

ENVIRONMENTAL SUSTAINABILITY REPORT 2021



POLITECNICO
MILANO 1863

ENVIRONMENTAL SUSTAINABILITY REPORT OF POLITECNICO DI MILANO 2021

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POLITECNICO DI MILANO'S COMMITMENT TO SUSTAINABLE DEVELOPMENT

Commitment letter.

Politecnico promotes the culture of sustainable development in all its institutional activities, in teaching and research. Working in partnership with society and helping it to achieve sustainable development goals at global, national and local levels is an integral component of the University's mission, firmly embedded in both the relevant community context and the international academic setting.

At Politecnico we face the challenge of sustainable development, strengthened by our identity and values as a polytechnic school. Indeed, we believe in the value and effectiveness of the contribution that the design and creative culture as well as the problem-solving ability, typical of a polytechnic approach, can give to the urgent and global challenges posed by the United Nations 2030 Agenda.

We have been doing this with growing commitment for many years on at least four fronts: environmental sustainability, promotion of responsible research, international cooperation and equal opportunities. This is evidenced by the policies that have been developed over time.

Nevertheless, we believe that the efforts made over the last ten years must be further consolidated. Politecnico wishes to take responsibility for new projects and new investments. Global challenges are increasingly urgent and sometimes, as has been the case in the last two years, unpredictable. In this evolving context, the role and responsibility of higher education and scientific research are crucial, as they are capable of generating high-level innovation and knowledge that can be used to support both immediate decisions and longer-term policies and strategies. These considerations highlight the importance of our contribution as a university, as a place of research and teaching, a campus, a place of work and study; and the call for a joint, collaborative effort by the entire Politecnico community to direct our work and research towards a fairer society is ever clearer.

Our commitment to sustainable development is not a mere administrative act or the response to a passing trend. We believe it to be our duty. We are fully aware that pursuing sustainable development goals within the university entails a high cost in terms of economic resources, work and energy; but only by staking on research and education can this cost become an investment for the future of the society we are called upon to build and to which we belong.

Ferruccio Resta
The Rector

Emilio Faroldi
The Vice Rector for Building,
Spaces and Sustainability

Eugenio Morello
The Delegate for Environmental
Sustainability of the University



INTRODUCTION

Objectives of the report: areas of investigation and operational boundaries of the document

The general objective underlying the drafting of an **Environmental Sustainability Report** in the University is to **spread the culture of sustainability** contributing to create, in view of the third and fourth mission, a society that incorporates and promotes the principles of sustainability by pursuing and achieving the Sustainable Development Goals at global, national and local level.

This report has several operational purposes.

The first is certainly that of planning and making future decisions based on the **knowledge of current environmental performance**, risks (understood as threats but also opportunities), the resources available for their improvement and the limitations encountered, and the trends in processes taking place in the University and in society. It is an Environmental Sustainability Report, with a **broad and holistic view anchored to the Sustainable Development Goals (SDGs)** in the various **institutional, research management and teaching activities** that are now an essential reference and a universal language for a collaborative dialogue between institutional partners.

Investigating the field of environmental sustainability in the University, this report represents a **vertical breakthrough within a broader and more integrated vision of governance for the sustainable development of the Politecnico**, which the University has begun to address as set out in the objectives of the 2020-2022 Strategic Plan. Therefore, the work contributes to laying the foundations (a sort of preview) for a broader and more integrated work covering all aspects of the 2030 Agenda, i.e. the 17 SDGs. Above all, the report offers a scientific method for strategic planning of sustainability at the university. In fact, the method promotes a collaborative and dynamic approach to the drafting of a document, trying to involve the Politecnico community, with the aim of striving for co-authorship and the active contribution of all interest groups and components of the University's governance.

Moreover, the work has contributed, through data collection, to understand the difficulties of systematisation and **involvement of the University Structures** in a costly operation that requires (human and financial) resources, knowledge of the existing context, planning and creativity in the construction of meaningful indicators for those who produce them and for those who collect them. The data in this report was collected for 2019 and updated as far as possible on 2020; the strategies, activities and events reported in the document include data and facts updated to 2020.

Although it mainly examines the environmental dimension of sustainability at the University, the document has higher ambitions. "The University's Social, Environmental and Sustainability Reports are, or can be, an opportunity for the University to assess and rethink its range of courses, its research areas and its third and fourth mission activities so that they are more in line with the values and urgencies that sustainable development indicates"¹. In a higher education context, **promoting sustainable development undoubtedly covers many dimensions**; however, the ultimate aim is **to make students and workers aware of the sustainability challenges and provide them with the right tools** to address and solve them in their profession and in everyday life.

¹ Antonelli et al., 2019. Table 4A University education for sustainability.
https://www2.cruil.it/cruil/positionpaper/PositionPaper_Tav4A.pdf

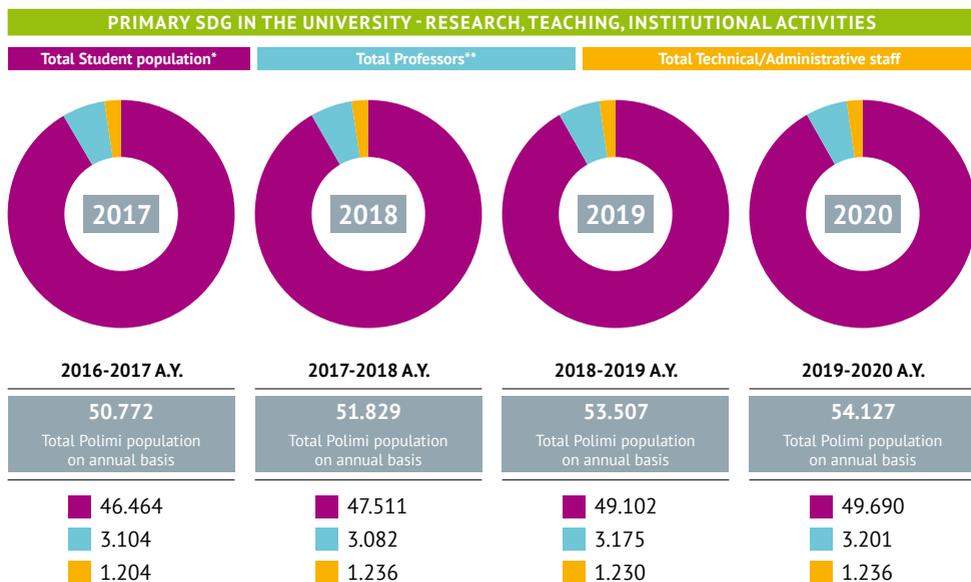
The approach: The report as a collaboration

This document is the result of a **collaborative effort** carried out with extensive input from the Politecnico community. In order to draw up this document, a **listening phase was launched with all the souls of the Politecnico community**, involving students, faculty and technical/administrative staff. The listening phase has a twofold purpose: firstly, it is **aimed at spreading a pervasive awareness** not only of sustainability topics but also of the role that each of us has or can play with regard to the challenges of sustainable development, with particular reference to environmental topics; secondly, it aims to **collect the already existing sensitivities and requests** (suggestions, existing and planned work) of our community in order to enrich the work and define objectives in line with our resources. In short, the areas of environmental sustainability are to be found in the daily management of the University, in the promotion of institutional activities also towards external stakeholders, in teaching and research.

The Politecnico: 12 Departments and 6 Other Campuses

The **Politecnico di Milano** hosts a number of active students on degree, master, specialisation and PhD courses that has been steadily increasing in recent years. If we add to this the workers (professors, administrative technicians, research fellows and other collaborators, grouped together in the staff category), we arrive at a **population of 54,127 people gravitating around the university in 2019/2020 Academic Year**.

Specifically, the Politecnico di Milano has **49,690** enrolled students including PhD students and students on master's, specialisation and postgraduate courses in the 2019/2020 academic year and **4,437** employees including professors, researchers, research fellows, adjunct professors and administrative technicians, housed in six campuses located in the cities of Milan, Cremona, Lecco, Mantua and Piacenza.



* Students enrolled on LT (LAUREA TRIENNALE) and LM (LAUREA MAGISTRALE) and CU programmes, including PhD students and students on masters, specialisation courses

**Professors, researchers, research fellows, adjunct professors.



With a range of 28 Laurea Triennale (equivalent to Bachelor of Science) programmes, 43 Laurea Magistrale (equivalent to Master of Science) programmes, 19 PhD courses, 1 Specialisation School in the 2019/2020 academic year, as well as a wide range of 86 active courses including first and second level Master's degrees, the Politecnico is a **benchmark university for education in engineering, architecture and design**, both at national level and worldwide.

Currently, educational/teaching activities are organised in 1 PhD School and 4 major Schools listed below:

- **Architecture, Urban Planning and Construction Engineering**
- **Design**
- **Civil, Environmental and Land Management Engineering**
- **Industrial and Information Engineering**

There are 12 Departments that form the aggregation of specific scientific-disciplinary projects:

- Architecture and Urban Studies (DASTU)
- Architecture, Built Environment and Construction Engineering (DABC)
- "Giulio Natta" Chemistry, Materials and Chemical Engineering (DCMC)
- Design (DESIGN)
- Electronics, Information and Bioengineering (DEIB)
- Energy (DENG)
- Physics (DFIS)
- Civil and Environmental Engineering (DICA)
- Management, Economics and Industrial Engineering (DIG)
- Mathematics (DMAT)
- Mechanical Engineering (DMEC)
- Aerospace Sciences and Technologies (DAER)

In relation to the distribution of its locations, the University is divided into six Campuses. As a general overview, the main characteristics of the hosted Politecnico community and the accessibility of each campus are briefly outlined below. The two main Campuses are located in Milan, a city that enjoys an extensive public transport service and a wide range of ancillary services for shared mobility.

MILAN CITTÀ STUDI CAMPUS



1
No. of railway stations
(within 1km)



2
No. of underground stations
(within 500m)



8
Bike sharing points
(within 500m)



3
Station based car sharing
points (within 500m)

	2017	2018	2019
Number of students*	24.103	24.512	26.031
Professors** and Technical/ Administrative staff	2.822	2.794	2.834

MILANO BOVISA CAMPUS



2
No. of railway stations
(within 1km)



0
No. of underground stations
(within 500m)



5
Bike sharing points
(within 500m)



2
Station based car sharing
points (within 500m)

	2017	2018	2019
Number of students*	17.983	18.639	19.235
Professors** and Technical/ Administrative staff	1.368	1.429	1.492

COMO CAMPUS³

	2017	2018	2019
Number of students*	771	714	265
Professors** and Technical/ Administrative staff	15	9	7

CREMONA CAMPUS

	2017	2018	2019
Number of students*	350	341	367
Professors** and Technical/ Administrative staff	15	12	12

² The Como Campus was closed in the 2019/2020 academic year.

³ The Como Campus was closed in the 2019/2020 academic year.

LECCO CAMPUS



No. of railway stations
(within 1km)



No. of underground stations
(within 500m)



Bike sharing points
(within 500m)



Station based car sharing points
(within 500m)

	2017	2018	2019
Number of students*	1.626	1.631	1.632
Professors** and Technical/ Administrative staff	31	28	26

MANTUA CAMPUS



No. of railway stations
(within 1km)



No. of underground stations
(within 500m)



Bike sharing points
(within 500m)



Station based car sharing points
(within 500m)

	2017	2018	2019
Number of students*	645	615	575
Professors** and Technical/ Administrative staff	30	25	17

PIACENZA CAMPUS



No. of railway stations
(within 1km)



No. of underground stations
(within 500m)



Bike sharing points
(within 500m)



Station based car sharing points
(within 500m)

	2017	2018	2019
Number of students*	986	1.059	997
Professors** and Technical/ Administrative staff	27	21	17

* Students enrolled on LT (LAUREA TRIENNALE) and LM (LAUREA MAGISTRALE) and CU programmes, including PhD students and students on masters, specialisation courses

**Professors, researchers, research fellows, adjunct professors.



THE POLITECNICO DI MILANO TOWARDS THE ACHIEVEMENT OF THE SUSTAINABLE DEVELOPMENT GOALS

Our mission and ambitions

By joining the **Network of Universities for Sustainable Development** (RUS) and signing the **Lombardy Regional Government Protocol for Sustainable Development**, the Politecnico di Milano is committed to pursuing the Sustainable Development Goals (SDGs) promoted by the United Nations 2030 Agenda. In order to track and monitor its commitment to the SDGs, the University has promoted the following initiatives:



- **“POLIMI4SDGs”** the first SDGs self-mapping campaign for institutional, teaching and research activities, launched in spring 2017 and renewed in spring 2020 (more details - POLIMI4SDGs section).
- **“Sustainability talks”** carried out in spring and summer 2020, with the representatives of the areas of the University, aimed at raising the awareness of those responsible for the structures with respect to their position in determining and promoting the culture of sustainability and examining the coverage of the SDGs in the activities assigned to each operational area.

The University's commitment to promoting various recurring initiatives, which are an integral part of all sections of this Environmental Sustainability Report, will also continue:

- **“Giornate della sostenibilità”** which have been organised for years now, mostly on the occasion of events such as the Festival of Sustainable Development, to raise awareness and inform the university population as well as the local community about sustainable development topics with a special reference to the objectives of the 2030 Agenda.



- **“Continuous awareness-raising”** of the entire Politecnico community, aimed at enabling the various activities (institutional, teaching and research) to be linked to the relevant SDGs. For example, all seminar initiatives promoted first and foremost by the University Sustainability Unit are labelled with the relevant SDGs; professors who have joined the POLIMI4SDGs campaign have also been invited to make the relevant SDGs explicit in their course programmes in order to make students aware of and participate in them.

POLIMI4SDGs

The voluntary self-mapping campaign POLIMI4SDGs, promoted by the Delegate for Environmental Sustainability of the University, launched in **2017** and proposed again in **2020** by the University Sustainability Unit, aims to investigate and monitor the commitment of Politecnico di Milano to achieving the **Sustainable Development Goals**, as defined in the **United Nations 2030 Agenda**. Thanks to the two POLIMI4SDGs campaigns, it has been possible to map the Institutional, Research and Teaching activities carried out at the Politecnico and their contribution to the Sustainable Development Goals.

The campaign, based on voluntary participation in the completion of an online questionnaire, collected 387 responses in 2020 with a response rate of around 7.5% (considering Professors and Technical/Administrative staff), up 31% on 2017⁴.

Although Polimi4SDGs represents a partial mapping based on self-declaration, it has nevertheless an important meaning in terms of pro-activity and engagement of our community. The aggregated results are a non-exhaustive but indicative representation and show that the activities of the Politecnico contribute mainly to the achievement of the following Goals: **Goal 11** (Sustainable cities and communities), **Goal 9** (Enterprise, Innovation and Infrastructure), **Goal 4** (Quality Education) and **Goal 12** (Responsible Consumption and Production) therefore in line with the University's scientific and technological expertise.

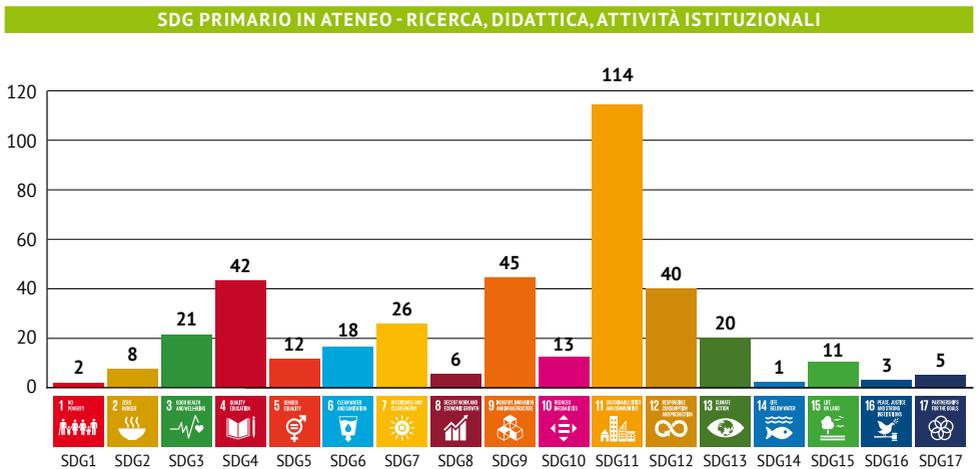


Figure 1. Primary SDGs in institutional, research and teaching activities (data source: POLIMI4SDGs 2020 self-mapping campaign).

⁴ The number of responses per Department and Divisions/Services is detailed below. DASTU (44), DABC (31), DCMC (6), DESIGN (30), DEIB (48), DENG (29), DFIS (3), DICA (44), DIG (29), DMAT (5), DMEC (3); General Management (1), Area Campus Life (29), Infrastructures, Estates and General Services (3), Public Engagement and Communication Division (9), HR and Organizational Development Division (1), ICT Services Division (1), CUG (1), Consorzio Cise (1), METID (17), MIP (1), MantovaLab Interdepartmental Laboratory (1), POLIEDRA (22), Other (28).





UNIVERSITY GOVERNANCE AND THE ENGAGEMENT OF OUR COMMUNITY FOR ENVIRONMENTAL SUSTAINABILITY

Governing environmental sustainability



Primary SDGs to which the Politecnico contributes through the governance mechanism.



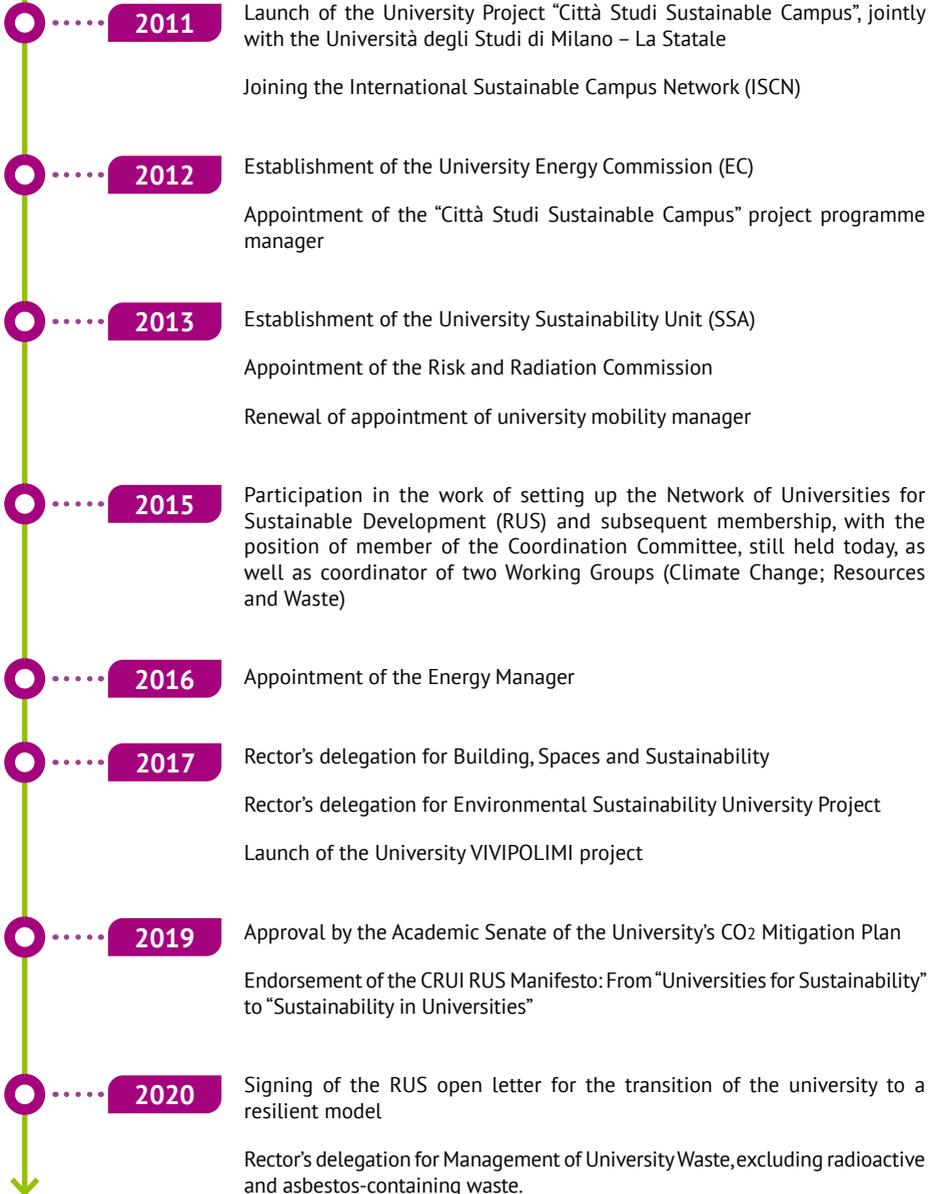
Secondary SDGs to which the Politecnico contributes through the governance mechanism.



History of Sustainable Development Governance at the University

In the ten years of the **Politecnico's formal and substantial commitment to sustainability issues**, important steps have been taken towards institutional recognition and a significant use of resources. This has enabled the University to achieve important goals in environmental performance, awareness and involvement of the Politecnico community.

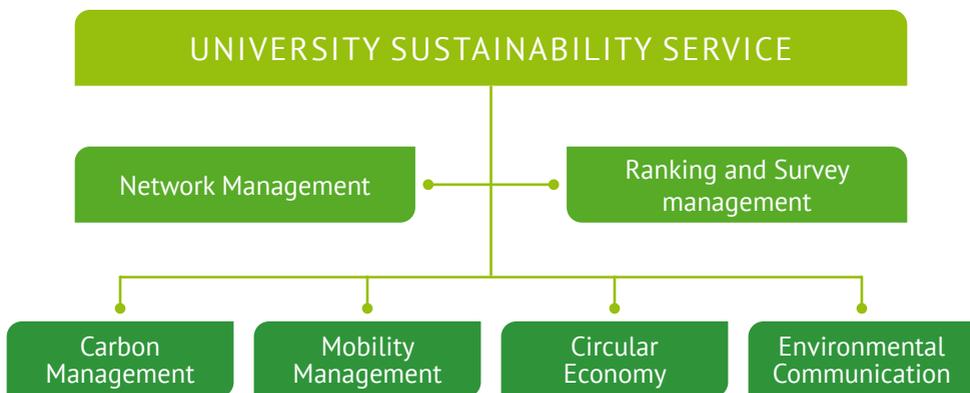
STEPS IN ENVIRONMENTAL SUSTAINABILITY GOVERNANCE AT THE UNIVERSITY



The organisation of the Politecnico, in line with the provisions of the Articles of Association and the General Regulations of the University, includes the Rector, the Senate, the Board of Governors and the Director General as governing bodies.

The Director General is responsible for the financial, technical and administrative management of the University and the coordination of the 9 management structures, the departmental and territorial structures.

The **University Sustainability Unit** within the Campus Life Division **coordinates and manages sustainability initiatives and actions in the University, in close synergy with other structures**, in particular the Supplies & Facility Management Division, the Real Estate, Construction and Development Division and the Public Engagement and Communication Division.



The work of discussion and dissemination of environmental sustainability topics in the University has its roots in the **Città Studi Sustainable Campus Inter-University Project**, launched in 2011 together with Università degli Studi di Milano. Ten years after the start of this journey and since the establishment in 2013 of the service specifically dedicated to Sustainability (Sustainability Unit), a **culture of sustainability** has been developed, step by step, and has reached more and more people within our community. However, community engagement is an onerous task, to be renewed constantly and with perseverance, as the student population is cyclical and spends a limited amount of time at our university.



University community involvement and partnerships for sustainability

INTERNAL COLLABORATION WITHIN THE POLITECNICO COMMUNITY



Primary SDGs to which the Politecnico contributes through internal collaboration.



Secondary SDGs to which the Politecnico contributes through internal collaboration.

Facts



The **dissemination of knowledge of the Sustainable Development Goals (SDGs)** has become an imperative for the University, specifically since the **Rector's Delegation to the Environmental Sustainability of the University**, which has given particular impetus to the activities of **internal mapping of teaching and research related to the SDGs** and, subsequently, to the implementation of **activities and awareness campaigns** on various topics.

Among others, the University participated in the **first edition** of the **Sustainable Development Festival** promoted by the **Italian Alliance for Sustainable Development (ASviS)**, in 2017, to continue in the following years with a schedule of events and activities published not only on the Città Studi Sustainable Campus website but also on the platform of the Festival itself, which provided for the **involvement** not only of the **Politecnico community** but also of the **population**.

The **dissemination** of this and many other initiatives takes place through a **variety of information channels**, ranging first and foremost from the Città Studi Sustainable Campus website, dedicated to sustainability issues (www.campus-sostenibile.polimi.it), to the related **social networks** (Facebook, Instagram, Twitter, YouTube), from the **Sustainability News** (currently not regularly published) to **Sustainability Days** and **ad hoc events**.

Type of involvement:

- Events: seminar activities (also off-campus), information desks, demonstrations, conversations, webinars, field activities, documentary film screenings, shows, etc.
- Ad hoc competitions and awards for graduation thesis on sustainability topics
- Surveys and questionnaires
- Corporate volunteering activities in cooperation with associations
- Citizen science activities in cooperation with associations
- Internships
- Graduation thesis
- Social media
- Newsletters
- Awareness-raising videos
- Support for student associations



FOCUS: PARTICIPATION IN THE FESTIVAL OF SUSTAINABLE DEVELOPMENT

2019/2020

Since the first edition in 2017, the **Politecnico di Milano** has joined the **Festival of Sustainable Development** organised by the Italian Alliance for Sustainable Development (ASviS) and promoted by the RUS (Network of Universities for Sustainable Development). The entire event takes place over **17 days and aims to draw attention to the 17 Sustainable Development Goals**, with the aim of **involving and raising awareness** among an ever-widening segment of the population on the topics of the 2030 Agenda. On the occasion of the Festival of Sustainable Development, the Politecnico is organising a **varied programme of free events** including conferences, seminars, concerts, demonstrations, interactive activities, generally open to all citizens.

Among the activities carried out, note that: the “**great sustainability game**”, a dissemination proposed by EnvLAB, the teaching laboratory of the study programme in Environmental and Land Planning Engineering at the Politecnico, aimed at telling in a playful manner a non-expert audience about some of today’s most important environmental challenges.

For more information:

Website – Città Studi Campus Sostenibile

⁵ For example: <https://www.som.polimi.it/premio-per-tesi-di-laurea-con-impatti-sui-sustainable-development-goals/>

PARTNERSHIP FOR SUSTAINABILITY



Primary SDG to which the Politecnico contributes through partnerships.



Secondary SDGs to which the Politecnico contributes through partnerships.

Facts



Partnership for sustainability: from global to local networks

With the aim of pursuing SDG 17 (Partnerships for the Goals), the Politecnico joins a series of networks at national and international level, committed to spreading the culture of environmental sustainability.



The **International Sustainable Campus Network (ISCN)** is an international network to support Universities in exchanging information, ideas and best practices for sustainable Campus operations and integrating sustainability into research and teaching. The Politecnico di Milano has been a member of ISCN since 2011.



The **Network of Universities for Sustainable Development (RUS)**, promoted by CRUI - Conference of Italian University Rectors - is the first experience of coordination and sharing among all Italian Universities committed to environmental sustainability and social responsibility. The Politecnico di Milano is a founding partner of the RUS (2015) and actively participates, also with coordination roles, in the Working Groups (WGs).



IDEA LEAGUE - is a strategic alliance between five leading European science and technology universities. Based on the knowledge that it can help shape the future, it aims to join forces and create valuable connections that inspire innovation and the pursuit of ambitious goals.

CLIMATE FRAMEWORK WORKING GROUP

The Politecnico di Milano participates in the activities of the **Climate Framework Working Group** active since 2020 with the aim of promoting commitment and guidelines for climate planning at the Universities joining the league.



EIT Climate-KIC is a Knowledge and Innovation Community (KIC) that aims to accelerate the transition to a carbon neutral and climate resilient society. Supported by the European Institute of Innovation and Technology, Climate-KIC promotes innovation and systemic change: networking with partners from business, academia and the public and non-profit sectors, developing products, systems and services that will have a major impact on the market.



Italian Industrial Symbiosis Network SUN (Symbiosis Users Network), promoted by ENEA, is the first Italian industrial symbiosis network. The SUN network proposes itself as an Italian reference for operators who want to apply industrial symbiosis at industrial, research and territorial level.

The Politecnico, together with ENEA and CNR, is coordinating WG 4 - Certification and standards for industrial symbiosis, which aims to publish a support manual for the identification of standards useful in the different phases of implementation of the industrial symbiosis process.



U-MOB LIFE is a European project financed by the LIFE programme of the European Commission, aimed at creating a university network for the exchange of knowledge and good practices in the field of sustainable mobility, to which the University adheres by actively participating in the various initiatives.

The Politecnico has also set up several **partnerships with the local area**. Institutional partnerships in the **metropolitan area of Milan** include, by way of example:

- **Città Studi Sustainable Campus**; an inter-university project launched in 2011 with the University of Milan, initially focused on the sustainable regeneration of the university area and then becoming the reference for engagement activities on sustainability topics for all the University's campuses.
- **OFF CAMPUS | Il Cantiere per le Periferie**, is an initiative promoted by Polisocial since 2018 with the aim of strengthening the presence of the Politecnico in the city of Milan and the idea of a more responsible University, attentive to social challenges, open and close to territories and communities.
- **Riformare Milano (Reforming Milan)**, a collaboration between the Municipality of Milan and the School of Architecture, Urban Planning and Construction Engineering to rethink Milan's suburbs in institutional teaching courses.
- **ForestaMI**, the urban forestation project promoted and launched at the Politecnico for the planting of three million equivalent trees in the Milan metropolitan area by 2030.

Collaboration initiatives with local stakeholders include:

- **Initiatives shared with Zone 3 in Città Studi and Zone 9 in Bovisa**; including: the regeneration of Piazza Leonardo da Vinci and the agreement for the use of the square; the Coltivando initiative at Durando Campus with the vegetable garden shared between the Politecnico community and the neighbourhood.
- **Awareness-raising initiatives with environmental associations**; these include many activities with Legambiente, Cittadini per l'Aria, FIAB.



RESEARCH AND EDUCATION

Sustainability in Research



Primary SDGs to which the Politecnico contributes through research.



Secondary SDGs to which the Politecnico contributes through research.

Facts



RELEVANT FIGURES				
	2017	2018	2019	2020
€ to support H2020 green projects	3.232.724	7.779.213	4.865.324	7.561.385
€ in support of green projects - contracts on behalf of third parties	8.772.918	6.299.195	9.513.793	6.377.115
Number of H2020 green projects funded and activated in the respective years	7	18	19	23
Number of active H2020 and green third-party research projects	188	171	236	187
Number of researchers involved in H2020 green projects activated in the respective years	62	146	49	52

In 2020, the Politecnico has **187 active Horizon 2020 and third-party research projects** dealing with sustainability issues, totalling around **€7.5 million** from **Horizon 2020** funding, and around **€6 million** from **third-party contracts**.

In 2020, the Politecnico's various research activities resulted in the publication of **2,131 scientific articles that contribute to the achievement of the Sustainable Development Goals** by dealing with topics closely related to Industry, Innovation and Infrastructure (SDG 9), Clean and Affordable Energy (SDG 7), Sustainable Cities and Communities (SDG 11), Health and Well-being (SDG 3), Responsible Consumption and Production (SDG 12), and Combating Climate Change (SDG 13).

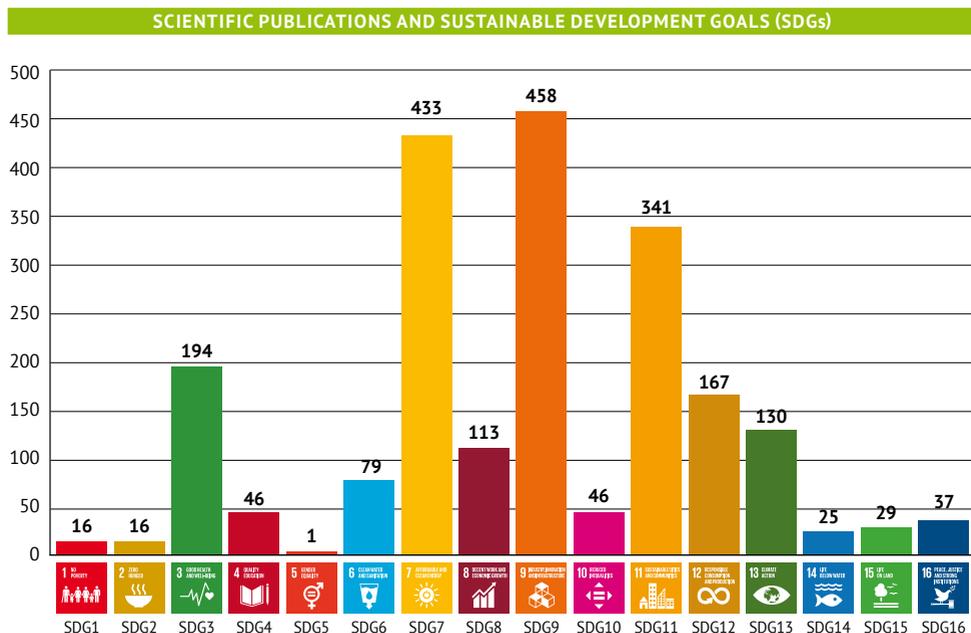


Figure 1. Total number of scientific articles published in 2020 related to the different SDGs, according to Scival Scopus⁶.

Researchers at the Politecnico can count on the support of the **library and archive system**, as well as on services such as **free Open Access publication** from more than 3,880 online journals available.

⁶ For methodological details, see <https://scival.com/sdg>

Sustainability in Education and Teaching



Primary SDG to which the Politecnico contributes through education and teaching.



Secondary SDGs to which the Politecnico contributes through education and teaching.

Facts



The understanding and coverage of **relevant sustainability issues and challenges** take place primarily during the Laurea Triennale (equivalent to Bachelor of Science) and Laurea Magistrale (equivalent to Master of Science) programmes. The Politecnico has around **60% of its courses related to sustainability issues**, with an **upward trend** since 2017 (55.6%). In detail, 36 study programmes, out of a total of 61 offered, aim to embrace the concept of sustainability in architecture and planning, engineering and design.

It is also a broader objective of the University to ensure that the **culture of sustainability** permeates the **various educational opportunities**, both in curricular teaching and in complementary activities:

- 1) **Raising awareness among professors** through engagement activities, such as the POLIMI4SDGs mapping campaign, aimed at building awareness of the role each professor can play towards the Sustainable Development Goals.
- 2) **Characterise specific educational processes**, such as the two new Laurea Magistrale (equivalent to Master of Science) in “Food Engineering” and “Mobility Engineering” launched in 2019.
- 3) **Offering Master’s degrees in sustainability management, measurement and reporting** and applying sustainability principles, e.g. to the construction of buildings and infrastructure or to energy management.

Alongside the curricular courses, the Politecnico invests in **other optional teaching opportunities that are open to the whole community**. The Open Educational Resources (OER) and the Massive Open Online Courses (MOOC) promoted through the Polimi Open Knowledge (POK) portal are now a solid activity of the University thanks to the commitment of METID. In 2019, in collaboration with UNIBO, the MOOC called Higher Education for SDGs (**HE4SDGs**) was activated, the result of joint work of professors and technicians from the two universities engaged on various fronts of sustainable development.



CO₂



CLIMATE ACTIONS

Climate Change Mitigation Plan



Primary SDG to which the Politecnico contributes through climate change mitigation actions.



Secondary SDGs to which the Politecnico contributes through climate change mitigation actions.

Facts

- 25% and -35%

the University's carbon dioxide emission reduction targets for 2025 and 2030 respectively

1 milion €

for replacing refrigeration units with new high-performance and eco-gas elements (2019)

4.8 milion €

the investments already allocated and planned for the trigeneration plants at the Città Studi and Bovisa campuses (2019)

The **CO₂ Mitigation Plan of Politecnico di Milano** presents the methodological framework for the definition and subsequent verification of the University's CO₂ emission reduction commitments; it constitutes the necessary knowledge base for the assumption by the University governing bodies of formal commitments to contain climate-changing emissions, formalised at the Academic Senate (18 February 2019) and the Board of Governors (26 February 2019), as the contribution of Politecnico di Milano to the global effort to mitigate climate change.

The 2019 edition of the Mitigation Plan takes 2015 as its base year, the first year in which a complete inventory of emission data is available for all the University's locations, and contains the first assessment

of the University's CO₂ emission reduction potential resulting from ten types of interventions⁷ in the energy, building and transport sectors, with time horizons of 2025 and 2030. These time horizons include emission reduction targets of minus 25% and minus 35%, respectively, compared to the base year (2015). The investments already earmarked and planned for the trigeneration plants at the Città Studi and Bovisa campuses, which allow a reduction in CO₂ emissions in the production of renewable energy, amount to €4.8 million, while spending on replacing refrigeration units with new high-performance elements and ecogas for 2019, as well as for 2020, amounts to €1 million.

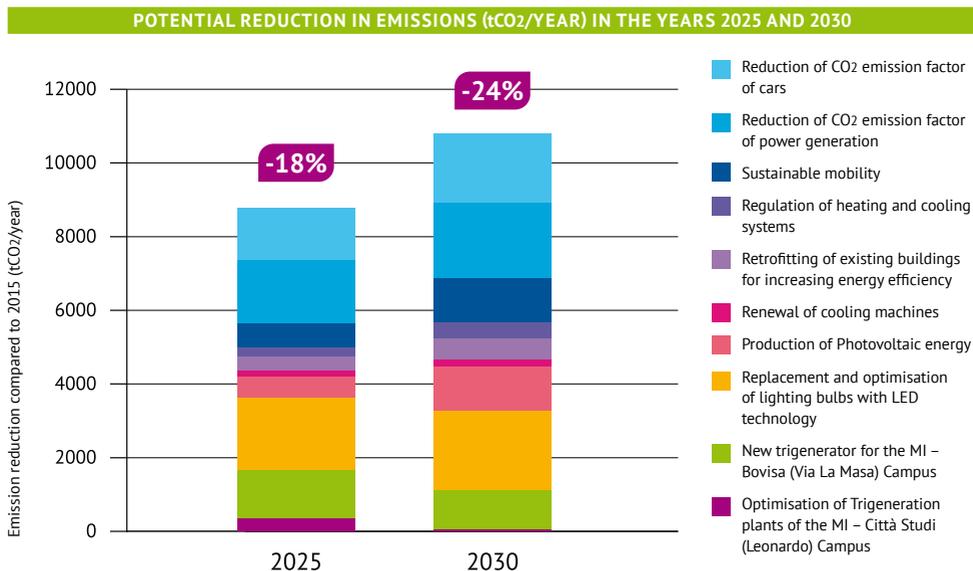


Figure 2. The potential emission reductions (tCO₂/year) in the years 2025 and 2030, resulting from the implementation of the ten key actions identified in the Mitigation Plan. Please refer to the Mitigation Plan for further details.

In terms of emissions accounting and strategic mitigation planning for our Campuses, the following work has been produced as part of the activities proposed by the RUS Climate Change Working Group, which the University coordinates:

- 1) The drafting of **“Operational guidelines for the preparation of greenhouse gas emission inventories of Italian universities”**;
- 2) The drafting of **“Guidelines for the drafting of CO₂ mitigation plans for universities”**
- 3) **“CO₂ emission factors for energy consumption”**

⁷ Please refer to the Politecnico di Milano [Mitigation Plan](#) for further specifications



UNIVERSITÀ DEGLI STUDI "GABRIELE D'ANNUNZIO"
CHIETI - PESCARA

1° CONVEGNO NAZIONALE DEL GRUPPO
DI LAVORO CAMBIAMENTI CLIMATICI
DELLA RETE UNIVERSITÀ PER LO SVILUPPO
SOSTENIBILE



UNIVERSITÀ DEGLI STUDI "GABRIELE D'ANNUNZIO"
CHIETI - PESCARA

1° CONVEGNO NAZIONALE DEL GRUPPO
DI LAVORO CAMBIAMENTI CLIMATICI
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SOSTENIBILE



Il meeting "INVENTARI DELLE EMISSIONI DI GAS SERRA NELLE UNIVERSITÀ ITALIANE" ha lo scopo di illustrare sia il lavoro svolto dal Gruppo di Lavoro Cambiamenti Climatici, sia le esperienze maturate presso alcuni atenei aderenti alla RUS per la realizzazione del proprio inventario delle emissioni di gas serra, dando evidenza agli aspetti metodologici, pratici e alle criticità incontrate.

L'obiettivo è di analizzare e condividere i punti di forza e debolezza per aumentare la capacità ed efficacia nel progettare e realizzare gli inventari delle emissioni di gas serra, a scala di ateneo, con modalità operative coerenti su tutto il territorio. Con il fine quindi di pervenire in futuro ad una stima affidabile delle emissioni degli atenei italiani, base conoscitiva necessaria per l'assunzione di impegni formali per il loro contenimento.



La giornata di studio sarà aperta con l'intervento di indirizzo della prof.ssa Elisabetta Vignati - Coordinatrice dell'unità "Air and Climate Unit" del Joint Research Centre, (JRC) Ispra, della Commissione Europea, che svilupperà il tema delle emissioni di gas serra dal punto di vista tecnico e illustrerà le tendenze e gli scenari futuri previsti a livello europeo.

INVENTARI DELLE
EMISSIONI DI GAS SERRA
NELLE UNIVERSITÀ
ITALIANE

22 NOVEMBRE 2019
AULA MAGNA DI LETTERE
CAMPUS DI CHIETI
VIA DEI VESTINI, 31

progetto grafico co-media
servizio di Comunicazione Multimediale
Segreteria del Direttore Generale

CON IL PATROCINIO



FOCUS: INVENTORIES OF GREENHOUSE GAS EMISSIONS IN ITALIAN UNIVERSITIES

2019

The first national meeting of the RUS Climate Change Working Group, organised at the D'Annunzio University of Chieti-Pescara (Ud'A) - had the aim of illustrating both the activities carried out by the Working Group and the experiences gained at a number of RUS member universities for the **creation of their greenhouse gas inventory**, highlighting the **methodological and practical aspects and the criticalities encountered**.

The objective was to analyse and share strengths and weaknesses in order to increase capacity and effectiveness in designing and implementing GHG emission inventories at the University level, with consistent operational methods across the territory. Therefore, the aim is to achieve a reliable estimate of the emissions of Italian universities in the future, as a necessary basis for formal commitments to reduce them.

For more information on the event:

Website - Città Studi Sustainable Campus

Website - RUS

Climate change adaptation strategies



Primary SDG to which the Politecnico contributes through climate change adaptation actions.



Secondary SDGs to which the Politecnico contributes through climate change adaptation actions.

Facts

+ 920 m²

the areas that have been cleared and turned into green areas on the main Campus by the VIVIPOLIMI project in the new Leonardo Gardens

+ 8.000 m²

the shaded pedestrian areas on the new Bonardi Campus (project 2016 - completion 2020)

1

a system for collecting and using rainwater for irrigating the gardens at the Leonardo Campus (2019)

In addition to mitigation actions, the University has recently paid greater attention to **climate change adaptation issues**, given that in the Milan context the projected increase in maximum and minimum temperatures by 2050 is expected to be over +2°C in summer and over +1°C in winter⁸.

Specifically, the major climatic phenomena affecting the metropolitan territory are:

- the increase in extreme temperatures (with the generation of urban heat islands);
- the intensification of rainfall (with the consequent increase in flooding episodes).

This focus is both on raising our **community's general awareness** of the issue and on **concrete actions on our campuses**, in terms of **design and management**.

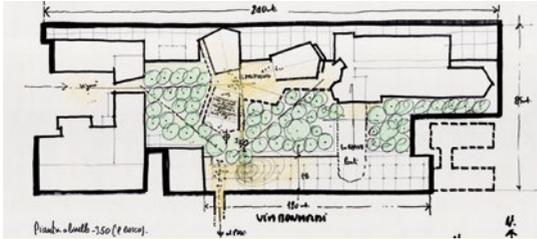
In terms of **strategic planning for the adaptation** of our campuses, the following exploratory work has been undertaken within two of the networks to which the Politecnico di Milano belongs.

- 1) The drafting of "**Guidelines and good practices for adaptation to climate change in Italian universities**", as part of the activities proposed by the RUS Climate Change Working Group, which the University coordinates;
- 2) The definition of preparatory actions for the launch in 2021 of a **planning process for climate adaptation and mitigation through a "Climate Framework" shared by all the universities**, within the framework of the activities carried out by the group dedicated to climate action at IDEA League, which the University has joined.

⁸ For more information please refer to the [Summary Report of the Regional Climate Change Adaptation Strategy](#) for the Lombardy Region, 2017.

The first opportunities to introduce the theme of adaptation into our spaces were:

- the recent achievements of the **University's VIVIPOLIMI project**, which implemented **green and blue technical solutions in the redevelopment of open spaces**. In compliance with the regional law on hydraulic invariance, 4 dispersing wells were drilled in 2019 and 6 dispersing wells in 2020 in order to increase the draining surfaces, and permeable soils were increased in the renovation works of the Leonardo Gardens in the headquarters of Piazza Leonardo da Vinci 32;
- project activities in open spaces aimed at mitigating climatic stress in extreme summer temperatures, i.e. the provision of **new drinking water supply points on campuses**, and the creation of new shaded areas. Renzo Piano's project for the regeneration of the Bonardi Campus involves the transformation of 8,000 m² of open space from a car park to an entirely pedestrian area shaded by 100 new trees.

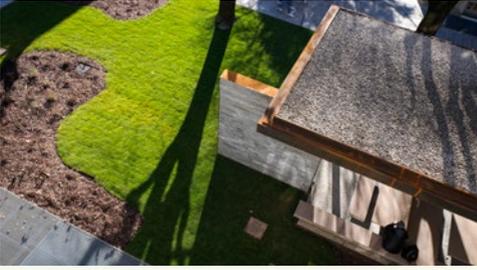


FOCUS: BONARDI CAMPUS

The new Bonardi University Campus is the result of an idea by Renzo Piano presented to the Politecnico di Milano and the enhancement and development of the original idea by ODB-OTTAVIO DI BLASI & Partners. The project proposes a thorough **rethinking of the Campus' spaces**, modelled primarily on the needs of the students, making it **open, international and avant-garde**, and centred around three key points:

- **greenery**: the new campus will feature a large number of trees and green spaces
- the **relationship with the historic buildings**, which will be respected, while restoring their original appearance
- **useable terraces**: the roofs of low buildings will be used for outdoor activities and events





FOCUS: VIVIPOLIMI@Green



2020

The project, launched in 2020, aims to improve the **environmental quality of our university** by creating a **campus that is resilient to climate and environmental challenges**. To slow down runoff water and support sustainable rainwater drainage, it is essential to **increase soil permeability and drainage** and provide **infrastructure to maximise hydraulic invariance**. To mitigate urban temperatures, in addition to **increasing ground vegetation**, it is important to increase **tree and shrub vegetation** to promote evapotranspiration and shading. The use of **clear surfaces with high solar reflectance** will reduce heat build-up in the built environment.

VIVIPOLIMI@Green promotes environmental quality to **improve life quality**, focusing on the well-being of people who will use the spaces with positive psycho-physiological impacts (@Health).

For more information:
VIVIPOLIMI@Green



Climate change awareness activities

The University also considers it a priority to raise awareness of climate change mitigation and adaptation among the entire community, and for this reason **implements and promotes communication and awareness-raising campaigns** and **dissemination** meetings. The University also proposes the administration of a questionnaire aimed at monitoring the mobility of the polytechnic population with dedicated questions to acquire data for the inventory of CO₂ emissions.



FOCUS: CLIMBING FOR CLIMATE: HIGH ALTITUDE SEMINARS

2020 - at the Monza-Bogani Alpine Hut (LC)

The Network of Universities for Sustainable Development (RUS), in collaboration with the Club Alpino Italiano [Italian Alpine Club] (CAI), organised the second edition of the “Climbing for Climate” initiative, in which the Politecnico di Milano also participated. The day included an **excursion to the Rifugio Alpino Monza-Bogani**, Esino Lario (LC), where an **in-depth seminar on climate change** was held, coordinated by two experts from the Department of Civil and Environmental Engineering of the Politecnico.

For more information on the event:

Website - [Città Studi Sustainable Campus](#)

Website - [RUS](#)

Youtube video - [Città Studi Sustainable Campus](#)



BUILDINGS, INFRASTRUCTURE, ENERGY AND GREEN SPACES

Buildings, infrastructure and energy

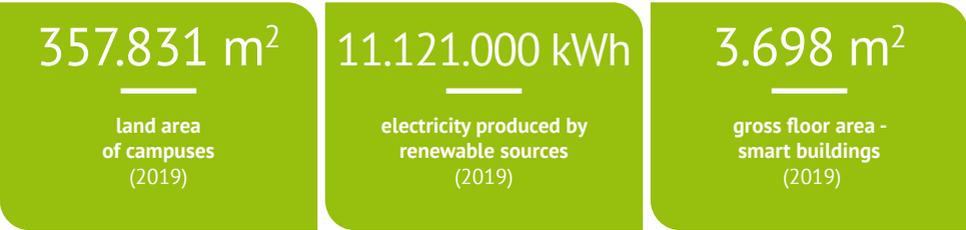


Primary SDGs to which the Politecnico contributes through actions on buildings, infrastructure and energy.



Secondary SDGs to which the Politecnico contributes through actions on buildings, infrastructure and energy.

Facts



RELEVANT FIGURES				
	2017	2018	2019	2020
Total area of the campuses (land area, m ²)	352.234	342.582	357.831	\
Electricity produced by renewable sources (kWh)	9.063.000	11.121.000	11.121.000	10.596.000*

* Preliminary data

Energy saving and low energy buildings

The Politecnico invests in **building quality**, focusing on the **energy efficiency upgrading of existing buildings** and the **highest standards of performance and sustainability for new constructions**. A forerunner in energy-efficient buildings thanks to the VELUXlab at Bovisa, the Politecnico continues to invest in buildings that meet the most advanced energy efficiency criteria, becoming Nearly-Zero Energy Buildings (NZEB); these include the new Campus Bonardi buildings designed by Renzo Piano and the future ZEN building.

Smart Building

Following a long process of technological adaptation, a **continuous monitoring** system of many buildings of the university is now in place:

- the installation at Città Studi and Bovisa (La Masa Campus) of **Smart Meters** and their **online monitoring**;
- a **thermal energy monitoring** system for each building and a heating plan for Città Studi and Bovisa Campus (La Masa Campus);
- installation of **advanced automation systems** in a number of buildings in order to test, for example, smoke detectors (Città Studi, building 25);
- implementation at the Piazza Leonardo Campus in Città Studi of a system (micro-grid) for the **management of electricity production and consumption** in island mode;
- **optimisation of the district heating network in Città Studi**: temperature verification to avoid network losses.

Renewable energy

A boost for renewables has recently come from the Mitigation Plan (2019), which recognised the significant contribution of solar energy production potential on the university's roofs. **Since 2017, there has been an increasing trend in the production of electricity from renewable sources** (around 9% on average per year).

The university is equipped with two types of electricity generation: **trigeneration and photovoltaic solar energy from renewable sources**. Several buildings also have **geothermal systems** (heat pumps).

The main source of energy production in Città Studi comes from a trigeneration plant, i.e. a combined cooling, heating and power (CCHP) system. The unit is located on the Leonardo Campus and meets the electricity, heat and partial cooling needs of the Campus. The plant's electricity production is monitored through the Campus online metering system. The second trigeneration plant at the Bovisa Campus, with the same electrical power (2MW), is in the design phase and is scheduled to be installed in 2021.





FOCUS: VELUXLAB ZERO-IMPACT LABORATORY

2011 year of first implementation

Conceived as an experimental module, VELUXlab is a building that achieves high levels of energy efficiency. The shape and orientation of the building, combined with its **bioclimatic architecture** and innovative building shell, allow optimal use of solar energy as well as **natural lighting and ventilation** to ensure comfortable interiors without any energy consumption.

As an active laboratory of Politecnico di Milano, VELUXlab is a true **living lab**, whose mere presence raises awareness and educates the Politecnico community. Indeed, the building is subject to continuous experiments, the last of which, completed in August 2019, led to it becoming one of the first buildings with a green roof in Milan.

For more information:

[VELUX Press - VELUXlab, the zero-impact laboratory of Politecnico di Milano, obtains the ActiveHouse licence](#)

Green spaces

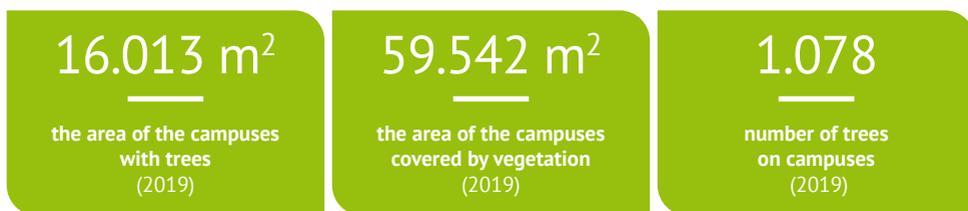


Primary SDGs to which the Politecnico contributes through actions on green spaces.



Secondary SDGs to which the Politecnico contributes through actions on green spaces.

Facts



RELEVANT FIGURES	
	2019
Total "forested" area on campuses	16.013
Total area covered by vegetation on Campus	59.542
Total permeable area excluding forested areas covered with vegetation	124.356
Number of trees	1.078
Quantity of trees - higher than 3 metres	930
Quantity of trees - lower than 3 metres	148
Quantity of shrubs (bushes)	243

Although most campuses are located in central urban contexts, in many of them greenery provides the Politecnico community with **spaces to socialise** and also contributes to **increasing the psychological and physical wellbeing** of the university community.

The master plans for Città Studi and Bovisa and recent projects (including the redevelopment of the Leonardo Garden, the new Bonardi Campus and the ongoing redevelopment of the Giuriati Campus) confirm the University's desire to become increasingly accessible over time and to **enhance open spaces, the green component and drainage areas**.

Specifically, the university includes about 16 thousand m² of wooded areas, mainly on the Milano Città Studi (about 7 thousand m²) and Milano Bovisa (about 9 thousand m²) campuses. On the same campuses, there is also a considerable presence of trees (459 tall and medium-trunked trees in Città Studi, 425 tall and medium-trunked trees in Bovisa) and shrubs (122 in Città Studi, 107 in Bovisa). The Cremona, Lecco, Mantua and Piacenza campuses have an average of 50 species of trees by campus.



Milano Città Studi Campus - Golgi Parchetto Campus.



Milano Città Studi Campus - Bassini Campus Parchetto Smerlo.

Water management



Primary SDG to which the Politecnico contributes through actions on water management.



Secondary SDGs to which the Politecnico contributes through its actions on water management.

Facts

83

water dispensers
in the Campuses
(2020)

1

water house installed,
open to citizens and students
(2020)

317.718 m³

drinking water consumed
annually
(2020)

RELEVANT FIGURES				
	2017	2018	2019	2020
Water dispensers in the Campuses	19*	19*	39*	83**
Water houses	/	1	1	1
Quantification of consumed drinking water (m ³)	616.521	503.851	512.389	317.718

* Estimated figure

** 83 water dispensers divided as follows: 40 dispensers present in the Departments; 36 freely accessible dispensers; 7 dispensers in catering areas.

With special reference to drinking water, Politecnico di Milano contributes to sustainable water management through the following actions:

- 1) **Interventions on the water infrastructure in the toilets of the campuses**, in order to ensure a saving of the resource;
- 2) **installation of drinking water dispensers on campuses, be they drinking fountains (drinking bottles) or water houses**, in order to make the resource accessible to all and reduce the consumption of disposable plastic;
- 3) **awareness-raising during sustainability events and initiatives** (World Water Day, Sustainable Development Festival), and through the suggestions in the "[Code of Conduct for a Sustainable Campus](#)"; a document resulting from a collaborative discussion of the Politecnico community in 2011, which has since been updated.



FOCUS: DRINKING WATER DISPENSERS

Since 2016, the Campus has invested in the installation of drinking water points, water coolers, located in the buildings housing the teaching facilities, to provide free access to water for our students and reduce the consumption of disposable plastic. In this regard, a video has been created and published on the Città Studi Sustainable Campus YouTube channel encouraging the use of a personal cup/glass instead of the plastic cups normally dispensed by hot drink vending machines.

For more information:

["Portami al Poli" YouTube video - Città Studi Sustainable Campus](#)

WATER HOUSES AND ACQUAPOINTS

2018 - Campus Bassini

On World Water Day, the Casa dell'Acqua [Water House] is inaugurated at the Giardinetti in Via Pascal 6, in the presence of the city authorities, MM Spa and the Politecnico di Milano. The new House, equipped with **real-time water quality analysis instruments**, is a point of awareness and information on water in Milan, with explanatory panels and a special place for study/research activities, involving professors and researchers from the Department of Civil and Environmental Engineering of the Politecnico.

2019 - Cremona Campus

On 24 September, the **AcquaPoint** of Padania Acque, sole manager of the integrated water service in the Province of Cremona, was inaugurated. Refrigerated, plastic-free natural water will therefore be provided for students and staff at the Campus. To mark the occasion, around 200 "Goccia" water bottles were distributed.



AWARENESS-RAISING INITIATIVES AND DISTRIBUTION OF WATER BOTTLES

The University has been carrying out awareness-raising activities on the issue of tap water quality for years, combined with a reduction in the use of single-use plastic from 2019.

In addition, at certain events organised by the University Sustainability Unit, water bottles bearing the Campus Sustainability logo were distributed free of charge to members of our community.

To mark the start of the new 2019-2020 academic year, the Piacenza Regional Campus once again welcomed first-year students on the Mechanical Engineering and Architectural Design degree courses by giving new students a personalised PoliMi water bottle to discourage the use of plastic water bottles.

On 27 September 2019, the seminar “What kind of water do we drink? The underground journey of Lombardy’s water from the glaciers to the plains” organised by Padania Acque in collaboration with the Cremona Campus and Water Alliance, was held at the town hall of Cremona. The event was organised as part of the MEET ME TONIGHT (Researchers’ Night) initiatives).



INSTALLATION OF FOUNTAINS AT THE NEW LEONARDO GARDENS

2020 - Milan Città Studi

The VIVIPolimi Project addresses the issue of water supplies by providing the community with **new fountains at rest and refreshment areas.**



SUSTAINABLE MOBILITY



Primary SDG to which the Politecnico contributes by promoting sustainable mobility.



Secondary SDGs to which the Politecnico contributes by promoting sustainable mobility.

Facts



RELEVANT FIGURES				
	2017	2018	2019	2020
Total parking stands	1.169	1.386	n.d.	1.100
Total motorbike stands	195	195	n.d.	240
Total agreements for the promotion of sustainable mobility	6	17	17	9
Total motorised vehicles at the university's disposal	32	34	36	33
Total non-motorised vehicles available to employees	106	n.d.	102	101

One of the main objectives of Politecnico di Milano is to progressively reduce the use of private cars, **encouraging the use of public transport or vehicle sharing**. The main initiatives taken to achieve this goal are listed below:

- subsidies for the purchase of public transport season tickets for university employees;
- shared mobility agreements for the Politecnico community in the use of bike, car, scooter sharing, bus and airport shuttle services, scooter rental and car pooling;
- PoliCiclo, the university's free cycle workshop service, set up in 2014 and run entirely by volunteer students;
- installation of bicycle racks;
- Campus redevelopment, car park cleaning and reorganisation of vehicle parking areas and thanks to projects such as VIVIPOLIMI⁹ and Renzo Piano¹⁰, and installation of new infrastructure (covered racks and electric vehicle charging stations);
- communication and awareness raising through participation in events such as the European Mobility Week or the Sustainable Development Festival;
- networking with local authorities (Municipality of Milan, Metropolitan City of Milan, Lombardy Region), participation in national (RUS, Mobility Working Group) and international networks (European project U-MOB LIFE).



According to the **survey on the mobility habits of the Politecnico community**¹¹, which is the basis for supporting the identification of the initiatives listed above, **the most used mode of transportation** to access the campuses is **public transport** (this figure has increased since 2017), which alone covers about half of the displacement (modal division Figure 5). The share of **active mobility** is also interesting: 1 in 10 journeys for students and slightly less for staff are made entirely on foot; almost 1 in 10 staff journeys are also made entirely by bicycle (half the proportion for students). For staff, the share of car use for the whole trip is on a par with that of active mobility, with just under 1 in 5 trips made in this way; for students car use is rather low at 7%. The results of the survey briefly summarised here are the basis for the drafting of the **Home-Work Displacement Plan**, which is currently in the approval phase, and are also used for the creation of the CO₂ emission inventory.

⁹ www.polimi.it/en/the-politecnico/university-projects/construction-sites/vivipolimi/

¹⁰ www.polimi.it/en/the-politecnico/university-projects/construction-sites/new-architecture-campus/

¹¹ Survey usually carried out every two years in collaboration with TRASPOL Laboratory of Politecnico di Milano

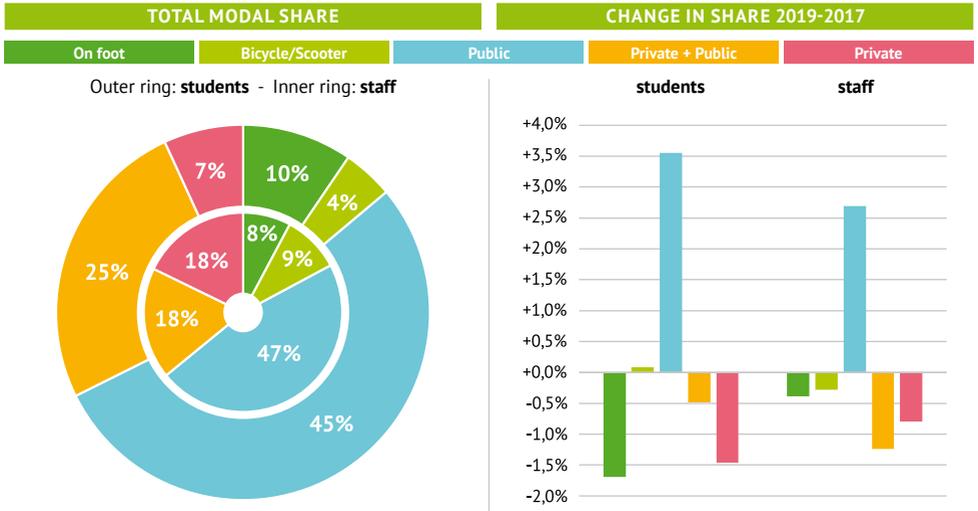


Figure 5. Total modal share 2019 and change from 2017

In the summer 2020 the **National Survey on Home-University Mobility at the Time of COVID** has been carried out by the RUS Mobility Working Group. Its results made it possible to **analyse the expected behaviour of the university population** (students and workers) based on two possible scenarios of infection severity. Considering scenario 2, according to which the risk of infection is still high, the population of the Politecnico stated that they would change both the frequency with which they go to the University and the means they use to make the journey: the frequency drops to about a third of the previous one and the use of public transport drops, especially for the staff category. As shown in Figure 6, for displacement under 7km, the flight from public transport results in an increase in active mobility and partly also in private mobility, which could be discouraged due to the short distances. For longer journeys there is a strong increase in private share, the only real alternative to the train.

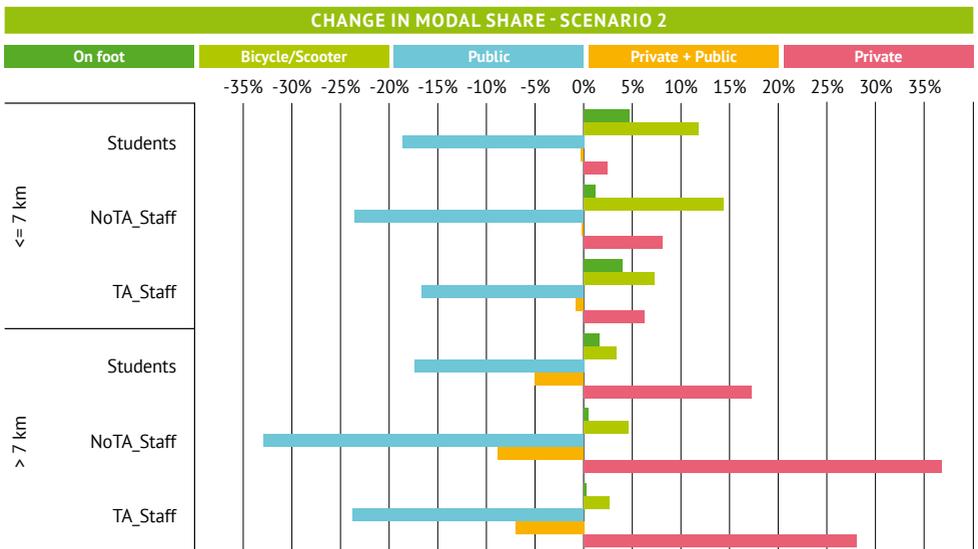


Figure 6. Change in modal share in scenario 2, broken down by user type and distance to destination



FOCUS: PARTICIPATION IN EUROPEAN MOBILITY WEEK

2016/2020

Every year the European Mobility Week (16-22 September) - an event promoted by the European Commission - identifies a specific claim to which the participating institutions and associations must draw their inspiration from. “Zero-emission mobility for all” was the claim for 2020 and “Let’s walk together” was the claim for 2019.

The Politecnico, as part of its **mobility management activities**, has also been participating in this event since 2016 by organising various initiatives to raise awareness among its community.

Among the initiatives carried out for the occasion: the Sustainability Days, Al Poli senza auto, the organisation of specific seminars, the realisation of video contests and photo competitions, the extraordinary awareness-raising activities of the PoliCiclo cycle workshop, the cyclo changeover to monitor air quality and more. These actions also make it possible to **actively contribute to the reduction of CO₂ emissions generated by home-work/study displacement** and thus to the achievement of the University’s objectives.

For more information:

Website – [Città Studi Sustainable Campus](#)





FOCUS: Bike2Poli - THE BICIBUS FOR GROWN-UPS

2020

"Bike to work" initiative for the entire Politecnico community to **encourage people to cycle to university**. Thanks to the involvement of a number of Politecnico employees who already cycled to work and who were willing to accompany them, it was possible to identify many different routes and cover a large part of the Milan area.

For more information:

Website – Città Studi Sustainable Campus

A top-down view of various zero-waste items arranged on a teal background. In the top left, there is a glass jar with a metal clasp lid and a wooden toothbrush. To the right are two more glass bottles, one with a white cap and another with a metal cap. In the bottom left, there is a piece of white rope and a piece of light-colored fabric. In the bottom center and right, there are two more glass bottles, one with a metal cap and another with a metal clasp lid. The text "ZERO WASTE" is centered in the middle of the image in large, white, bold, sans-serif capital letters.

ZERO WASTE

CIRCULAR ECONOMY: RESOURCE AND WASTE MANAGEMENT

Resource management

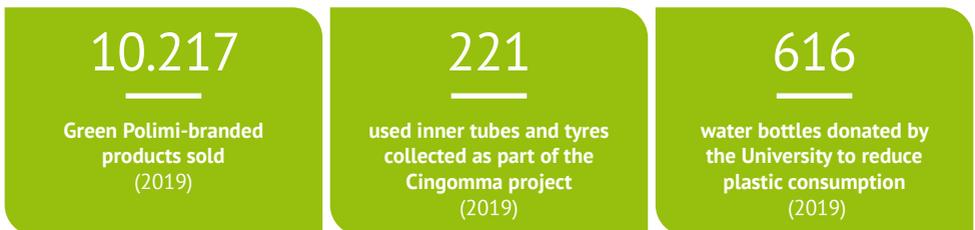


Primary SDG to which the Politecnico contributes by promoting sustainable management of resources.



Secondary SDG to which the Politecnico contributes by promoting sustainable management of resources.

Facts



Key actions in the area of sustainable resource management include:

- development of the “NO PAPER” project: digitalisation and de-materialisation of administrative processes, both in the teaching context and in the areas of accounting, personnel management, research and, more generally, document management;
- offering catering services in the University with a low environmental impact¹²: catering suppliers have proposed actions and projects to reduce “food waste”;

¹² https://www.polimi.it/fileadmin/user_upload/allegati_bandi/1498579790_Disciplinare%20Ristorazione%20Campus%20Milanesi.pdf

- raising awareness of the Politecnico community on the topic of waste reduction¹³;
- the University's participation in national networks on the subject (SUN - Symbiosis Users Network);
- participation in CIRS (Comitato Interdisciplinare Rifiuti e Salute - Interdisciplinary Committee on Waste and Health);
- participation at the round table of the Ministry of Environment dedicated to CAM – Minimum Environmental Criteria, representing the Resources and Waste Working Group of the RUS [Network of Universities for Sustainable Development];
- promoting the activities of the PoliCiclo University cycle workshop;
- creation of a line of POLIMI-branded green products, available both in shops and on the Official Merchandise Politecnico website.

GREEN POLIMI-BRANDED PRODUCTS SOLD				
	2017	2018 (15/10-31/12)	2019	2020
Bottles	\	472	4.218	849
Cotton shopper	\	358	5.859	1.849
Mug away	\	\	85	67
Belts	\	\	46	10
Keyring	\	\	\	50
Bike helmet	\	\	9	18



Given that the procurement of “green” products by the University and the conscious and sustainable use of resources is a fundamental first step, the **sharing of information on more sustainable products and materials** also contributes to a more circular economy, together with a process of awareness raising and information, which also sees the active involvement of the Politecnico community, as in the case of the Cingomma Project.

¹³ For example <http://www.campus-sostenibile.polimi.it/portamialpolimi>



FOCUS: CINGOMMA PROJECT

from 2019

The project consists in **collecting inner tubes and tyres** from different areas of the University (identifiable through an interactive map), which are used to make belts and other items (by an external partner) and sold through the Politecnico Official Merchandise channel.

The experimental project also aims to help **disseminate the principles of the circular economy**, raising awareness among the Politecnico community and the general public on the increasingly important issue of waste prevention. The Politecnico makes some of its spaces available to enable the **implementation of experimental projects for the collection, reuse and recycling of materials**.

The University has also launched a **new Green Collection** as part of its merchandising activities to help promote a culture of sustainability. The creations made by Cingomma as part of this initiative, for example certain models of belts, are available in the Official Merchandise catalogue of the Politecnico.

For more information:

Website – Città Studi Sustainable Campus



FOCUS: OFFER OF ENVIRONMENTALLY FRIENDLY CATERING SERVICES IN THE UNIVERSITY

Offer expanded in 2020, specifically through:

- the use of hybrid material for cups dispensed from vending machines
- the use of one's own cup at vending machines
- the use of compostable material instead of plastic in bars and self-service restaurants
- the inclusion of the option to buy water in bio bottles
- the compass box: sale of leftover food at a reduced price at the end of the day
- agreements with food bank to recover surplus food from canteens and catering services

Stop spreco di cibo (PoliMi)

Iniziativa «STABILE»

Iniziative finalizzate alla riduzione dello spreco di cibo e acqua, realizzate presso i nuovi punti ristoro disponibili al Politecnico di Milano.

**NON SPRECARRE IL CIBO,
PRESSO I PUNTI
POLI DISTRICT RICHIEDI LA
TUA COMPASS BOX!**

Dalle 16.30 alle 17.15 ritira la tua Compass Box presso i nostri punti Poli District al prezzo simbolico di € 1,00. Grazie al tuo piccolo gesto garantirai la re-immissione nella catena alimentare di cibo che altrimenti verrebbe sprecato o perduto. Un piccolo passo per un grande risultato!

**243 compass box
ritirate dal 20
settembre al 6
novembre 2020**

Politecnico di Milano

**CHIEDI BIRRA IBRIDA AI PUNTI
DI RISTORO POLI DISTRICT ED
AIUTACI A COMBATTERE GLI
SPRECHI ALIMENTARI**

Ibrida è una BIRRA AL PANE ARTIGIANALE che nasce da una start-up di giovani talenti del Politecnico e che si impegna nella lotta contro gli sprechi alimentari dando una seconda vita al pane cotto con amore e passione dai forni locali di Milano.




LET'S TAKE AWAY!

PREDDO MENSA EDIFICIO 36 - VIA OGLIO

Impegniamoci tutti insieme nella lotta agli sprechi riducendo al minimo gli scarti alimentari

DA LUNEDÌ A VENERDÌ DALLE ORE 16:

**PRIMO PIATTO A 2 EURO
SECONDO PIATTO A 2,50 EURO
SECONDO PIATTO E CONFORTO 3 EURO**

Anziani anche tu!



RUS risorse e rifiuti

AVANZIMANIA

2020

Avanzimania is a **recipe collection** initiative, created by the University Sustainability Unit - Campus Life Division, to raise awareness of the need not to waste food. During the 2020 European Week for Waste Reduction, the Politecnico community was invited to submit recipes, which were then shared through the Città Studi Sustainable Campus project channels (website and social media, including the CSCS YouTube channel) via videos, stories and photos.

For more information:

Website – Città Studi Sustainable Campus

Waste management



Primary SDG to which the Politecnico contributes by promoting sustainable waste management.



Secondary SDG to which the Politecnico contributes by promoting sustainable waste management.

Facts



RELEVANT FIGURES				
	2017	2018	2019	2020
Number of WIFs (Waste identification forms) managed annually	554	482	479	543
Kg of batteries collected	556	691	296	1.132
EWCs managed annually	65	56	60	75

The Politecnico not only aims to reduce waste production, as seen in the previous section, but also to **improve the efficiency of the waste management and collection system**, in accordance with the main challenges identified by the RUS Resources and Waste Working Group¹⁴.

In order to achieve this result, the University has long been equipped with **suitable infrastructures** for the separate collection of all types of waste produced (some also under specific agreements that allow for the collection of waste produced in the open spaces of the University, accessible to the public), subsequently launching an **intense systematic activity of awareness and information** in order to create awareness on the issue and thus affect the behaviour not only of the university community but also, through it, of the entire citizenship and stakeholders of the territory.

The following waste management initiatives and infrastructures are highlighted:

- **Enhancement project (2017)**
Internal policies to raise awareness of the need for separate waste collection and to initiate, with specialised companies, the **recycling of certain types of materials** to make them useful again (e.g. paper, end-of-life equipment and metals such as iron, steel and aluminium).

¹⁴ For further details, please refer to the [CRUI 2019 position paper, Environment, Waste Mobility and Territory Table](#)

- **Constant renewal, adaptation and integration of the infrastructure** for the collection of the four standard types of waste at the campuses (paper, plastic and aluminium, glass and general waste), adopting bilingual signs and container colours in accordance with UNI 11686.
- Presence of compactors/shredders in some refreshment areas (corner vending machines).



- The presence of **Temporary Storage Facilities** organised in areas within the University and differentiated by size and type of waste collected. The Politecnico di Milano produces different types of waste mainly from office, teaching, laboratory and research activities. Some waste (paper, plastic/metal, glass/metal and general waste) is handled by the public collection service and delivered to the large-volume containers located in specific areas of the University (recycling centres) where bulky waste, WEEE and toners are also handled and collected. Other special waste from laboratory and research activities is handled in areas directly identified and managed by the individual production facilities (facility depots). Overall, the Politecnico has 3 recycling centres and 57 facility depots.
- The presence of **containers related to some experiments launched by the University** to improve the quality of differentiated waste collection, as well as to promote circular economy projects aimed at redirecting material flows towards alternative channels to waste-to-energy, capable of creating the conditions for immediate reuse or recycling with production of new goods/materials. In addition to the containers placed thanks to the Cingomma project mentioned in the previous paragraph:
 - **Battery Container Project**
(ERP Italy and AMSA agreement since 2017)
25 specific containers of batteries and accumulators have been placed in different buildings on the Campus (identifiable through an interactive map). A specially designed label has been placed on the containers to improve the recycling of batteries and accumulators.
 - **Containers for materials of architectural models**
(2019, at Ed 11 - Leonardo Campus)
Experimentation with students' re-use of material used or left over from modelling activities in the architecture workshops.



WHAT'S NEW IN 2020

- **Project ZeroZeroToner Containers (2020)**

The project involves the total recycling of spent printer cartridges, which are completely converted into raw and secondary materials, and participation in the Print Releaf programme, which allows the University to take part in one of the global reforestation projects in operation.

- **Second Life Furniture Project (2020)**

An in-house **reuse system for furniture** that is no longer useful has made it possible to survey more than 1,200 items and relocate 33% of them, thus avoiding disposal. The furniture is mapped by defining its main properties (e.g. size, material, state of repair) and the mapping is forwarded to the facilities that can show their interest in reusing the material.

- **Organic Waste Project (2020)**

At the Politecnico, **experimentation with the collection of the organic waste fraction**, which until now was only present in the University's canteens and cafeterias, was introduced with the aim of promoting and increasing user awareness of separate waste collection.

The experimental phase of the project consists of the placement of 26 proprietary containers, widely distributed throughout the two Milan campuses (9 at the Città Studi site and 17 at the Milan Bovisa site) which are easily identifiable and marked with special signs informing and educating users about proper disposal.

- **Setting up a new recycling centre (2020)**

The new recycling centre has the same characteristics as the previous one, replacing the one decommissioned for the redevelopment of the Bassini Campus.



Credits

The BSA 2020 was carried out by a dedicated working group, coordinated by the University Sustainability Service, Campus Life, with the involvement of various University professionals:

Scientific contribution, methodology and texts by:

- **Eugenio Morello**, *Rector's Delegate for Environmental Sustainability University Project*
- **Andrea De Toni**, *Research Fellow, DASTU*
- **Eleonora Perotto**, *Campus Life, University Sustainability Unit and Mobility Manager*

Technical contribution to data collection and systematisation, drafting of texts:

- **Chiara Bianca Pesenti**, *Campus Life, Division Head*
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- **Giada Messori**, *Campus Life, University Sustainability Unit*
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Governing environmental sustainability	General Directorate – Planning Control and Analysis Unit Campus Life Division Public Engagement and Communication Division HR and Organizational Development Division Supplies & Facility Management Division
The Politecnico: 12 Departments and 6 Other Campuses	Real Estate, Costruction and Development Division Public Engagement and Communication Division General Directorate - Statistical Analysis, Evaluation and Accreditation Support Unit HR and Organizational Development Division
Internal collaboration within the Politecnico community	Public Engagement and Communication Division Campus Life Division Research, Innovation and Corporate Relations Division
Partnership for sustainability	General Directorate – Planning Control and Analysis Unit General Directorate – Planning Control and Analysis Unit Campus Life Division
Sustainability in Research	Research, Innovation and Corporate Relations Division
Sustainability in Education and Teaching	Research, Innovation and Corporate Relations Division General Directorate - Statistical Analysis, Evaluation and Accreditation Support Unit Career Service Unit
Climate Change Mitigation Plan	General Directorate Supplies & Facility Management Division Energy Commission Campus Life Division ICT Services Division
Climate change adaptation strategies Buildings, infrastructure and energy	Department of Civil and Environmental Engineering (DICA) Real Estate, Costruction and Development Division Energy Commission Real Estate, Costruction and Development Division Supplies & Facility Management Division
Green spaces	Department of Architecture, Built Environment and Construction Engineering (DABC) Supplies & Facility Management Division
Water management	Real Estate, Costruction and Development Division Campus Life Division
Sustainable mobility	Supplies & Facility Management Division Mobility Manager TRASPOL Laboratory Campus Life Division Public Engagement and Communication Division HR and Organizational Development Division
Resource management	Energy Commission Supplies & Facility Management Division Campus Life Division ICT Services Division
Waste management	Public Engagement and Communication Division Supplies & Facility Management Division Campus Life Division

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