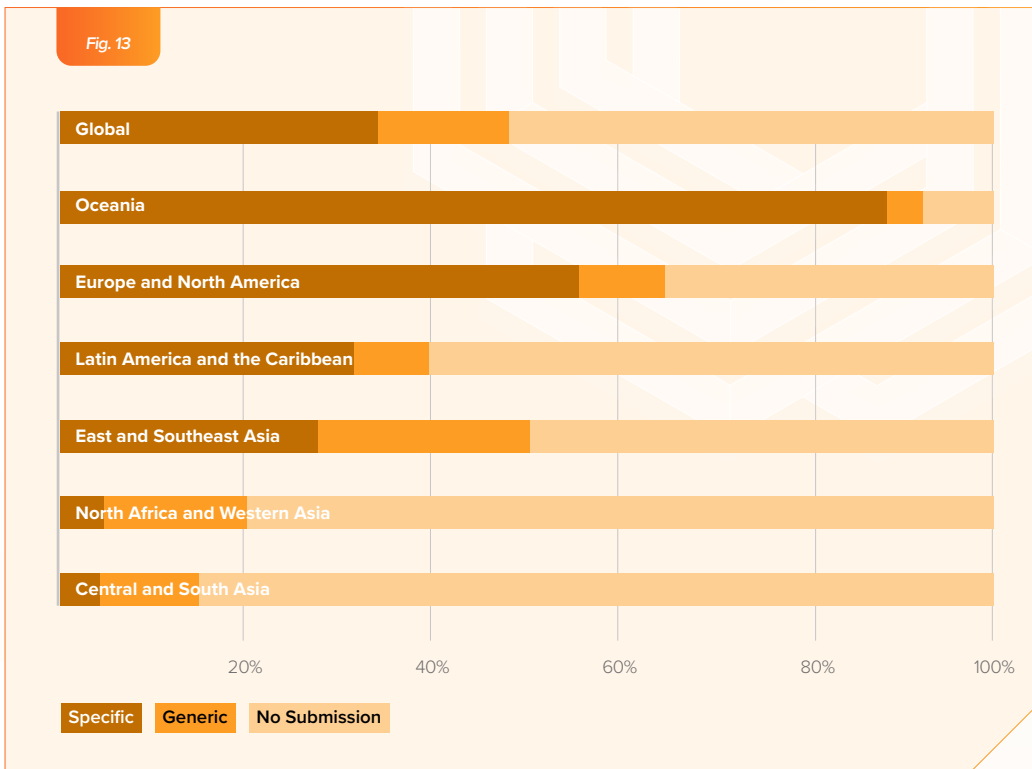
Figure 13 shows university data on their policies to allow or promote remote working. Also known as 'telecommuting' or ´telewoking´, these are policies aimed at reducing the overall amount of employee commuting, besides other potential benefits, and therefore contribute to the reduction of carbon emissions and traffic congestion. Remote working practices include working from home and using digital technologies to remotely attend meetings. Universities can also encourage condensed working weeks (for example, a four-day working week) to ensure less employee travel. Sometimes policies will refer to these practices as flexible working, or hybrid working. It must be stressed that this metric does not require or encourage a maximization of remote working over presential working but merely the existence of policies that allow or promote it, the extent to which will always depend on the nature of the tasks and the university context.

Overall, around 30% of universities submitted full evidence and over 30% some evidence for remote working practices. By region, Oceania had the highest proportion of institutions submitting specific evidence (over 90%), with Europe and North America next. However, most institutions at the North Africa and Western Asia (NAWA) and Central and South Asia (CSA) regions did not submit any policies, with only 5% submitting specific actions or policies.
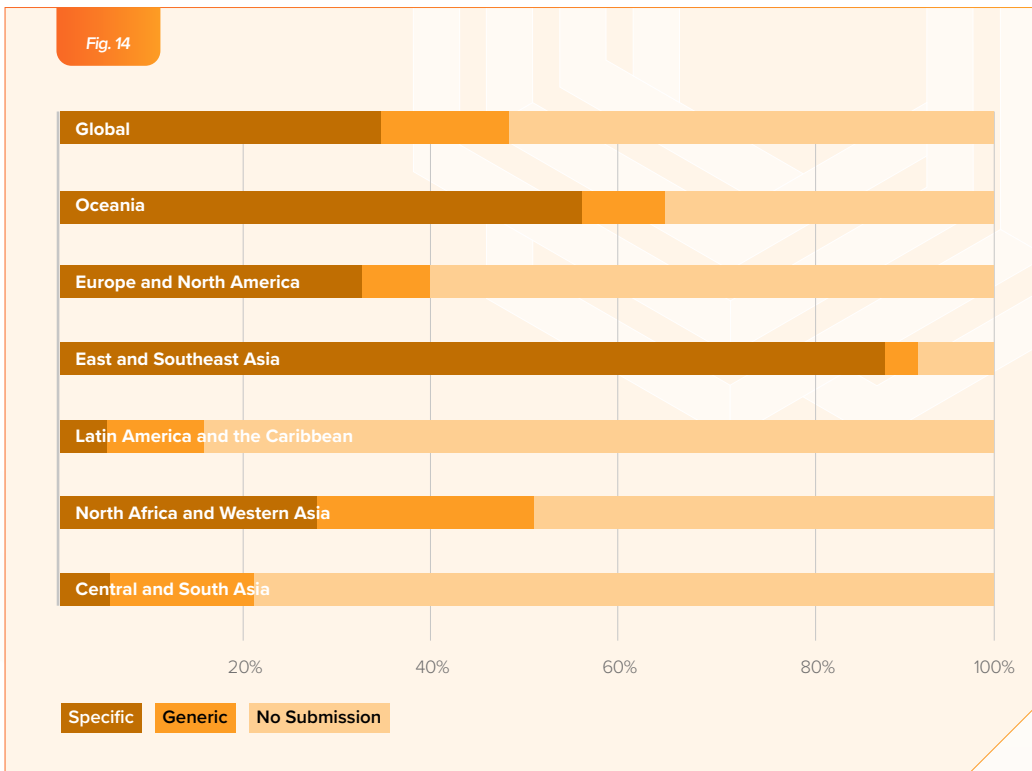
Fig. 14

Global

Oceania

Europe and North America

East and Southeast Asia

Latin America and the Caribbean

North Africa and Western Asia

Central and South Asia

20% 40% 60% 80% 100%

Specific   Generic   No Submission

Fig. 15

Global

Oceania

Europe and North America

East and Southeast Asia

Latin America and the Caribbean

North Africa and Western Asia

Central and South Asia

20% 40% 60% 80% 100%

Specific   Generic   No Submission
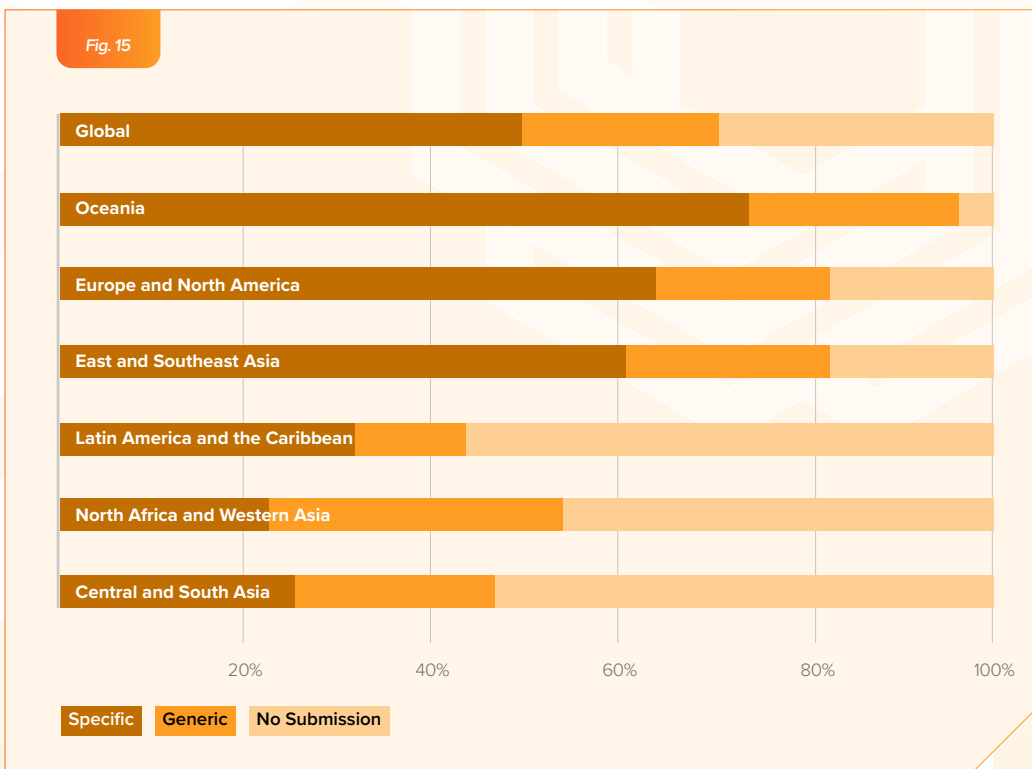
Figures 14 and 15 show how universities support their employees and students in housing. Affordable housing can contribute to sustainable communities and campus-based accommodation (or housing near the campus) can alleviate pressure on local traffic congestion.

Comparing the two figures shows that across all regions, universities perform better in supporting affordable housing for students rather than for employees, with 50% and 25% of universities submitting specific evidence respectively. The Latin America and Caribbean region have a high percentage of universities supplying no evidence for both housing for employees (close to 90%) and students (above 50%), indicating a need for significant improvement in the policies around accommodation in the region. Oceania also shows a significant gap between the policies on affordable housing for students, with over 70%, and employees, which is under 30%.

There could be many reasons for the global imbalance in supporting affordable housing for students versus housing for employees. One may simply be that university campuses are primarily designed for student accommodation rather than employee accommodation. It may also be that there is a lack of financial support for employee accommodation or that the affordability of housing for employees is assured through adequate salaries rather than through the direct provision of accommodation or accommodation subsidies. However, it should not be automatically assumed that all staff remuneration is already sufficient to ensure housing affordability, particularly if the institution does not have structured mechanisms in place to link salaries to the evolution of the local housing market.
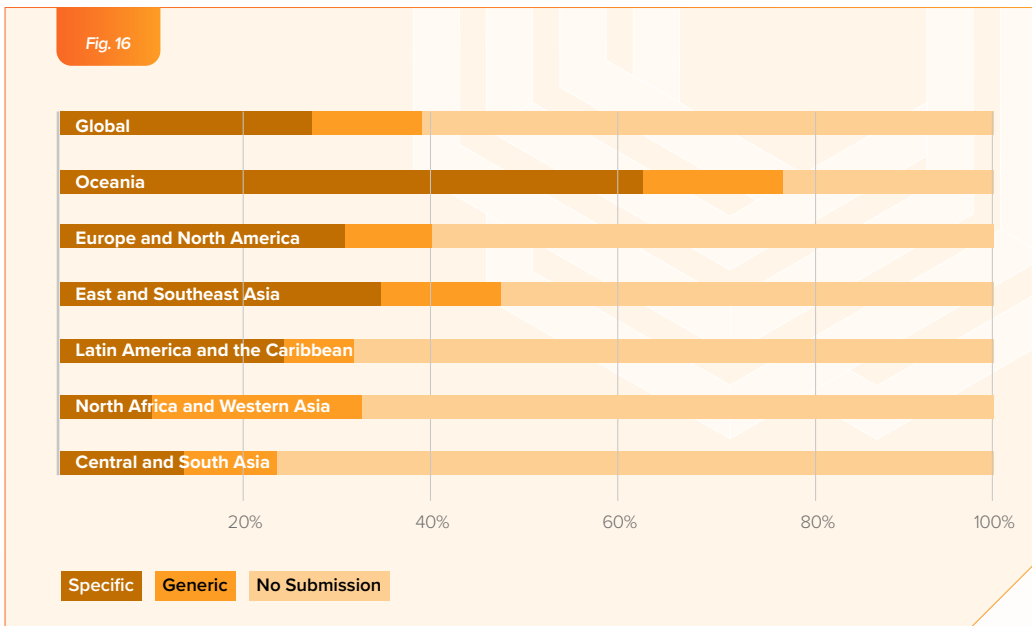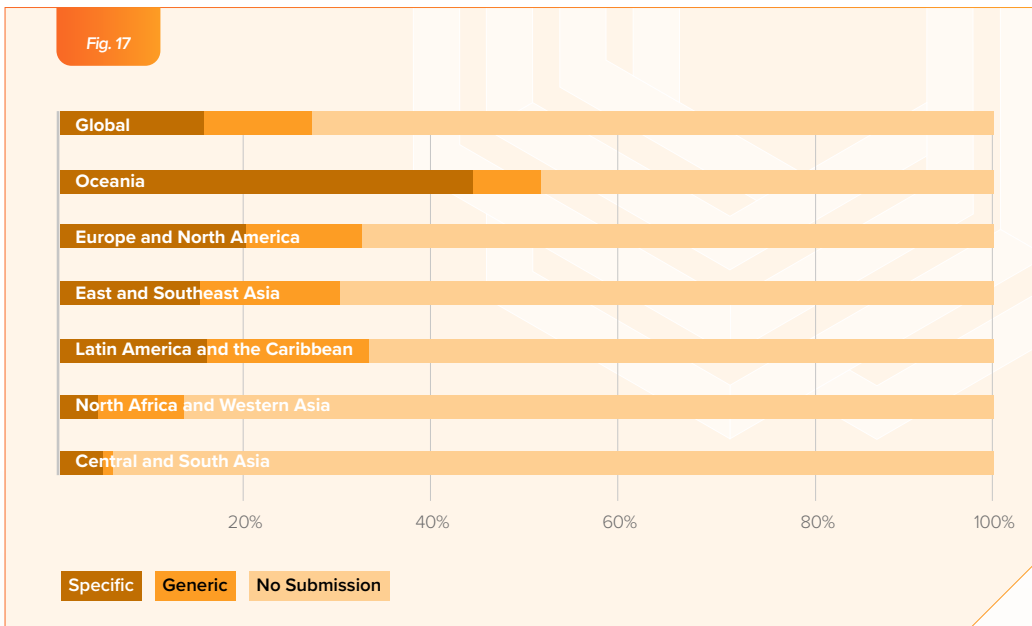
Figure 16: Pedestrian Priority on Campus

Figure 16 shows how universities prioritise pedestrians on campus. These are policies that ensure that pedestrian exposure to congested traffic and emissions are minimized and enhance the experience through dedicated spaces on the campus. Increasing pedestrian activity may contribute not just to individual health and well-being, but also the broader well-being of the campus through reduced noise and pollution.

The data in figure 16 shows over 60% of institutions in all regions didn't submit on policies or practices that prioritise pedestrians on campus. Oceania is the region that mostly provided specific evidence, followed by East and Southeast Asia which had the second highest proportion of universities specific evidence. The results show opportunities for improvement. At the same time, pedestrian promotion policies must be coordinated with other sustainable commuting practices. It must be noted that sometimes pedestrian priority (or pedestrian only) campuses can only be reached through unsustainable means of transport, such as for campuses located afar from the nearest residential areas and which can only be reached via roads that are not safe for cyclists or pedestrians. It is therefore imperative that pedestrian promotion policies within campus are coordinated with other sustainable commuting practices outside of it.

The next three figures are all related to how universities ensure sustainability in the planning and development of their buildings. Figure 17 shows how universities work with local authorities to address planning issues and development, including ensuring that residents can afford housing. Cooperation in this area can be an important element in mitigating any potential inflationary effects that universities may have on the local housing market (most notably, the potential consequences that gentrification can have on the neighbouring population).

Fig. 17

Global					
Oceania					
Europe and North America					
East and Southeast Asia					
Latin America and the Caribbean					
North Africa and Western Asia					
Central and South Asia					

20%   40%   60%   80%   100%

Specific   Generic   No Submission

Slightly above a quarter of universities in all regions have submitted some evidence of working with local authorities on planning and development. By region, Oceania has the highest proportion, and the highest amount of full evidence (45%), which indicates more concrete examples of those kinds of local authority collaborations. The Europe and North America (ENA), the Latin America and the Caribbean (LAC), and the East and Southeast Asia (ESA) regions have all around 30% of universities that submitted either specific or generic evidence, though Europe and North America has the highest proportion of full evidence.

In general, there is significant room for improvement in partnerships development between universities and their local authorities. However, there can be many factors that impact the lower rate of collaboration with local authorities. Firstly, there is geography, including both the different sustainability challenges that are intrinsic to each climatic region, and the actual distance between the university campus and the nearest urban centre. Secondly, there are variations in which SDG 11-relevant competences have been devolved to the local government level. This could include, as well, the amount of funding a local authority has to pursue projects related to sustainability. Finally, internal structures at universities vary significantly across the world, with some universities having large professional services departments dedicated to building partnerships (often referred to as 'extension' services). Others may rely on partnerships exclusively based on interpersonal relationships at the leadership or senior levels, which can be helpful but do not ensure long term continuity of those partnerships or the implementation of joint actions.
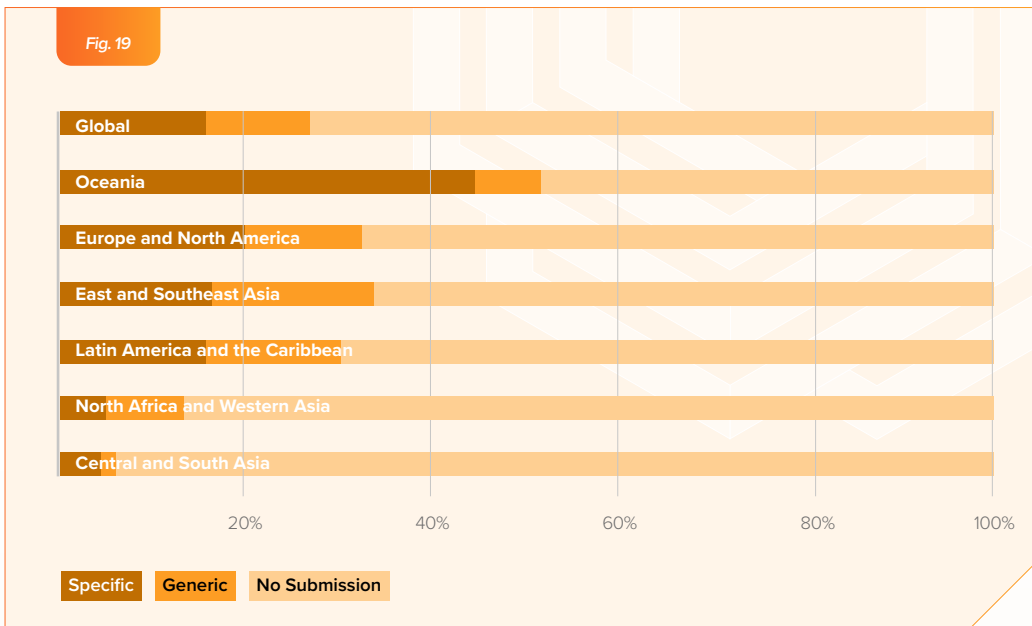
Fig. 18

Global

Oceania

Europe and North America

East and Southeast Asia

Latin America and the Caribbean

North Africa and Western Asia

Central and South Asia

20%   40%   60%   80%   100%

Specific   Generic   No Submission
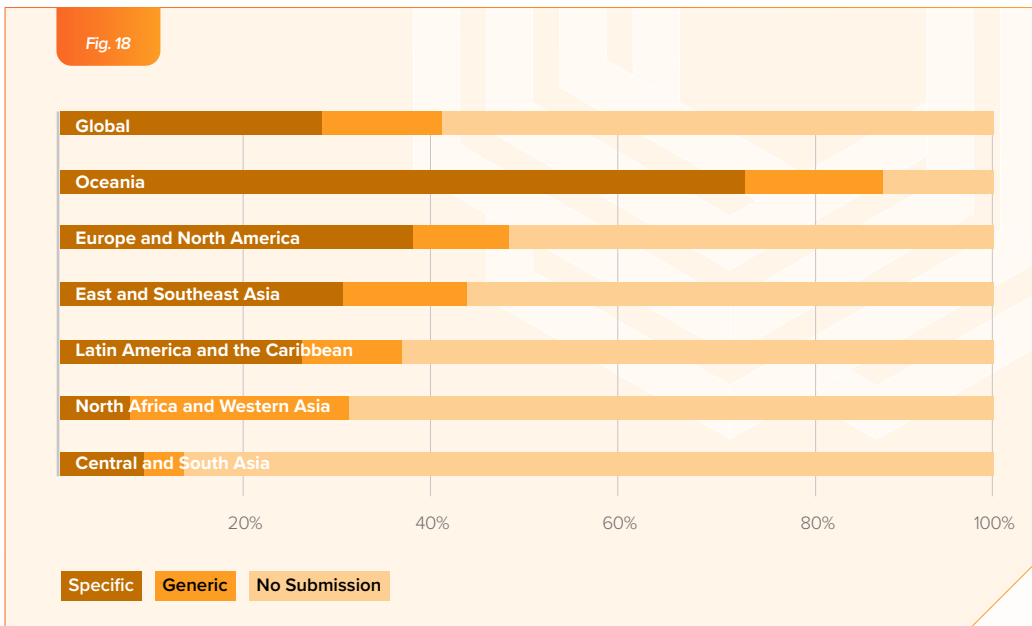
This metric is connected to universities' standards, policies, and practices on sustainable buildings construction. These policies can include, for example, the use of sustainable buildings materials and construction techniques, efficient heating, lighting, and overall energy consumption (or even achieving the so-called 'passive building' status), self-generation of renewable energies within the building, retrofitting sustainable practices into older buildings, measuring and ensuring air quality, and overall use of smart monitoring to inform efficient choices. Some of these factors will be regulated by individual countries' buildings standards, or even by local municipalities, while others are based on the universities' own standards or voluntary adherence to third-party standards (such as a private certification), and this can account for the variation in scores across countries and regions.

Figure 18 indicates that overall, close to 30% of the universities in the sample have submitted specific evidence and around 60% do not have any policies. By region, Europe and North America (ENA) and Oceania have a relatively higher proportion of their universities that submitted strong policies and evidence related to their sustainable buildings standards. However, ENA also has a significant number of universities that have zero or generic policies, showing disparity between universities within the region on how they approach sustainability issues within their estate. Other regions have a higher proportion of their universities submitting generic policies on sustainable buildings standards. Scores in this range indicate that policies can be improved to become more comprehensive, and that more evidence needs to be demonstrated on the efficacy of those policies.

State-led regulations can impact the way in which universities in different countries set their sustainable buildings standards, as well as how they

Figure 19 chart with the following regions: Global, Oceania, Europe and North America, East and Southeast Asia, Latin America and the Caribbean, North Africa and Western Asia, Central and South Asia. Axis from 20% to 100%. Legend: Specific, Generic, No Submission.

monitor and evaluate those policies. However, the physical university space remains an area where leading practices on buildings sustainability can be developed, given the research community that can be tapped into. Sharing good practices within countries, and then within and across regions remains paramount to ensuring that universities demonstrate to the wider community the innovations that can lead to more sustainable building practices. It can also inform the design of new universities – which will predominantly be in the Global South – to have sustainable estates from the outset.

The final metric that measures university contributions to sustainable practices evaluates their policies about building on brownfield sites. Brownfield sites are defined as a site where there has been previous building or previously developed land that is currently underused or unused. In some countries such as the Unites States, it refers to a property whose expansion or redevelopment may be complicated by a hazard or contaminant. Brownfield development is seen as crucial for urban regeneration and minimizes the impact on green or rural spaces as it is already close to urban infrastructure.

Universities may seek to expand their physical estate, to build new accommodation or education facilities. Some universities may even create new campuses in other parts of their country or abroad. A policy on building on brownfield sites will contribute to the university's ability to expand or redevelop sustainably.

The data in Figure 19 shows that this area is the one with the most room for improvement across regions compared to all the other metrics for sustainable practices. All regions have more than 40% of universities submitting no evidence. Oceania is the only region with more than 50% of universities
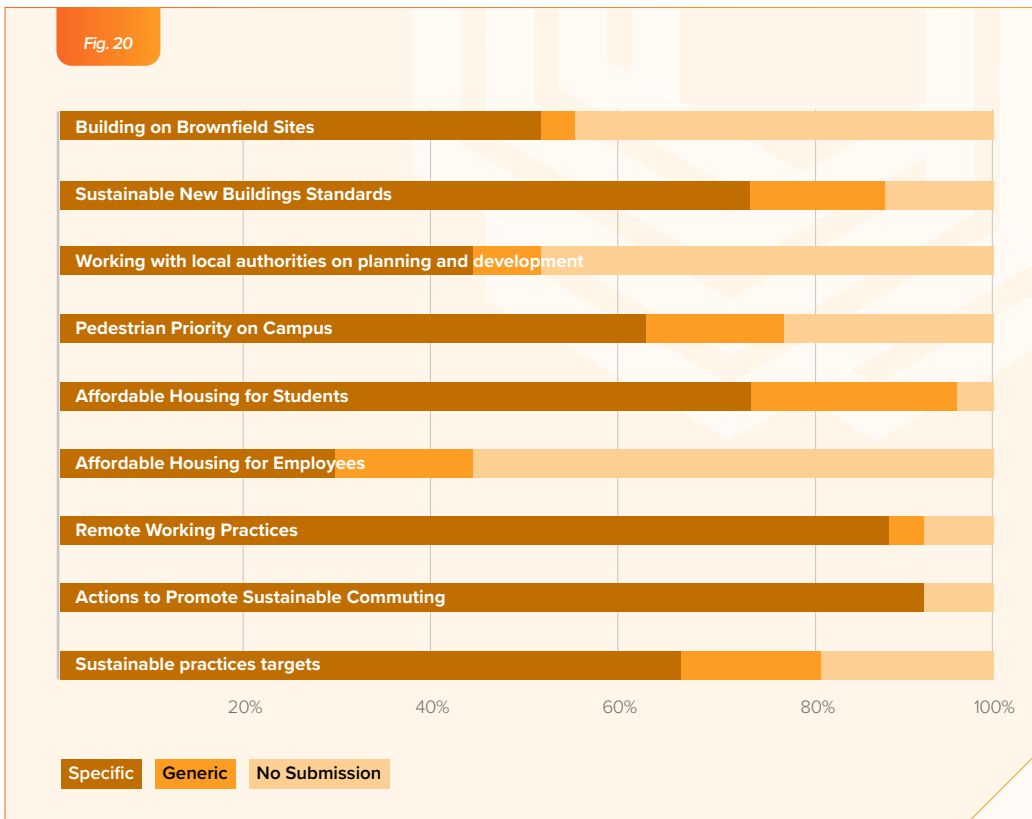
submitting full evidence for building on brownfield sites. By contrast, North Africa and Western Asia and Central and South Asia had around or below 10% of their universities providing at least some evidence for building on brownfield sites.

The data for this metric indicates that brownfield site development is not a high priority for universities globally, whenever considering expanding their buildings or campuses. There may be several reasons for the current lower percentage of institutions having no evidence. Firstly, campus-based universities in the countryside may simply have no potential brownfield sites to develop on. Secondly, redeveloping brownfield sites offers distinct challenges, such as dealing with hazardous material and contaminated areas, requiring greater levels of investment and expertise. Finally, there could be distinct local regulations that govern brownfield site development that impact a university's ability to pursue it.

SPOTLIGHT: OCEANIA EXCELLENCE IN SUSTAINABLE PRACTICES

Though the Oceania region was only represented by 26 universities submitting data for SDG 11, their performance stood out amongst all regions across most of the nine metrics in the sustainable practices (11.4) metric area.

Fig. 20

Building on Brownfield Sites
Sustainable New Buildings Standards
Working with local authorities on planning and development
Pedestrian Priority on Campus
Affordable Housing for Students
Affordable Housing for Employees
Remote Working Practices
Actions to Promote Sustainable Commuting
Sustainable practices targets

20%　40%　60%　80%　100%

Specific　**Generic**　**No Submission**

◀ **Figure 20: Overall performance of Oceania Universities in Sustainable Practices**

As shown in Figure 20 above, over 60% of universities from the region submitted specific evidence for policies on six out of the nice metric indicators (please see the Impact Methodology for the full description of all indicators). Only in the categories for affordable housing for employees, working with local authorities and building on brownfield sites was there a significant number (over 40%) of universities in Oceania that submitted zero or irrelevant evidence.

The higher proportion of zero evidence for employee housing, working with local authorities and brownfield site use was repeated across all regions, showing that there is a global need for greater understanding and possibly action on ensuring that employees of universities have access to affordable housing, that universities collaborate more with authorities and that universities are utilising available local brownfield sites for building. Greater attention to these metrics at a global scale should move the international higher education sector closer to fulfilling their contributions towards achieving SDG 11.

CONCLUSIONS: SUSTAINABLE PRACTICES

With nine metrics measuring the transparency and quality of university policies and activities in sustainable transport, housing, estates and partnerships, this metric grouping has the most scope for universities to ensure their focus on SDG 11. Whilst there is a clear lead for Oceania in performance, evidence shows that many of the other regions are working their way towards having better practice and policies. For some universities, it might be a case of better-evidencing things that they are already doing; for other it may require moving from having a policy on these selected areas, to also having a concrete implementation strategy associated to it, with sufficient resources, targets and publicity.

Even with the significant variances between regions, the data shows that a high share of universities have sustainable transport practices and policies, though not always with associated targets; affordable sustainable housing options for students but not for staff; and require improvements in working with local partners, and building on brownfield sites.

ARTS AND HERITAGE

The arts and heritage sector provides a unique and sometimes unquantifiable role in supporting the well-being of citizens and giving an outlet to creative endeavours. Heritage – as the actions of preserving of cultural activity and outputs from generations gone by – is itself a marker of sustainable communities. For SDG 11, universities can show their support for intangible human assets by strengthening and providing access to local culture and heritage.

Universities submit data to two metric groupings. The first one, Support of arts and heritage, has six metrics that universities are scored against, and these are evaluated through a university self-submission of a policy or activity which is evidenced. The metrics for this group include public access to buildings, museums, libraries, and green spaces, as well as public arts performances and efforts to record and preserve local culture and traditions, including the heritage of displaced communities. The first four of these metrics relate to public access measures, and have been grouped together for analysis in Figure 21.

Fig. 21

Figure 21: Scores and Averages for University Public Access Measures

Across all geographies, public access to green space scores the lowest. This may be because many universities do not own significant green or open spaces, particularly where they are positioned in inner city urban areas. However, universities in some instances may purchase specific green spaces or regenerate nearby spaces for public access. Also, across all geographies, public access to libraries and museums scores the highest, with universities owning their own libraries and being able to consider providing access to the public beyond their students and staff. However, this does not distinguish between access to consult resources and right to borrow resources for externals. Many universities also have museums, galleries, or significant cultural collections on-site that they may provide permanent, seasonal, or occasional access to.

In terms of broader regional trends for public access, universities from Oceania score the highest, and universities from East and Southeast Asia slightly outperform those from Europe and North America across the four public access metrics. Universities from the Central and South Asia region have a significantly lower average score than the other regions, with underlying metrics showing a higher rate of no policy on public access in this region.
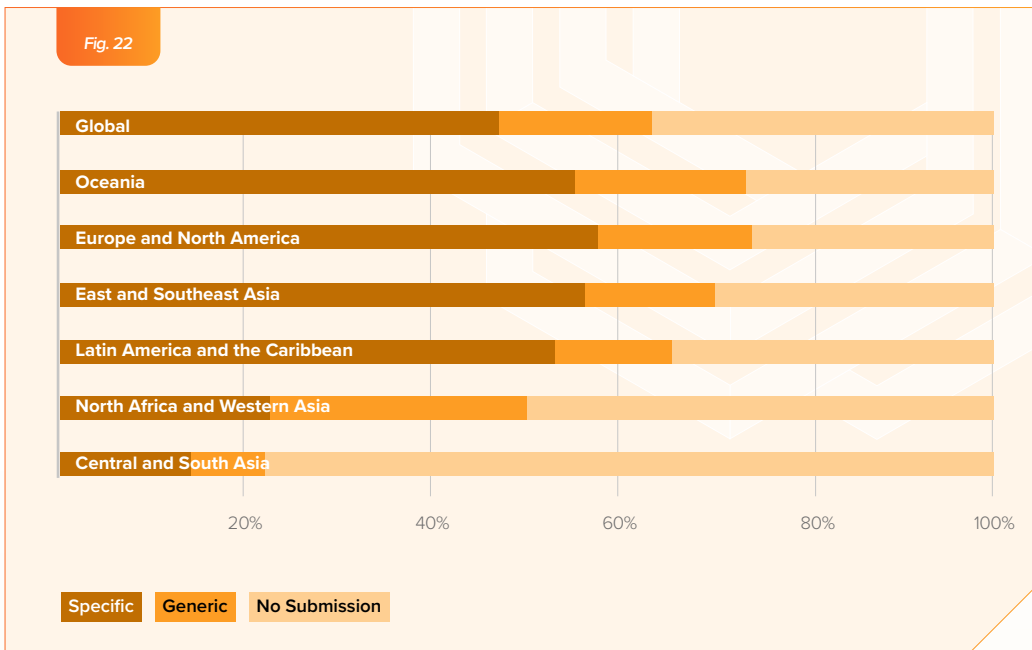
Fig. 22

Global					
Oceania					
Europe and North America					
East and Southeast Asia					
Latin America and the Caribbean					
North Africa and Western Asia					
Central and South Asia					

20%   40%   60%   80%   100%

Specific   Generic   No Submission

Figure 22 shows how universities make contributions to the arts and heritage for the public. Universities are scored depending on what kind of programme is delivered; for example, ad-hoc arts performances score less than annual programmes. These include dramatic productions, musical concerts and other dedicated creative events that are available to the public.

The data shows that in all but two regions, around or over 50% of universities submitted specific evidence of arts and heritage performances and programmes, and in all regions over 20% of universities submitted at least some evidence. The data for Central and South Asia (CSA) shows a large proportion (close to 80%) that didn't submit any evidence. This may suggest that universities CSA could improve on how their contributions to arts and heritage are evidenced, or indeed making programmes permanent or annual, rather than ad-hoc.
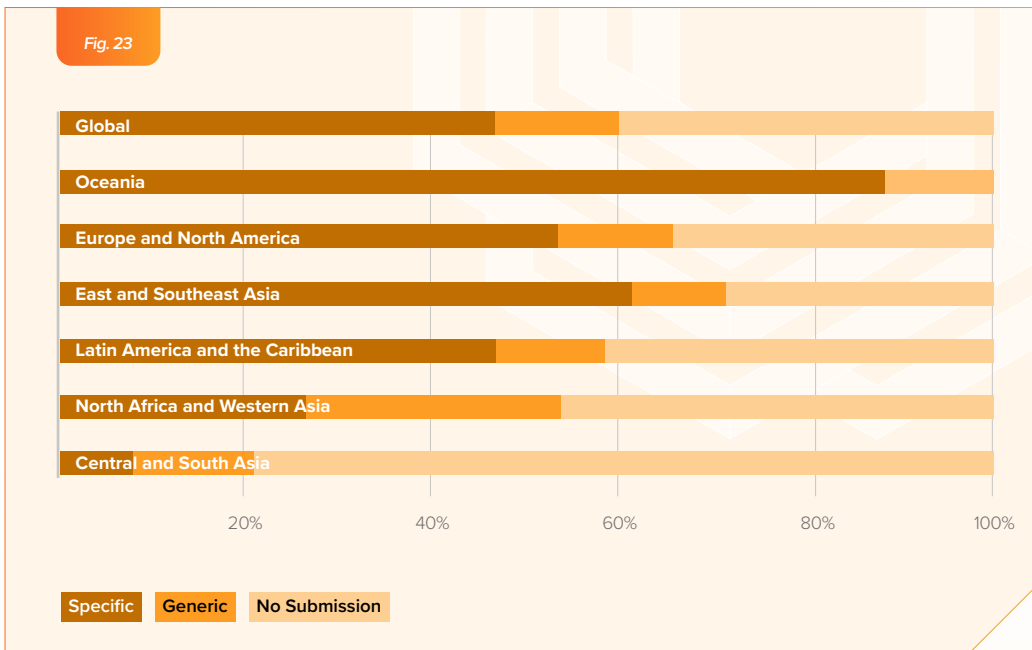
Fig. 23

Global
Oceania
Europe and North America
East and Southeast Asia
Latin America and the Caribbean
North Africa and Western Asia
Central and South Asia

20%   40%   60%   80%   100%

Specific   Generic   No Submission

Figure 23 shows that Oceania had universities that submitted the highest percentage of specific evidence for recording and preserving cultural heritage. In any university, these activities may emerge from two key internal sources. Firstly, academic departments may have individual researchers that are involved in research activity around arts and culture preservations. Secondly, the university may form partnerships with other external organisation and support multi-stakeholder projects dedicated to recording and preserving cultural heritage.

The North Africa and Western Asia (NAWA) and Central and South Asia (CSA) regions had lower rates of specific evidence submitted for this metric, which could indicate that whilst practices exist, not enough has been done to ensure those are publicised. Communicating the recording and preservation of cultural heritage is an increasingly important aspect of this university activity, ensuring that the public are informed and connected to the processes and outcomes of cultural heritage activities.

The second metric area for arts and heritage is the expenditure on arts and heritage (measured as a proportion of the universities' total expenditure). As a straight-forward measure of expenditure, there are significant variations in total and proportioned spending across regions and within countries. A calculation of the average proportion shows that globally, universities that submitted to SDG 11 spent on arts and heritage activities just under 4% of their individual total spend, as shown in Figure 24.

Fig. 24

Region	% of Expenditure on Arts and Culture
Central and South Asia	6.29%
North Africa and Western Asia	5.63%
East and Southeast Asia	3.98%
Oceania	3.49%
Europe and North America	2.84%
Latin America and the Caribbean	1.16%
Global Average	**3.90%**

◄ Figure 24: Percentage of Total Expenditure Spent on Arts and Culture

Whilst the Central and South Asia, and North Africa and Western Asia regions have the highest relative expenditure (as a percentage of total expenditure), this only serves as a very peripheral guide to understanding a university's activity on arts and heritage. As mentioned, due to the variabilities in each university's expenditure totals, the funding regimes of each country, and the other resources available to universities, this metric provides just a snapshot into the commitment of the higher education sector to preserving and supporting arts, culture, and heritage.

CONCLUSIONS: ARTS AND HERITAGE

The metrics for the arts and heritage can effectively be split into three; those dealing with public access measures, those dealing with activities related to performance and preservation; and arts and heritage spending. On access measures, it appears that worldwide, universities facilitate more open access to libraries and museums than green spaces and public buildings. However, there are many variations in the relationships between universities, their local municipal governments and even national policies on culture and arts that could impact these measures.

There is also good evidence for a considerable share of universities providing art and culture performances and undertaking activities to preserve culture and heritage. However, there are still noticeable regional differences which, interestingly, do not necessarily correlate with the differences in the proportion of expenditure on arts and heritage and as a proportion of overall expenditure. For example, Central and South Asian region has the highest proportion spent on arts and heritage and, at the same time, it has the lowest scores on the performances and preservation.
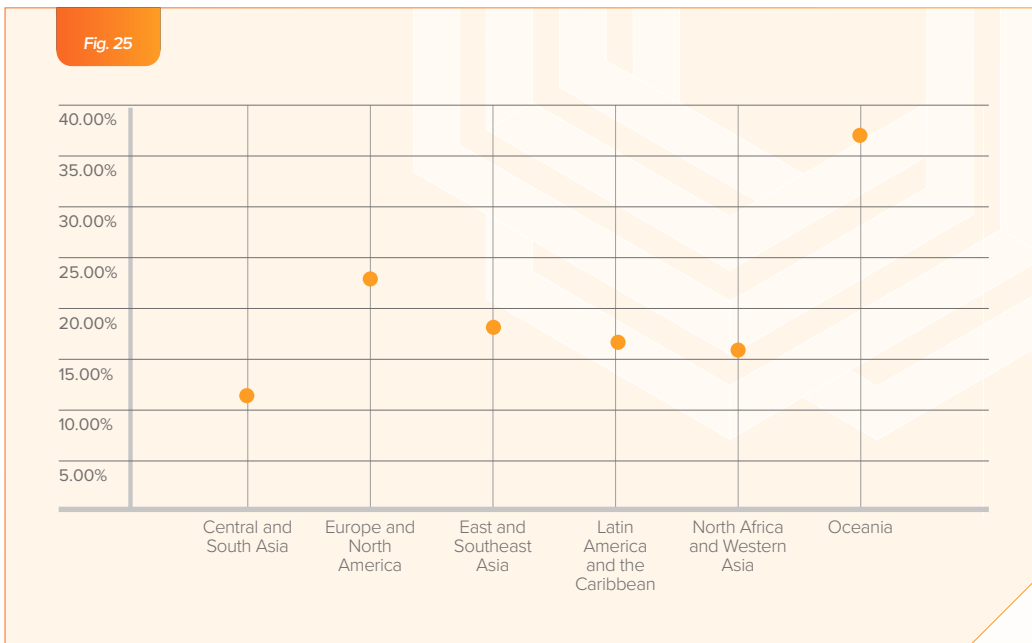
RESEARCH

Research Metrics for SDG 11 show how universities are addressing the key issues around sustainable cities and communities through peer-reviewed academic research publications. SDG 11, as mentioned, covers a wide array of academic disciplines, and indeed the research that underpins improving conditions of sustainability in urban and rural communities is inherently interdisciplinary. The subjects that are used to define what constitutes research for SDG 11 is derived from Elsevier's ASJC classification.

There are three research metrics used for SDG 11. The first measures the proportion of a university's publications that appear in the top 10% of journals according the Citescore metric. It is intended to reflect the excellence of a university's academic output. The second explores the quality of a university's output in sustainable cities and communities using the number of citations received as a metric. The final metric looks at the scale of research output from a university, recording the number of publications related to SDG 11. These research metric scores are taken for the period 2016 to 2022, which is the period of cal.

Figure 25: Average for overall number of papers per institution

Fig. 25

Through these measures, Oceania produces both the largest average number of publications (relating to scale of research) and highest average percentage of papers in top 10 journals (relating to excellence of research) amongst all the regions. The scale of the output – an average of 468.19 papers published on SDG 11 across the 26 institutions – is very high, with five institutions producing over 1000 publication each. This indicates research across different academic departments as well as interdisciplinary research to achieve such large and high-quality research. Since these indicators are not affected by institution size, larger and wealthier institutions may be expected to score higher on output and quality, also including the ability to attract well-known academics and provide high performing research environments.

The results for the Europe and North America region, which has the largest number of universities submitting SDG 11, also indicate quality and dedication. To average over 230 publications with nearly 23% in top 10 journals across such as geographical breadth and amongst a real diversity of institutions suggests that issues around sustainable cities and communities are also being taken seriously. Other regions- particularly North Africa and Western Asia and Central and South Asia have lower indicators for both overall output and quality, indicating the need to dedicate more resources and focus to research around the multiple disciplines that can address SDG 11.

OVERALL CONCLUSIONS FOR SDG 11 DATA

The overall conclusions for SDG 11 show that Oceania performs consistently better than other regions across all metric areas and in most of the individual metrics; there is only one metric, affordable housing for students, where universities from Oceania did not lead the rest of the regions. As the spotlight on Oceania shows, participating universities tended to provide full and robust evidence and case studies of policies and practices, in most of the metrics. As such, they are the global benchmark for excellence in SDG 11.

Other regions performed well in different metrics, with Europe and North America (ENA) generally coming second in rank for performances across the metrics, while the Latin America and the Caribbean (LAC) and the East and South-East Asia (ESA) being interchangeably third and fourth ranks depending on the measure. However, ENA and LAC have a significantly lower average than Oceania's metrics. Both regions have a high number of universities submitting data to SDG 11, across many different nations.

For example, ENA had 312 universities across 33 different countries submit, LAC had 75 universities across 12 countries, and ESA had 214 universities across 12 different countries submit data. Compared to just 26 universities across 3 countries for Oceania, there is a far larger chance of inter-country variation in performance on metrics. Different countries in those regions can have vastly different educational traditions and administrative procedures within universities. They also can exist in very different national economic contexts, which can provide both opportunities as well as restrictions on how they can perform in these metrics.

The other regions- North Africa and Western Asia (NAWA), Central and South Asia (CSA), and Sub-Saharan Africa (SSA), all have to make considerable improvements across the metrics to reach the level of the leading three regions. For SSA, although the final average was relatively high, the lack of universities submitting data from the whole region (just 12, across four different countries) makes judging performance on SDG 11 difficult.

The NAWA and CSA regions found themselves at the bottom of several metric groups. Along with LAC, these three regions have great diversity of institutions, but one factor that can be repeatedly seen in the data is a higher percentage of universities submitting only some evidence or no evidence for the metrics. This means that either existing initiatives for SDG 11 need to be further rolled-out or better evidenced, or that new initiatives need to begin so that the 'no evidence' score is reduced.

Overall, whilst there are clearly strong contributions in some metrics – such as sustainable transport policies, student housing, public access to libraries and museums – at a global scale, there can be improvements in several other metrics. Furthermore, apart from universities in Oceania, there is significant room for improvement for the research metrics in excellence, quality, and output. This could be resolved by increasing focus of university research strategies in the themes of SDG 11.

Case Studies

ASWAN UNIVERSITY

BACKGROUND

Aswan University was stablished by the national government of Egypt in 2012, though it had operated as part of other entities since 1976. The university has above 31,000 students, roughly evenly split by gender and distributed in six locations within or near the city of Aswan, in Southern Egypt. Aswan City has a growing population of above 350,000 inhabitants, so the university community represents a significant share of its population, and Aswan Governorate (region) has a population of around 1.5 million.

In an effort towards transparency, the university website has a dedicated section explaining the status of its institutional contribution to 9 of the 17 Sustainable Development Goals, including SDG 11.

STRATEGIC APPROACH

Mission, values, and high-level goals.

The university leadership is committed to sustainability and promotes it at the highest level by including it in its strategic mandates and policies. Aswan University's mission statement makes explicit reference to the importance of contributing to the regional environment, and adapting to its specific needs as follows:

´Aswan University is also obliged to improve the quality of manpower in the South Valley area in a way that meets the needs of this unique community and reaching distinguished and sustainable cooperation beneficial to us and our partners in the domains of education and social services´.

Policies and regulations

Aswan university has a wide range of official policies that develop the strategic goals into concrete regulations, quantitative targets and milestones. The policy level of intervention is key to bridge the gap between high-level statements and individual actions, allocating resources and assigning responsibilities to specific units or people. These include:

- A sustainable transport policy, including walking, buses, and participation on the "bicycle for every student" programme of the

Egyptian Ministry of Higher Education, which aims at making cycling the main transport for students and staff inside and outside the university. The policy also establishes the monitoring of the share of students and staff using each means of transport, by tracking the daily use of buses and the car parking garage. The current target for 2025 is to achieve 50% of staff using sustainable transport and 100% of the campus residents (students and staff) by 2030. The aim is to increase this share for the rest of the students as well, though no concrete target was set. Academics are allowed to work remotely even after the pandemic, for up to 30% of their time, which can reduce commuting emissions. As the capacity of its data centers increases, the university plans to gradually expand these percentages and to eventually include non-academic staff. As will be explained below, students have access to online and blended learning options, further reducing commuting needs.

- A sustainable investment policy, according to ethical and environmental standards, including a 6% of the university self-budget (gained by its operation and services) dedicated to 'impact investing' on eight themes ranging from clean energy and transportation to health and waste management.
- A climate change action plan, a CO_2 emissions reduction commitment, and a sustainable buildings policy. These include concrete time-bound emissions reduction and renewable energy production targets, training and awareness-raising initiatives within students and local communities, encouragement of dedicated research, and the adoption of the construction standards and the Green Building Classification System from the Egypt Green Building Council (an independent organization promoting technical benchmarks). Recent campus buildings incorporate these standards, such as durability or maximizing natural ventilation and illumination. Some of these policies are promoted by the dedicated committees of a university office, which provides support to the university leaders and Higher Council with these goals.
- A sustainable food policy within the university, including prioritizing local produce, meeting certain quality and production standards, monitoring food waste and coordinating with local authorities for its management.

STRUCTURES, PROGRAMMES AND RESOURCES

Housing and Urban development

Aswan University provides to around 10% of its students. Providing free or below-market student accommodation allows the university to increase their equity by reducing the indirect costs of higher education for students. It also aims at reducing the inflationary pressures that those students would create in the local housing market. The university estimates that around 25% of its students come from outside the city of Aswan and only around 50% of residence applicants can receive accommodation. Students with priority

access to university accommodation are those living over 60 km away from Aswan), in other governorates or international students, along with students with outstanding academic qualifications and a weak financial situation.

The university also provides subsidized accommodation for staff members in several locations on campus. This helps reduce their commuting time and its negative externalities, while it can serve as an additional incentive for talent attraction.

Some of the university's residences were built by renewing or repurposing abandoned sites and buildings, such as warehouses previously owned by the Egyptian Electricity Holding Company. The university plans to expand its accommodation capacity by building more of its own residences on campus in the coming years following environmental construction standards.

The university also adds value by providing consultancy services to the local and regional government (cooperating with the New Urban Communities Authority) on urban planning and housing projects (inspecting from structural safety of buildings to sewage plants) in the New City of Aswan, an urban development near Aswan with a smart-city approach, where the university also has a branch.

Transportation

Universities can be a major focus of daily commuting in their respective cities and can therefore have a measurable impact on the urban CO_2 emissions and pollution. Conversely, they can also spearhead a transition towards sustainable transportation models, incentivizing non-motorized options and providing, subsidising or advocating for affordable mass transportation. Aswan University has incorporated several measures for sustainable transportation within its campuses, where it has a policy of zero emissions. It also has a shuttle bus service within the campuses and is considering the acquisition of small electric cars for staff short trips. Buses are fully or largely subsidised for staff.

However, access to the main campus and several other buildings can only be done by car or bus, which have to park in the surrounding parking areas upon arrival, reserving the rest of the campus for pedestrians.

The university promotes walking and the use of the bicycle. Besides awareness-raising events, its two main campuses have parking places for parking bicycles and bicycle lanes within the campus and connecting to nearby public transport stops. However, it lacks bicycle lanes connecting the campuses with each other and with the rest of the city of Aswan, which is physically separated from its main campus by desert land and can only be reached by a road not adapted to cyclists. Despite pedestrian paths within and around campuses, there are no pedestrian crossings across the four-lane traffic road in front of some buildings, such as the Faculty of Energy

Engineering, at close distance of a nearby residential area. Other buildings are, however, integrated within the city itself. To better connect these last ones, the university plans to collaborate with the local authorities to establish bicycle lanes reaching these campuses from different parts of the city.

Another way in which universities can reduce their carbon footprint, and expand access opportunities at the same time, is by reducing the need for commuting altogether via virtual and blended education. While this should not be a one-size-fits-all solution, it can accommodate the needs of specific students who may otherwise find it difficult to attend full-time daytime lectures. The e-learning system of Aswan University allows all students to choose between the default system of regular on-campus attendance or a flexible hybrid option. This hybrid option includes up to 30% of distance e-learning for applied programmes that require practical activities and operations, or up to 100% for the rest of programmes.

Aswan university also provides consultancy services to the local government on transportation, such as on-site investigations and reports on the New Aswan City's Road Network.

Cultural services to the community

Universities can act as local hubs of cultural activity, from hosting or funding exhibitions, museums and shows, to contributing with their expertise to the preservation of archeological and anthropological heritage. Aswan University organizes cultural activities, with the occasional students' art exhibition or concert, and participation in local cultural events. It has also a Zoology Museum with free entrance for the public.

The Aswan Civilization and Heritage Center of the university includes, for example, the Monuments Restoration Centre, the inventory of intangible cultural heritage manifestations, and the Heritage Crafts unit, which documents and preserves traditional handcrafts from local markets. The university is also a member of the committee of 'Architecture Heritage Preservation', led by local authorities.

The university's library offers free access to external students as well, subject to prior request.

General services to the community

The university's 'Special Units' operate as 'consulting centers in serving the business community and as income sources for supporting the university's sustainable development plans'. This is also highlighted among the institution's strategic goals. Some of these units include:

- The Environmental Studies and Development Unit, which provides environmental studies and teaching on areas such as climate, energy, soil and fertilizers, water management, biodiversity and pollution, as well as services such as chemical analyses to researchers and companies, searching for pollutants in air and water.

- The Training of the Teachers of Adult Education Unit. Frequently, local adult education (for example, in basic literacy skills) relies on volunteers as teachers. In most cases, they are not qualified educationally for this task. Therefore, this unit provides those volunteers as well as graduates from the Education Faculty with adequate training for supporting adult learners.

These units offer consultancy to the local and regional governments, from architectural analyses of the structural safety of public buildings, to collaborations with the Ministry of Irrigation and Water Resources. The Social Workers Capacities and Skills Development Centre of the university provides training to these professionals in the local community.

Geographies of innovation

Universities can play a key role in driving local economic development towards more environmental and socially equitable businesses. They are uniquely placed to drive local geographies of innovation, where the physical proximity and partnerships between businesses and centers of scientific and technological research generate new opportunities and synergies for economic development Aswan university is, a key partner in the "https://apearc.aswu.edu.eg/" Aswan Power Electronics Applications Research Center (APEARC). It provides research on the challenges of the sector, with whom it collaborates. Its Scientific Excellence Centre in Photovoltaic Energy also provides testing and certification services for photovoltaic panels, as well as research, promoting the regional development of this industrial sector.It provides research on the challenges of the sector, with whom it collaborates. Its Scientific Excellence Centre in Photovoltaic Energy also provides testing and certification services for photovoltaic panels, as well as research, promoting the regional development of this industrial sector.

Additionally, universities can host incubator spaces for start-ups, and share their scientific and industrial expertise with local businesses and authorities as consultants or partners of joint ventures. The University of Aswan contributes to the Nile Venture Lab. This business incubation service provides labs, coworking spaces, training as well as financial and general support for startups with a focus on sustainable green technology. It also organizes conferences and other events.

Through their research and technology transfer activities, universities promote new business opportunities. The Technology Innovation and Commercialization Office (TICO) is operated by Aswan University thanks to government funding, providing 'services to link the university and the scientific research to the industry and the community needs'. Its three offices specialize in technology transfer, identifying and publicizing funding and international cooperation opportunities, supporting inventors protect their intellectual production and providing training. The TICO also has an Entrepreneurship Club that provide services to the local community and NGOs, such as training

and coaching opportunities, events and conferences (Ideation Bootcamp, hackathons,...), entrepreneurship projects competitions and incubation.

At the same time, through their teaching, universities can provide new qualified workers, upskill and reskill existing workers, and provide entrepreneurial skills. Besides its standard degree-granting teaching activities, the university operates the Aswan University Professional Development Center, in collaboration with the American University in Cairo and the U.S. Agency for International Development, focusing on providing students withs skills linked to higher employability in the region.

ACTIVITIES

Universities, or their departments, may also organize other activities aimed at sparking interest in sustainability, disseminating research findings or providing short training without the need of formal overarching programmes. These more flexible initiatives can serve as pilots and, if successful, lead to more permanent or recurring schemes. Some examples of recent shorter or time-bound actions carried out by the university staff and students linked to sustainability and the local community include:

- Training Programme on Environment and Sustainable Development
- First Event on Circular Smart Cities in Aswan University. This event not only provided dissemination on these key concepts for sustainability, but also served to identify those with relevant business ideas and connect them with diverse incubation support programs.
- Participation in the meeting of the Executive Committee of the National Initiative for Smart Green governorates
- Training course "Early detection of disabilities in the Haya Karima villages"
- Current Situation of Tourism Sector in Aswan Governorate and Future Trends
- Entrepreneurship Awareness Programme for Governorate Youth

LESSONS LEARNED AND KEY SUCCESS FACTORS

The use of the Special Units and Centers has been a key enabler of the contribution of Aswan University towards SDG 11 and reasons are twofold.

On the one hand, these units provide services to the business community and local stakeholders beyond the traditional degree-awarding teaching and academic research functions. This includes initiatives from direct training of citizens and professionals on sustainability-related matters, to the provision of technical support to local and regional authorities on heritage management, urban planning and building sustainability, among other areas. The use of Special Units has also contributed to the local innovation geography by its research output, supporting green business incubators, and providing key services, such as patent recognition through the TICO, testing of technical equipment and environmental analyses.

On the other hand, the autonomous or semi-autonomous status of these units allows them to generate income with the services they provide to public and private partners. This income has been key for funding the rest of sustainable development initiatives of the university, as well as equity-oriented policies and services, such as scholarships and further services to students unfeasible only with standard sources of public funding.

TOWARDS 2030: CHALLENGES AND VISION

Aswan University plans to continue developing the strengths outlined in this report, notably the contribution of the special units to the local community and regional stakeholders, while expanding the ambition of its housing and transportation initiatives.

Regarding housing, the current coverage of only half of those who request student accommodation is deemed a good start, but still insufficient. The construction of additional residences, with the highest environmental construction standards and ideally on underused or deteriorating locations, is expected to address this issue. This will increase the affordability of higher education for students coming from outside Aswan city and, at the same time, reduce the pressure on the local rent market.

The sustainable commuting strategy aims at 100% coverage of campus residents by 2030. However, the geographical isolation of its main campus, the absence of cycling lanes outside of the campuses' premises and the lack of continuity in the government funding of the "A Bike for Every Student" programme limit these goals. The university hopes to continue funding this programme and is advocating to the local government for the creation of cycling lanes that can allow students and neighbors to reach every campus by bicycle from other parts of the city. If this is achieved, students could constitute a critical mass of cyclists that can then spearhead the demand for further extensions of the cycling lanes network, using the university as node of high demand and prioritized intervention, incentivizing in turn its use by the general population of the city.

The issue of funding remains a primary concern in order to sustain and expand all these goals. The model of charging a fee for its consultancy, technical and scientific services still have potential for expansion. Similarly, joint ventures with external companies are considered another revenue source with potential for expansion. The agricultural and energy sectors are considered strategic for both the university and the regional development. The university even expressed its interest in developing its own industrial capacity in key areas where it already has expertise, such as solar energy, which could give it the resources to drive further sustainable development within its campus and beyond.

5.2

NATIONAL TAIWAN UNIVERSITY

BACKGROUND

National Taiwan University, located in Taipei, in the island of Taiwan, traces its founding back to 1928 during Taiwan's Japanese Occupation. It was renamed to its current form in 1945. As of 2022, NTU has 16 colleges and over 32,000 students at undergraduate and postgraduate level.

NTU is committed to social responsibility along with the promotion of sustainable development goals at both local and global level which is supported by its Office for Sustainability. To show transparency in its activities and research on sustainability, NTU has dedicated webpages to the university's sustainability governance framework, projects mapped directly to the United Nations Sustainable Development Goals (SDGs), university sustainability report and monthly newsletters to update on how different academic departments at NTU are tackling issues in sustainability. In the academic area, the university offers over 950 sustainability-related courses, and there are over 200 sustainability-related academic research projects being undertaken. At the time of writing, 995 faculty and administrative staff had undertaken sustainability-related learning courses. There are also 82 sustainability-related student clubs. Furthermore, since 2015, the University has delivered the International Degree Programme in Climate Change and Sustainable Development.

More broadly, NTU works closely with the Taipei City government and other governmental agencies to ensure the transfer of knowledge and technologies that will enable a more sustainable future.

STRATEGIC APPROACH

NTU publishes an annual 'NTU Social Responsibility and Sustainability Report' that acts as an overarching document of accountability, transparency and success in terms of the university's work in the sustainability agenda. The report is aligned to the Sustainability Tracking Assessment and Rating System (STARS) framework developed by the Association for the Advancement of Sustainability in Higher Education (AASHE). Within this document, the 2021 report selected the theme of 'building campus sustainability and expanding

social influence' and used the 17 UN SDGs as a framework to translate this vision into concrete terms, outlining how the university is undertaking concrete actions in each SDG separately.

NTU has a specific set of institutional goals related to sustainability, beyond any specific SDG:

1. Analyzing the risks and impacts of climate change and proposing policies for sustainable development in social and economic aspects.
2. Establishing system models in economy, ecology and energy to support policymaking for adaptations for climate change.
3. Publishing key reports for policy makers to be a leader toward a low-carbon future.

POLICIES AND REGULATIONS

NTU has several policies and regulations that support the SDG 11 goals on transport, housing and culture.

- Transport: there are three key components to the strategy around sustainable transportation: i) encouraging the use of electric vehicles, ii) optimizing bicycle management and iii) business trip management.
- The university offers a free shuttle bus service for students between the main campus and downtown campus, and the Academic Sinica. Offering free transport can alleviate costs for students and potentially widen participation for students in the long run. Furthermore, it financially incentivizes students to use mass transit vehicles rather than individual cars through subsidized tickets.
- Accommodation and buildings: NTU committed to expanding the faculty dormitory facilities to retain its professors and researchers
- The university offers refurbished student accommodation to ensure that students with disabilities can have a barrier-free experience of living and study at the university
- Culture: through the Indigenous Students Resource Center, there is a policy to support indigenous students in their daily campus activities as well as promote indigenous culture and education; a special advisory committee oversees this.

STRUCTURES, PROGRAMMES AND RESOURCES

Housing and Development

NTU provides more than 12,000 beds for students on campus (including on-campus and BOT dormitories), of which the monthly housing cost per person in the on-campus dormitory ranges from NTD 1,156-2,867, which is better than off-campus community rental housing (about NTD 7,000 to 16,000 per person per month), which are all affordable accommodation expenses for students.

NTU provides cost-effective accommodation to more than one thousand faculty and staff members. Short-term visiting fellows can also apply for

housing. The monthly housing cost per person in the dormitory ranges from NTD 3,600-19,500, which is better than off-campus community rental housing (about NTD 7,300 to 43,000 per person per month), which are all affordable accommodation expenses for employees.

NTU's 21 buildings have got "green building label" certified by Taiwan Architecture and Building Center. All new constructions are required to be certified according to the NTU Campus Planning Principles Article 22.

Transportation

NTU has gradually replaced its business vehicles with green transportation, and introduced a 24-hour car rental service that uses electric vehicles only. NTU also works closely with Taipei City's Department of Transportation to install bike stations on and near the campus, and offers financial incentivization to students to use public transport.

One of the strategies to promote sustainable goals on the NTU campus is to promote green energy cars and motorcycles. Two major goals regarding this have been spelled out: (1) improve the current bus system on campus. (2) replace old University vehicles with environmentally friendly vehicles year by year to reduce gas and noise.

NTU launched the "Public Bicycle Youbike 2.0 Pilot project" with the Taipei Bike Sharing System providing 102 rental stations, 1,808 bicycle columns, and 500 new public bicycles in and around the campus. It tracks and reviews the usage rate of each station, and adjusts the number of vehicles accordingly to improve the usage rate of public bicycles for teachers and students, promoting sustainable communication.

Culture and community

NTU research strives to preserve and maintain the archaeological record of the prehistoric peoples and cultures of Taiwan, which is one of the original sites of the Austronesia peoples. As an example, NTU scholars have analysed Neolithic pottery findings from the Wansan Site in Yilin county to understand the evolution of the land and economy in Taiwan across multiple generations from prehistory. These programmes help to maintain the visibility of indigenous cultures.

NTU promotes free use of its library service to non-students and staff, and has 10 museums which are free to access by the public. 4 of the museums are listed monuments, and 1is a listed historical building. The NTU Center for the Arts collaborates with different Taiwanese artists to host concerts, theatrical performances, dance performances, visual arts exhibitions, and NTU Art Festival is the biggest art and cultural activity every year.

The NTU campus does not enforce access control to its campus, and with the exception of classrooms and buildings, the open spaces and green spaces are free to access by the public. The campus is also known as the

"Azalea City" due to the abundant plants and trees on the campus. It is located in the city center and has convenient transportation. Holidays often attract many citizens or tourists to enjoy flowers, walks, exercise or visit.

ACTIVITIES

NTU has a number of activities in the area of sustainability that contribute to the SDG 11 goals. Projects to improve the well-being on urban areas and engage communities at the rural-urban interface are prioritised by the strategy, mission, and structures of the universities

SC+NTU

Falling under the International degree programme in Climate Change and Sustainable Development (IPCS), the SC+NTU project is dedicated to urban-level climate actions. A key aspect of this is how climate change awareness is communicated to the community so that it can ensure their participation and co-operation. Improving citizen's environmental perception is seen as an important social responsibility of the higher education community. Ultimately the project aims to formulate climate action policy that is informed by local community perspectives.

The project uses south Taipei as a 'field research site', and its methods include participatory sensing, data analysis and reproduction, and a public governance initiative. Using two campus-produced sensor modules, the project records a variety of urban environmental sensory data, measuring indicators related to public and urban well-being. These microclimate sensing networks will eventually generate an urban climate map of the southern Taipei area, that begins at the university's smart campus, and gradually extends out to the smart community and the smart city

A monthly newsletter is produced to update on project progress, and demonstrate the individual and community actions undertaken. In 2022, for example, the microclimate sensoring approach allowed researchers to calculate the openness of the sky, and to track the heating of an urban village.

Canal Restoration

NTU worked closely with the Taipei city government to restore a canal network around the NTU campus. The canal network, that had originally been dug between 1938 and 1942, served water retention and irrigation purposes for the local area, and had hosted a thriving network of small traders upon wooden planks across the canal. However, from 1973, the canal was concealed under cement due to the building of new roads.

The restoration plan was created in 2017, and construction started in 2020. Along with restoring the waterway, old walls were replaced with eco-friendly shrubbery, and an old parking lot was transformed into a hydrologic area with sidewalks flanked by plants and greenery. The

overall design of the canal was inspired by agricultural waterways in rural areas, combining a pleasant waterscape with practical features such as water retention. The canal connects the green belt area outside of the main campus.

The design and completion of this project exemplifies NTU's approach to providing green areas of open enjoyment for the local population, building and restoring environmentally friendly areas from the campus outward to the community and the city.

LESSONS LEARNED

Working with the local community

One of the main goals of the IPCS is to accumulate and evaluate as much environmental data as possible, using the participatory sensing method. However, communicating findings to the community and ensuring their participation was a learned process, as initially, not all the experiments were accepted by communities outside of the campus. A key lesson has been to communicate more clearly and making the data and process more understandable to the community, including the equipment such as the environmental sensors that are being used.

Working with the city

The university has become a key partner working with the Taipei city government on working towards SDG 11, developing shared aims, approaches and projects together. This approach has included further stakeholder engagement with citizens and local urban communities, research local practices to local solutions, and financially supporting efforts to improve the environment. Partnering with the municipality means greater scope and responsibility to achieve SDG 11.

Pedagogy

Interaction with the local communities whilst working towards SDG 11 has meant a transformational feedback loop into teaching practice and the pedagogy of climate change and environmental sustainability at the university. This has impacted the content and pedagogy of the IPCS, with each cohort of students being aware of the challenges faced in their interaction with the community from lessons learned by previous cohorts.

TOWARDS 2030: PLANS AND VISIONS

NTU continues to strive towards achieving a sustainable and smart campus, using its own research and technologies to enable an 'intelligentization' of sustainability issues across the university, including its energy and water management, buildings and space optimization, and air quality. NTU is committed to ensuring both a greater quantity of affordable housing for its staff and students, as well as the quality of it. By 2025, it plans to build 'green' dormitories with nearly 4,000 beds. These will be buildings that use

non-toxic and environmentally-friendly building materials, with a focus on ventilation and natural light to reduce energy outgoings.

The university will continue to invest and support its structures and activities in governance, research and community engagement for sustainability, and communicating its efforts to achieve legitimacy in the communities it serves. Each year, the annual Sustainability report will detail all the work undertaken in research, teaching, stewardship and outreach for all the SDGs, including SDG 11.

5.3

UNIVERSITY OF JOHANNESBURG

BACKGROUND

The University of Johannesburg (UJ) was founded in 2005 resulting from a merger between three higher education institutions. It currently hosts over 50,000 students, placing it among the largest universities in the country by student enrolment. It is distributed across four campuses that expand in and around Johannesburg's metropolitan area: the Auckland Park Bunting Road Campus, Auckland Park Kingsway Campus, Doornfontein Campus, and the Soweto Campus.

While UJ inherited pre-existing infrastructures, it has aimed at evolving beyond its physical places and spaces through its policies, structures and activities, to become a more diverse, inclusive, innovative, and resource-efficient institution. In this context, the Transformation Unit facilitates ongoing processes of change, which are critical to elevating UJ's institutional culture and ethical values throughout campus and the university community.

STRATEGIC APPROACH

Vision and Mission

UJ's vision, becoming "an international University of choice, anchored in Africa, dynamically shaping the future", has fuelled many of its most emblematic initiatives in relation to sustainable development, including those tackling SDG 11 on Sustainable Cities and Communities. This vision is at the core of institutional development policies and initiatives such as the 2025 Strategic Plan, in effect since 2013. The plan sets clear expectations to inspire UJ's academic community, researchers, staff and students to connect with the pressing needs of the local and regional communities while leading the way forward globally through innovative and environmentally sustainable initiatives. The strategic plan is monitored annually by internal governance structures and external stakeholders to guarantee accountability to the university's mission and implement relevant changes as new challenges arise.

In practice, UJ's commitments relating to SDG 11 are held accountable through specific objectives, targets, and expected outcomes across university services, programmes, and initiatives. For example, strategic objective 4 (An

Enriching Student-Friendly Learning and Living Experience) aims at creating "vibrant learning and living communities" including the provision of quality housing options, promoting safe and inclusive environments, and creating social and cultural engagement opportunities. Though strategic objectives 5 (National and Global Reputation Management) and 6 (Fitness for Global Excellence and Stature), UJ highlights the importance of benchmarking its progress for meeting national and international sustainability and environmental standards and strengthening accountability efforts. These objectives are a base to build institutional efforts toward achieving SDG 11.

Further, innovation and collaboration have been key to UJ's pursuit of SDG 11. The university's current mission states the interconnectedness with society and the commitment to support regional development from within by "inspiring its community to transform and serve humanity through innovation and the collective and collaborative pursuit of knowledge". In addition to the university-wide ethos, faculties, associated schools, academic departments and research institutes and centres support the goal of linking their academic and research activities to create sustainable local impact.

Since 2018, the university has implemented significant changes and mobilised resources to pursue the strategy of Global Excellence and Stature 4.0, which built on the prior Global Excellence and Stature 1.0 strategy from 2013. This specific strategy seeks to position itself as a regional leader in the development and implementation of multidisciplinary initiatives within the Fourth Industrial Revolution (4IR). Establishing a clear roadmap for 4IR has ensured that UJ incorporates the strategy throughout its operations, programmes and services. Beyond the technical aspects of 4IR, UJ has successfully integrated technological innovation into sustainability community projects, key to advancing SDG11, for example social entrepreneurship initiatives to mitigating climate change or the promotion of cultural heritage.

Policies and regulations

Various internal policies and regulations impact UJ's contribution to SDG 11, some of which are described in this section. The university identified a need to set a clear pathway for short-, medium- and long-term development within its Campus Master Plan (CMP) approved in 2013. The plan aimed to connect infrastructure development with objectives that are closely linked to the development of sustainable cities and communities: enhancing the quality of life of staff, students and the surrounding community. Nonetheless, the evolving nature of the university's sustainability priorities calls for a new policy framework. Thus, UJ is currently working on a final version of the Spatial Development Framework (SDF), to guide future infrastructure development that transform campus experiences by setting sustainability evaluation, implementation and monitoring guidelines and procedures at the individual, departmental, and university-wide levels.

The SDF's key area of focus for future developments and initiatives is strengthening energy and resource management. This is done by tracking the use and waste of energy and resources throughout campus, and transitioning to renewable, cleaner, and more efficient energy sources. For instance, UJ has invested in solar panels, most notably for covered parking, heat pumps, and established the use of LED lighting for new or remodelled student residences, aiming at increasing renewable energy sources by 20% and reducing overall consumption by at least 10% by the end of 2022 and onwards, as described in the 2021 Annual Report.

STRUCTURES, PROGRAMMES AND RESOURCES

Housing

Housing is key to facilitating integration and inclusion, protecting the overall well-being of students, and developing a sense of community across campuses and in the city. UJ has 32 residences to accommodate students with a total capacity of close to 7,500 students. Although this represents about 15% of the student body, close to 60% of UJ students are beneficiaries of government financial aid, which also covers housing expenses. Furthermore, university and privately managed residences hosting UJ students must meet standards of quality and proximity to campus to facilitate access. About 20% of residence spaces are reserved for international students, securing their access to housing during their temporary stay.

Additionally, the university has 7-day houses that provide access to social and well-being activities to students living in campus residences or off campus in private homes. These spaces further contribute to community building and student engagement.

Transportation

Compared to equally large institutions, the strategic location of all UJ campuses conveniently connects and merges with the rest of the city, which allows access to key city services and public transportation. The pedestrian walkways around campuses have been upgraded for easier use by the visually impaired. The university has engaged in various projects to promote more sustainable means of transportation. For instance, UJ has recently participated in the evaluation of the use of fossil fuels and the potential for switching to electric engines in public buses in the city of Johannesburg. It has its own inter-campus bus service, with the first electric buses already in operation.

Geographies of Innovation

UJ has successfully contributed to the generation of technological innovation to promote sustainable social, cultural, and economic development of local communities in and around the university. The university has 40 research centres and two technology stations. They have embraced their role of linking science with local transformation through resource sharing and knowledge translation.

One of their flagship innovation initiatives is the Technopreneurship Centre. It is an "ideation and innovation hub" which has housed multiple social entrepreneurship projects led by staff and students, providing technical and professional assistance, and seed funding to integrate 4IR technology. The Centre connects businesses, researchers, and local communities to respond to key societal challenges.

The Centre for Ecological Intelligence (CEI) is yet another initiative that combines technology and entrepreneurship for advancing SDG 11 through its projects in urban agriculture and food systems, intersecting with issues such as poverty and hunger, socio-economic development, and urban design. The centre hosts the Siyakhana Garden among other living laboratories where community members and students can learn and practice ecological conservation.

University-government-industry partnerships

UJ has directed its operations to fulfil its 4IR agenda through a diverse array of structures and activities which connect technological innovation and resources with initiatives of local, regional and global impact. Among the initiatives within the 4IR framework, UJ has worked with the local and national governments to research, analyse and strengthen sustainability management such as air quality, solar energy infrastructures, waste management, and the reduction of single-use plastics. For example, the Process, Energy and Environment Technology Station (PEETS) has become a place for synergies between UJ, the government, and small and medium enterprises to share knowledge and resources for promoting circular-economy initiatives. Through PEETS, the university has actively supported the Gauteng Department of e-Government to create an e-Waste Management System for the disposal of electrical and electronic gadgets, educating citizens, and creating value for circular economy initiatives.

Another key collaboration involved the South African National Energy Development Institute (SANEDI) to investigate micro digesters to reduce the use of fossil fuels, resulting in the development of a Sector Development Plan. Through this project, UJ engaged in the promotion of economic and sustainable development of rural and urban areas by opening pathways for the creation and implementation of micro digesters.

These kinds of initiatives do not only evidence the contribution of UJ to local development but are directly linked to promoting sustainable practices that can impact positively multiple cities and communities in South Africa.

Community engagement, open spaces and services

In addition to creating a conducive environment for sustainability research and innovation, many of the structures at UJ are designed to support the communities beyond campus either through specific projects, or by providing open access to existing campus structures.

An example is the Gwakwani Village Project, which focuses on innovation for social and economic development. Since 2014, UJ has shared human and material resources to provide clean energy, water, and infrastructures for cooperative entrepreneurship projects in this remote location in the northeast of South Africa. UJ, through the School of Electrical Engineering, has worked directly with the local government and community members to make the changes financially and environmentally sustainable. Further, through technological innovation and data collection systems, the structures of the project can be remotely monitored, which facilitates ongoing research and evaluation efforts for the development of sustainability practices in other surrounding communities.

Some spaces and services have been opened to the general public, further contributing to the sustainable use of resources across campus by locals. The UJ Arts Centre, for instance, allows the use of theatre venues for productions and exhibitions from both the university community and external groups. Other venues such as the library, sports facilities, the law clinic and health clinics often offer services and events for the wider Johannesburg community at reduced or no cost. Some courses have also opened access to the general public to better understand African cultural heritage through the "African Insights" MOOC and other courses on the sustainable development goals, including specific ones for SDG 11. So far, the courses have collectively been accessed by over 45,000 people; 1,400 people have accessed the Introduction to Sustainable Development Goals course in just over a month since it was first launched in August 2022.

ACTIVITIES

In addition to permanent or long-term policies and services, UJ has also engaged in short-term or one-off activities involving the student community. Some of these activities are tracked and reported by SDG. Activities related to SDG 11 include:

- City clean-up campaigns: Clean-up campaign with the City of Johannesburg of parks and zoo; A Re Sebetseng clean-up campaign.
- UJ launched the KZN Floods Relief Fund to help the KwaZulu-Natal community after a natural catastrophe in the area.
- Monitoring the quality of life of surrounding communities: Gauteng Quality of Life study every two years through the Gauteng City-Region Observatory (GCRO).
- Various outreach events on the interaction between technological innovation and Sustainable Development Goals such as the Living Catchments Project.
- Cloudebates: a series of videos where experts share how 4IR can contribute to addressing global issues. For 2022, the videos have mostly tackled climate change.

CHALLENGES AND KEY SUCCESS FACTORS

Challenges

SDG 11 highlights the importance of providing access to safe, inclusive and accessible, green and public spaces. However, walkable and open spaces at UJ are limited due to student security concerns, which the university considers hard to address within its competencies and resources, pointing out the need for collaboration with external stakeholders on this matter.

UJ has made important contributions to strengthen the sustainability of cities and communities across South Africa. However, additional challenges remain before progress can be benchmarked against international initiatives. While the current strategic plan shows a commitment to strengthen accountability and benchmark progress, quantitative and qualitative data on the contribution to SDG 11 is scattered across academic and support departments. UJ has several policies, structures and actions that can promote sustainable cities and communities, starting with its own campuses. However, a consolidated and quantifiable collation of these initiatives would allow for better monitoring and evaluation in the future both regarding the availability of initiatives and their practical impact.

Success Factors

In general, UJ has invested in monitoring and evaluation (M&E) of university projects in all areas of work through the Division of Institutional Planning, Evaluation and Monitoring (DIPEM) within the portfolio of the Deputy Vice-Chancellor: Academic. While current M&E of the SDGs can be strengthened, the establishment of the DIPEM office shows UJ's commitment to develop better ways to collect data, analyse and translate results.

At the moment, institutional reports and academic research make direct links to the SDGs, which reiterates the university's commitment. For instance, in the research area, UJ became the second highest-ranked university in South Africa by publication input on SDG 11, according to Elsevier Africa. In addition, there is a university-wide alignment of initiatives with strategic objectives. As such, faculties and departments connect with the 4IR framework, the Strategic Plan 2025 and (in the near future) the final approved Spatial Development Framework (SDF).

Finally, UJ´s outstanding community engagement efforts have successfully responded to SDG 11 challenges. Since its establishment, UJ has developed solid collaboration relationships with government agencies, industries, and communities at the local and national levels. This strength is reflected in the student projects and activities as well as long-term projects mentioned in this case study. In particular, the projects carried out through PEETS evidence successful collaboration between the university, governments, and the private sector by integrating technological innovation to promote urban development and environmental sustainability.

TOWARDS 2030 AND BEYOND: PLANS AND VISIONS

UJ plans to continue its commitment towards SDG 11, and all the other SDGs, through the United Nations Agenda 2030 for Sustainable Development and the African Union's Agenda 2063. UJ has already developed a draft Strategic Plan for 2035, to replace the current plan that takes it to 2025. At the heart of the new plan is sustainability and societal impact, with an overarching intent to ensure the coherence of its 4IR activities and education in line with its vision and mission. In addition, with the approval and implementation of the Spatial Development Framework (SDF), UJ is expected to strengthen the institution's accountability to sustainability commitments, especially regarding future infrastructure developments and resource management. For instance, the construction of new residences will increase access to housing for more national and international students. However, it will also require the university to increase its efforts to accommodate students' services, resources and opportunities to connect with the community.

5.4

UNIVERSITY OF SÃO PAULO

BACKGROUND

The University of São Paulo (USP) is the largest public university in Brazil by number of students. USP was founded in 1934 and its main campus, the Cidade Universitaria, was inaugurated in 1960, to unify USP schools and faculties in one space. Today, USP has seven campuses, most of them located in the state of São Paulo, inland and coastal, with an approximate total area of approximately 76 km^2.

In 2021, USP counted approximately 90,000 enrolled students in undergraduate and postgraduate studies and more than 5,000 professors. USP is responsible for half of the scientific production of the State of São Paulo and more than 20% of that of Brazil.

STRATEGIC APPROACH

Mission

USP's current Statute defines the general guidelines for the USP mission, which contains the following principles:

- Promotion and development of all forms of knowledge, through teaching and research
- Training and developing qualified professionals for teaching and research in all fields of knowledge as well as for professional activities.
- To extend services to society which are inseparable from teaching and research activities

The third principle is strongly linked to SDG 11, and USP has an extensive service catalogue intended for contributing to the surrounding community.

Moreover, USP's vision also includes the contribution to sustainable development: *"To strengthen itself as a world-class university, strongly rooted in our history, contributing to the socioeconomic and sustainable development of the country and responding in an increasingly qualified and innovative way to the concerns of contemporary society, committed to the advancement of science, technology, and culture for the improvement of the quality of life".*

Policies and regulations

USP's policies and regulations give continuity to the different services, and environmental and sustainability initiatives. The policies for university extension activities are defined by the Provost of Culture and University extension and published through a Service Catalogue. In contrast, the environmental and sustainability policies are defined by the Superintendence of environmental management (SGA) in the Environmental Policy.

USP Service Chart

USP Service chart is a tool that USP makes available to facilitate the dialogue with its internal and external community. It thoroughly describes all the activities and services offered by USP, for the internal community and general citizenry. The charter is updated annually and includes a service catalogue, which lists the services offered by the USP.

Environmental sustainability policies

In 2009 a Working Group was created to implement Environmental Management at USP. In 2012, the Superintendence of Environmental Management (SGA) was created, to plan, implement, maintain, and promote environmental sustainability on all the campuses of the USP. Moreover, the SGA seeks to incorporate the environmental dimension of sustainability in all activities, plans, and policies of the University across the three missions.

The SGA, together with thematic working groups in topics like water and affluents, fauna, sustainable buildings, energy, mobility and solid waste elaborated into the USP Environmental Policy in 2018.

The policy promotes a more efficient and integrated environmental management following the University's principles while giving continuity to the implemented projects throughout different University administrations.

Participation with civil society

Besides offering services to the external community and working in sustainable actions, the University also consults with representatives of civil society for decision making processes.

In the maximum deliberation structure of USP, the University Council, there are representatives of the Research Support Foundation of the State of São Paulo, the Federation of Agriculture and Livestock of the State of São Paulo, the Federation of Trade in Goods, Services and Tourism of the State of São Paulo, the Federation of Industries of the State of São Paulo and entities representing the working classes. They ensure the interests of the people they represent are heard within USP.

There is also an Advisory Board constituted with the aim of ensuring the participation of society in matters relating to the administration of the University. It includes members of organized civil society, the private sector, specialists (external to USP) and stakeholders from other governmental spheres.

STRUCTURES, PROGRAMMES AND RESOURCES

Higher education brings many indirect costs, such as accommodation, transportation and living costs. Within universities, equity can be increased by providing housing and transportation services as well as other initiatives that could provide subsidized or free services to increase the wellbeing of the student community.

Housing

The student housing system is coordinated by the Office of the Provost of Inclusion and Belonging (PRIP), in partnership with the USP Campus Coordinators. Depending on socioeconomic screening, USP will provide housing grants at USP residential complex (CRUSP) or housing aid outside the campus. Currently, USP's university residences host 2,653 undergraduate and graduate students, most of them (1,726) in the CRUSP. Moreover, 10,584 students receive housing aid of 95 USD approximately. Each university housing has an university restaurant, which serves subsidised meals to local residents and other USP students as well as free meals to students who demonstrate socio-economic difficulties. The CRUSP is located in the Cidade Universitaria and linked to the different faculties by shared bicycles initiatives and by the free bus that runs inside the campus.

Transportation

USP has several campuses throughout the state of São Paulo. Considering the high commuting rates to the campuses and within them, universities could have a negative impact on the carbon emissions and associated pollution of the cities they operate in. Through sustainable transportation initiatives, they can also contribute to the transition towards sustainable transportation incentivising non-motorised mobility.

In the Cidade Universitaria USP community has free access to three bus lines that circulate within the campus and connect with the train stations Cidade Universitária and "Butantã". Moreover, there are ten municipal bus lines and one intercity line (São Paulo – São Bernardo do Campo). Moreover, and in an attempt to increase transport sustainability, the Cidade Universitaria has 36 km of bicycle lanes and 18 shared bicycle stations, connected to the bicycle network of the city of São Paulo. The coordinators of the USP campuses also promote pedestrian prioritization policies, such as the reformation of the sidewalk system and the reduction and inspection of speed on campuses.

In the Ribeirão Preto Campus, there is a free shuttle bus facilitating mobility within the campus. In São Carlos and Lorena, there are also free buses that run between the USP campuses located in each city.

The Ribeirão Preto, São Carlos, Piracicaba and São Paulo campuses have special vehicles for the internal movement of students, teachers and technical and administrative employees with reduced mobility.

Waste management

Since 2012, USP Recycles is part of the programmes of the SGA throughout USP campuses. It's mission is to contribute to the development of sustainable societies through initiatives aimed at minimising waste, environment conservation, life quality improvement as well as training to reach these ideals.

Through the programme, USP has developed a series of initiatives to diagnose and minimize waste , such as collecting garbage for recycling on campuses , composting plants for organic waste generated in restaurants and day care centres, banning the distribution of disposable plastic cups on campuses.

In relation to the external community, USP also develops initiatives such as the receipt of electronic waste and partnerships for the construction and operation of recycling plants in vulnerable communities close to the campuses.

USP Recycles also serve the public by sharing relevant information through education campaigns on waste management, supporting and promoting school projects (in Piracicaba and Ribeirão Preto) and developing partnerships with local governments and civil society organisations to improve waste management initiatives.

Open Spaces

There are 70 physical libraries in the campuses, all open to the external public for consultation and reading of books and journals, as well as access to computers and the internet at their facilities. USP also maintains 4 large museums and dozens of smaller collections maintained by USP Schools, Faculties and Institutes, all of them open to the external public and with free access.

São Paulo, Ribeirão Preto and Piracicaba campuses, which are large in territorial extension, also remain open to the outside community for most of the week, allowing for visits, physical exercise and open-air activities.

Cultural services to the community

Most of USP's cultural and academic activities are free and open to the general public.

The Cinema of USP and the USP theatre are free of charge and open to the general public. Both the São Carlos and Ribeirão Preto campuses also have a cinema and theatre, which display shows and thematic sessions throughout the year. In these spaces, teachers and students can exhibit their productions as well as broadcasting seminars, debates and courses stimulating intellectual and social development.

USP also offers cultural and extension services (coordinated by the Provost for Culture and Extension - PRCEU) that allows students who have completed secondary education but are not necessarily enrolled at USP to

take different courses. There are both free and paid available courses and they focus on language and culture learning as well as literature, theatre and cinema critique.

The four museums at USP are also open to the public. Particularly the USP Science and Technology Park (Parque CienTec), which can be visited by schools, general visitors and researchers carrying fieldwork in disciplines such as: astronomy, meteorology, education and ecology among others. In 2019, Parque CienTec received 281 schools and more than 8,000 students on guided tours.

General services to the community

USP has several general services provided to the community. Amongst the most relevant ones we could consider the medical services provided through the University Hospital which is integrated to the Brazilian Universal Health System (SUS) and provides services free of charge.

HU budget is maintained by USP in partnership with the São Paulo State Health Department and the Brazilian Ministry of Health. It is a teaching hospital and its services are geared to the USP community and the general public of six districts. In 2021, the hospital performed approximately 7.9 million interventions between medical telephone assistance, physical exams and consultations, procedures and surgeries.

Other medical services geared to the community are:

- The Hospital for Rehabilitation of Craniofacial Anomalies (HRAC) surpassing the mark of 100,000 patients.
- The Hospital das Clínicas of the of the University of São Paulo Medical School (HCFMUSP) that performs more than 10 million procedures (consultations, exams, surgeries, etc.) a year.
- The Hospital das Clínicas of the Ribeirão Preto Medical School (HCFMRP) , located in the city of Ribeirão Preto serves the cities of Ribeirão Preto, Franca, Araraquara, Barretos and respective regions. Per year, the HCFMRP performs more than 700,000 consultations and procedures., Barretos and respective regions.
- The USP School of Dentistry (FOUSP) also offers dental care to the general population. Most procedures are free of charge with the exception of prostheses and other services with laboratory costs. Through this, students training as dental surgeons are able to complement their academic education with practice. Free dental care services are also offered by the Bauru School of Dentistry (FOB) and by the Ribeirão Preto School of Dentistry (FORP). These three Units together offer approximately 80,000 interventions per year.

USP also manages a veterinary hospital open to the community for general services and specialised surgeries for cats, dogs and birds for a fee. This hospital is the largest in Latin America considering the cases served.

The School of Physical Education and Sport (EEFE-USP) and Ribeirão Preto School of Physical Education and Sports (EEFERP) along with the USP Sports and Practice centre (CEPE USP) offer free of charge physical activity programmes to the community of São Paulo as well as the USP community. There are also smaller sports centres on the campuses of Ribeirão Preto, São Carlos, Piracicaba and Bauru.

Other USP services geared to the internal and external community are psychological and legal services. The Psychology Institute of USP (IPUSP) offers free psychological services to the USP community as well as the general community living near the Cidade Universitaria. These services can be in-presence and also online. On the Ribeirão Preto campus, the Center for Research And Applied Psychology (CPA) provides services to children, adolescents, adults and institutions. There are also several mental health and care services aimed at USP's internal community.

The students from the USP Law school (FDUSP) manage the initiative that gives free legal advice to people from low socioeconomic backgrounds. There is a compulsory socioeconomic screening before offering the legal advice and to be eligible, family income cannot go over three minimum wages. The Law School of Ribeirão Preto (FDRP) also offers legal consultancy services through the Judiciary Center for Conflict Resolution and Citizenship (CEJUSC), the Center for Popular Legal Advice of Ribeirão Preto (NAJURP) and the Debtor Support Program (PAE).

Through the Open University for the Elderly, USP also offers free courses, sports and cultural activities for citizens over 60 years old. This programme is available in all USP campuses and has been active since 1994.

Geographies of innovation

Universities, with their research and technology transfer activities, innovation centres and business incubators have the possibility to impact local geographies of innovation playing a key role in the local economic development and reaching a more sustainable growth.

The Office of the Provost of Research and Innovation´s (PRPI) objectives are to foster interdisciplinary research, manage research-related programs and policies, and stimulate innovation and harmonize the activity of bodies that promote innovation associated with or belonging to USP.

Among the bodies that make up the PRPI, USP Innovation Agency (AUSPIN) is the main Technological Innovation Centre at USP present in all the campuses and is responsible for managing the innovation policy to promote the use of scientific, technological and cultural knowledge produced at the university, in favour of socioeconomic development sustainable development of the State of São Paulo and the country. It is also responsible for the management and articulation of maintaining four innovation and entrepreneurship incubators: CIETEC and Habits Incubator-School, in São

Paulo; SUPERA Technological Park, in Ribeirão Preto; and the ESALQTec Technological Incubator, in Piracicaba. In 2021, USP had incubated 247 companies and was in the process of incubating 95 more.

The USP Innovation Centre (INOVAUSP), also subordinated to PRPI, aims to aggregate and integrate laboratories and various initiatives in a multidisciplinary environment dedicated to the development of research and innovation. Innovation initiatives stay at INOVAUSP for five years which are renewable for another 5 years.

ACTIVITIES

Pilot Projects

USP had implemented sustainability-related initiatives before the publication of its environmental policy. In 2016, the SGA began to develop Pilot Projects (PPs). These projects are developed with local governments, USP schools, colleges and institutes, and University laboratories in partnership with research funding agencies, private companies or other institutional partners, and seek to develop initiatives and models that can be replicable. A recent study shows that mostly, PPs are connected to SDG 11 .

Other activities have been recently organized by USP with the objective of further aligning its initiatives towards working with the local community to achieve the SDGs. Some examples of recent actions carried out by USP in collaboration with the local community and linked to sustainability include:

The USP Municipios project aims to build partnerships with São Paulo municipalities to increase public policies that result in sustainable development, based on values such as: ethics, responsibility, innovation, social justice, sustainability and effectiveness. In 2021, through the DESAFIO USP – Sustainable Cities program, 27 projects were selected, bringing together undergraduate and graduate students who will work on different themes aimed at answering questions linked to SDG 11 with a focus on solving problems in local municipalities.

The project "Ribeirão Preto and the Sustainable Development Goals of the UN 2030 Agenda" has held public meetings to mobilize and debate the process of implementing the SDGs of the UN 2030 Agenda, in the city and region of Ribeirão Preto. Thematic seminars promoting critical discussions for each SDG as well as courses for students and training videos for public managers will be made available through the project. The project brings together several faculties of the USP Campus of Ribeirão Preto, in addition to the City Hall and the Municipal Chamber of Ribeirão Preto.

Also, between the end of 2020 and the beginning of 2021, SGA held a public notice for the selection and financing of projects aimed at reducing or offsetting carbon emissions on campuses allocating approximately 94,000 USD to 15 selected projects.

LESSONS LEARNED / KEY SUCCESS FACTORS

Throughout the implementation time of the several initiatives USP carries out, the main lessons learnt have to do with the continuity and the financing of the projects as well as the importance of success indicators. Firstly, to ensure the continuity of sustainability-related projects, they must be included in the Environmental Policy.

Secondly, due to the lack of funding to complete some of the projects, USP works in partnership with private companies from sectors such as banking, technology, digital services and energy that invest in the implementation of sustainable projects designed within the university.

Thirdly, success indicators and measurement are important. Until recently USP had been monitoring its initiatives with qualitative data; however, the university is planning to develop quantitative indicators for impact, beyond research indicators, to enhance the monitoring and evaluation of their policies and projects.

TOWARDS 2030: CHALLENGES AND VISION

The new management of the USP has included the 2030 Agenda in its vision for the future and has committed to solving the real problems of São Paulo and Brasil. This implies a thorough understanding of their social and environmental problems, collaborative work between the researchers, the students, and the community whose problems USP is trying to solve, as well as going beyond academic analysis and engaging in the real-life implementation of the solutions. To achieve this, USP is developing the Eixos Temáticos programme, aimed at identifying how the University can help solve major social problems in SDG thematic areas with an interdisciplinary approach and working with local governments and students from all levels (graduate, postgraduate, doctoral).

The main challenge to reaching this modality of applied research within the university, lies in the way in which research is currently evaluated. The indicators to evaluate research are mainly based on the number of published papers and citations. Through the interview with the USP representative, it was signalled as a remaining challenge that this kind of evaluation is not sufficient in engaging researchers in the new kind of work that is expected from them to solve societal problems.

Recommendations 6

Considering the foreseeable increase in population living in urban areas in the coming years, the actions HEIs can implement are paramount to reach SDG 11 - Sustainable cities and communities. Universities worldwide are already tackling SDG 11 through different actions as shown in the case studies. The following sections present different recommendations for higher education institutions (HEIs) related to SDG 11.

Campuses should be integrated with or within the city.

The choice of location for new HEIs or their expansion needs to incorporate sustainability and community priorities. Long-term partnerships between HEIs and local governments regarding urban planning and development are essential to ensure campus integration within the city, allowing the HEI community and the neighbouring community to mutually benefit from each other's basic services, cultural and sport activities and infrastructure, open and green spaces, public transportation infrastructure and services, as well as learning opportunities.

Campuses should be accessible by foot, cycling and affordable and sustainable public transport.

The daily commuting of students and staff can have a considerable carbon footprint if sustainable transportation is not available, convenient or affordable. This requires campuses friendly to pedestrians and cyclists, together with continuous and safe walking and cycling paths, as well as mass transit options, between them and the city residential areas. HEIs and local governments can partner to align their transport infrastructure inside and outside campus, as well as to provide free, subsidised or cheap public transport to, at least, low-income students. A lack of such measures can result in a geographic concentration of student housing demand, which can affect affordability depending on local contexts.

HEIs should ensure student housing affordability.

HEIs must take action to prevent that the cost of accommodation becomes a barrier to entry to and progress through higher education. This can be done by directly operating residences, increasing the offer of external providers

with agreed or subsidized prices, or by integrating accommodation expenses in scholarships (the HEI's own, or those provided by national programmes). In this way, students can have a stable environment and focus on their studies. Student housing policies at HEI level should be coordinated with local urban planning, considering the potential impact of localized studentization, youthification, population density and gentrification.

HEI buildings and infrastructure should follow the highest environmental and efficiency standards.

HEIs need to adopt an official policy to ensure that new buildings and infrastructure consider the newest sustainability standards. These can be government-set standards or private certifications, but must include clearly measurable benchmarks. Existing infrastructure should be gradually upgraded to meet these standards, with a time-bound roll-out strategy. Thermal insulation, efficient lighting and the use of the smart monitoring of supplies are common starting points. This will reduce the carbon footprint produced by the HEI and have a positive impact on the surrounding environment. When available, HEIs and local governments should consider the clean-up of former brownfields and the repurposing of underused land and buildings as sustainable opportunities to locate new HEI buildings, by maximising public resources, lowering environmental impact, and improving neighbourhood infrastructure and services.

Universities should promote volunteering of students and staff by partnering with local NGOs or governments.

The specialized skills of students and staff can make great contributions to local communities. From healthcare services and mental health support in teaching hospitals, to free legal counsel, civil engineering projects or education students supporting disadvantaged local schools, university students and lecturers can provide an added value to disadvantaged communities thanks to their professional skills, while receiving valuable experiential learning. This positively impacts the surrounding community, which becomes participant and benefits from these projects.

HEIs can provide professional services to governments, NGOs and businesses to improve cities and communities

Universities can provide SDG 11-relevant knowledge and services to local partners, from urban planning consultancies to cultural heritage preservation, joint research or laboratory testing, among many others. Partners benefit from these services by tapping into the accumulated knowledge and technology held at universities. At the same time, these services can be an additional revenue stream for HEIs, which can allow them to independently fund further sustainability or engagement projects.

HEIs can support the cultural heritage of their communities by promoting arts and culture

Universities can promote arts and culture by giving access to their spaces, such as libraries, museums, exhibitions, theatre and cinema. Promoting arts and culture can also be achieved by developing extension courses and making them readily available to students, faculty and the external community. Arts and culture can be out of reach for large shares of citizens, especially in developing countries, where cost becomes a strong access barrier. If HEIs give free or subsidized access to arts and culture activities to the local community, they are also contributing to the conservation of their immaterial heritage. Moreover, some HEIs are also hosted in historical buildings, which they must preserve for future generations to enjoy.

HEIs can leverage opportunities to partner with the private sector for developing innovative solutions for their cities and communities

Partnerships between HEIs and the private sector have an extraordinary potential to tackle SDG 11. HEIs can validate and transfer knowledge addressing the major social needs and urban challenges in cities. Together, private sector and universities can develop technology parks, science parks, innovation hubs or innovation districts geared towards providing solutions for a sustainable urban living. This can have a positive impact in the economic and technological development of the community and beyond.

HEIs should promote project and/or problem-based learning throughout the curricula

Project or problem-based learning have proved to be useful methodologies to address the SDGs, particularly if done in collaboration with local communities. HEIs should promote these methodologies within their curricula, train teachers to deliver them and adapt their teaching evaluation. In partnership with the local community, HEIs can organize dedicated project teams focused on local problems and co-develop solutions that could be later piloted and implemented. The success of these methodologies requires HEIs to innovate Solving local problems with the community not only improves the quality of life of the citizens, but also gives them agency to participate in this process increasing the chances of the project's success.

HEIs should increase its research related to SGD 11 topics

Research is the second mission of HEIs, and based on this HEIs can develop long-term research lines and create research centres, networks and departments in areas relevant to city and community sustainability. Establishing and prioritising research lines related to SDG11 can accelerate the progress on each indicator and facilitate the monitoring of its economic, social and environmental impact.

The sustainable development of cities can be supported by integrating local matters into applied research. HEIs should integrate into their research the concrete environmental and social problems that are relevant to their environment and communities, resulting in improvements in their quality of life.

HEIs should monitor and evaluate SDG 11-related targets regularly while ensuring the sustainability of the most impactful activities

Many HEIs develop activities related to the SDG 11 - but do not track them. The first step for every institution willing to implement a sustainability strategy is to gather systematic baseline information on the relevant activities. Following up is equally important, as a coherent monitoring and evaluation model for SDG-related activities will give the institution better information on how to improve and address incoming challenges, and this will facilitate a positive impact on the overall SDGs performance of the HEI.

HEIs should have policies in place to ensure the continuity of activities and services that have demonstrated positive or promising results. This will ensure that the positive impact of such initiatives in students, staff and the surrounding community continues in the long-term despite changes in management.

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