Politecnico di Milano

www.campus-sostenibile.polimi.it

ISCN-GULF Sustainable Campus Charter Report 2014

Milano, June 12 2015

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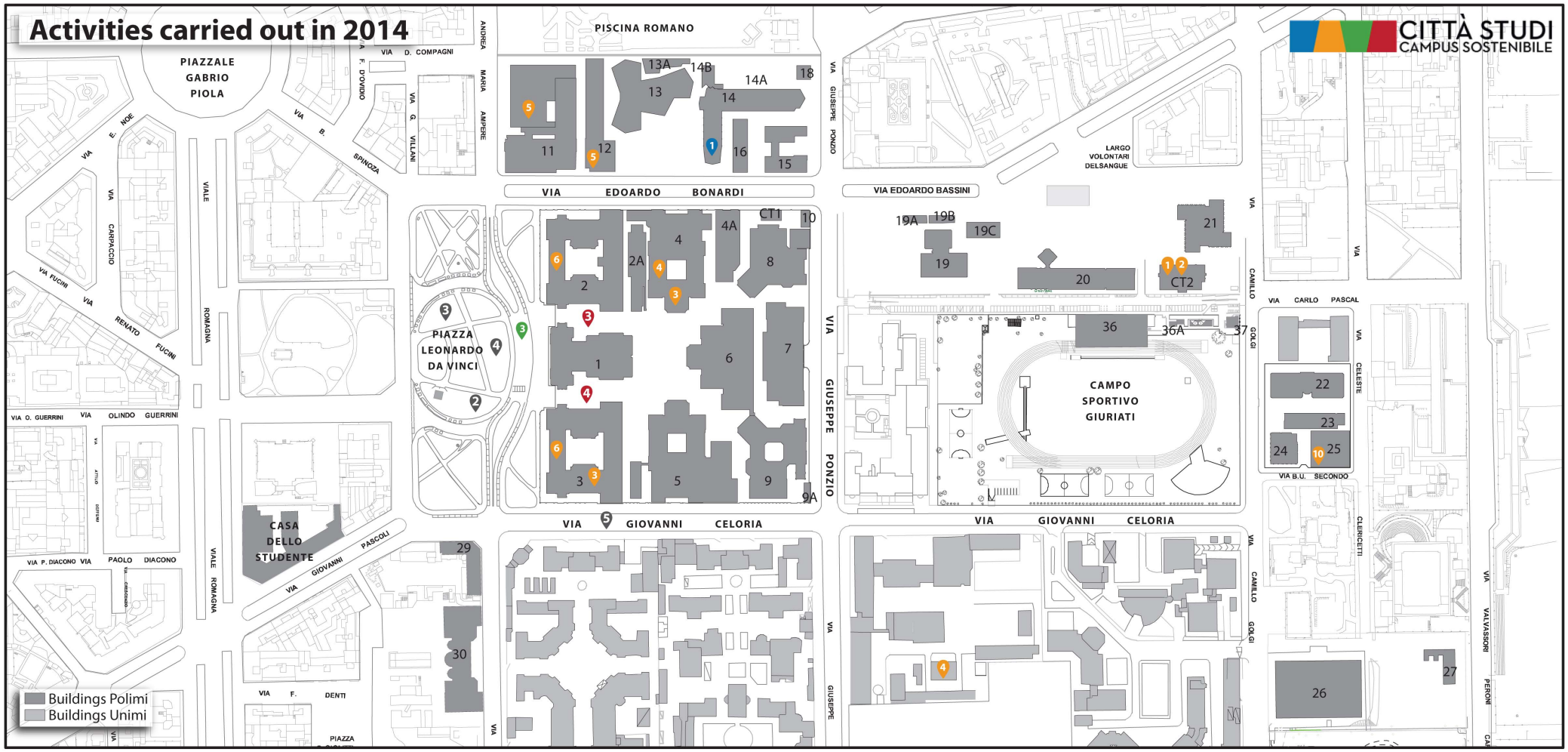
Activities carried out in 2014



PEOPLE

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1. INTRODUCTION

The project

Città Studi Campus Sostenibile is a project promoted by the Politecnico di Milano (POLIMI) and Università degli Studi di Milano (UNIMI). The project aims at transforming the whole campus neighborhood into an urban area, which can serve as an urban model in Milan with respect to life quality and environmental sustainability. The project is open to the participation and support of researchers, students and all campus citizens.
The goals of the project are the following: to test innovations developed by scientific research; to promote life style transformation and more livable spaces; to become a positive example for the entire city; to cope with the international network of sustainable campuses.

More on the Politecnico di Milano

POLIMI plays a significant international role in the field of engineering and technology as well as in architecture and design. Established in 1863, the school moved to the current site of Città Studi in 1927. The sustainable campus project concerns the 'Leonardo Campus', which is the main campus of the seven of our institution distributed around the Lombardia region. Today, the 'Leonardo Campus' occupies a surface of 157,977 m^2, 186,613 m^2 of floor area and 19,236 students are enrolled in the different programs offered by the university during the academic year 2013/2014. In addition, 1,709 staff members (professors and personnel) work every day on the campus.

A short history of the project - highlights

Year 1

- *January 2011* / Creation of the launch team of the project.
- *March 7 2011* / Launch of the project during the inauguration speech of the new Rector of POLIMI, Professor Giovanni Azzone.
- *Since March 2011* / Construction of the process and the on-line platform of the initiative.
- *June 9 2011* / Participation of POLIMI at the ISCN conference in Gothenburg. POLIMI joins the ISCN network and commits to the sustainability principles of the ISCN Charter.
- *June 16 2011* / Internal launch of the project. The two Rectors of POLIMI and UNIMI commit for a shared sustainability program that involves the whole district of Città Studi. The POLIMI and UNIMI communities are invited to join the project.
- *Since June 2011* / Launch of the "Thematic Tables" where researchers and technical staff present their ideas and project proposals and define targets and strategies for a more sustainable campus.

- *September 21 2011* / Press conference: Official launch of the project, commitment by the presidents of POLIMI and UNIMI. Confrontation with the municipality. Strong coverage by local and national newspapers.
- *End of September 2011* / Opening of the first release of the dedicated web-platform *www.campus-sostenibile.polimi.it.*
- *December 16 2011* / Presentation of the first works by the Thematic Tables, in which every working group reports on the discussed initiatives and strategies.

Year 2

- *Since March 2012* / Opening to the local community with the launch of the new "Table City" with events and workshops.
- *Since March 2012* / Reinforcement of human resources dedicated to the project, by the introduction of the new institutional members as part of the management system.
- *Spring 2012* / Implementation of research projects (among others TOC-TOC, &CO, GRU project)
- *June 2012* / Launch of the second release of the web-platform, allowing citizens to be active participants and richer in functions and services.
- *Since June 2012 I* Effective actions for the renewal of open spaces such as the introduction of the separated waste collection in the outdoor spaces of the campus, the installation of benches and tables and bike parking.
- *June 2012* / Establishment of the Energy Board.
- *October 2012* / Sustainable campus days "Giornate della Sostenibilità".
- *Since Fall 2012* / Initiatives for a stronger participation of students in the project: involvement of students' representatives in the board, launch of a student competition for redesigning sustainable open spaces on campus.

Year 3

- *Since February 2013* / Strengthening of the public private partnership with the local public authorities with the focus on the transformation of the public Piazza Leonardo da Vinci from a parking lot into a pedestrian area.
- *April 2013* / Establishment of the Servizio Sostenibilità d'Ateneo (sustainability office) with three full-time persons dedicated to the sustainability management of the university.
- *Since April 2013* / 100% purchase of green electricity (Convenzione Energia 11 Consip) with certified ECODOC label by Edison Energia.
- *Since June 2013* / Starting of the renovation of Piazza Leonardo with a calendar of activities (recreational, sport and cultural events) organized together with the local public authorities.
- *November 2013* / the launch of the new table on 'Food&Health' announced and promoted by UNIMI in order to cover sustainability aspects related to the person's well-being and lifestyle.
- *December 2013* / Preparation of the strategy document for the re-launch of the sustainable campus initiative, aiming at collecting the work done during the last three years and to promote a shared masterplan for the district to be officially presented to the mayor of Milan in 2014.

Year 4

- *Since Winter 2014* / The “Documento strategico”, the shared vision for the Città Studi district was delivered to the Polimi and Unimi Rectors and the City of Milan.
- *Since Spring 2014* / Design and construction of the new trigeneration plan that will lead to significant energy savings (ongoing, to be completed in 2015).
- *September 2014* / Polibikes, the bike repair shop managed by students opens on the Bovisa campus.
- *December 2014* / Delivery of the final re-design project for piazza Leonardo da Vinci. To be constructed in 2015.

2. “CITTA STUDI CAMPUS SOSTENIBILE": THE CONSTRUCTION OF A PROCESS TOWARDS SUSTAINABILITY

The campus as a living lab: A bottom-up approach

The campus is here intended as the place where knowledge and practice can meet. The initiative is based on a strong bottom-up approach in which everyone can collaborate and propose ideas. The prerequisite for the success of the initiative is the creation of a strong awareness on the topic of sustainability within the community. For instance, this project is supported by the collaborative work of many components of both the POLIMI and UNIMI communities. The involvement is purely on a voluntary basis: for instance, people propose and share ideas, but no dedicated funding was initially provided by the institution, with the exception of the launch team.

Starting from the implementation of a web platform where opportunities and problems become visible and proposals are collected and shared, the campus as a living lab is slowly been achieved by carrying out a number of co-design activities aiming at driving transformations within the campus environment as based on collaborative experimentation and test thus feeding collective learning and awareness. This Living Lab driven approach is showing large potentials in (re)framing the governance of the campus development and transformation. The most significant results in terms of the campus governance are related to the rooting of the bottom-up approach as referred not simply to the participatory approach of the whole initiative but rather as attaining at the willingness to be active part of the campus transformation by sharing scientific and educational resources, knowledge and efforts. This “sharing” from individuals and research work groups towards the wide campus community is evident in the functioning of the web platform and represents a significant challenge to the traditional academic work which is mainly competitive and bounded by disciplines and competences.

Funding

As a public institution, Politecnico di Milano is under the authority of the Italian Republic and mainly financed by the Ministry of Education, Universities and Research (MIUR), its tuition fees from students attendance and by research and consultancy contracts. The primary governance body is the Administration Board (Consiglio d’Amministrazione), which has regulatory functions, and it is responsible for guiding and controlling the administrative, economic and patrimonial management. The Board carries out its functions according to the policy choices and resource utilization criteria established by the Academic Senate, which directs the development program of the University, with particular emphasis on teaching and research.

2011

As we stated above, the initiative started with very little funding, and the latter was used to cover the expenses sustained by the launch team. The voluntary work by the research community built up the first initiatives through the website and the thematic tables. Later on, the Campus Sostenibile initiative adhered at the Periphèria CIP European Project (CIP ICT PSP Programme; Grant Agreement number 271015) and could benefit from it in terms of the ICT support (mainly by Archeometra srl Periphèria partner) and the Living Lab approach. Moreover, funding from taxpayers that decided to allocate a share of five per thousand taxes on personal income to POLIMI was dedicated in part to support projects on the sustainable campus topic for a total amount of 304,000 Euro.

2012

Two main areas of intervention were pursued in 2012 in order to raise funds from private sponsors, particularly the ones interested in testing innovative solutions and supporting research for onsite sustainability projects: firstly, the fund raising through research projects, through the participation to calls and projects; secondly, we devoted special effort for the establishment of a protocol for partnerships, which defines the types of involvement of private stakeholders in the project.

Since 2013

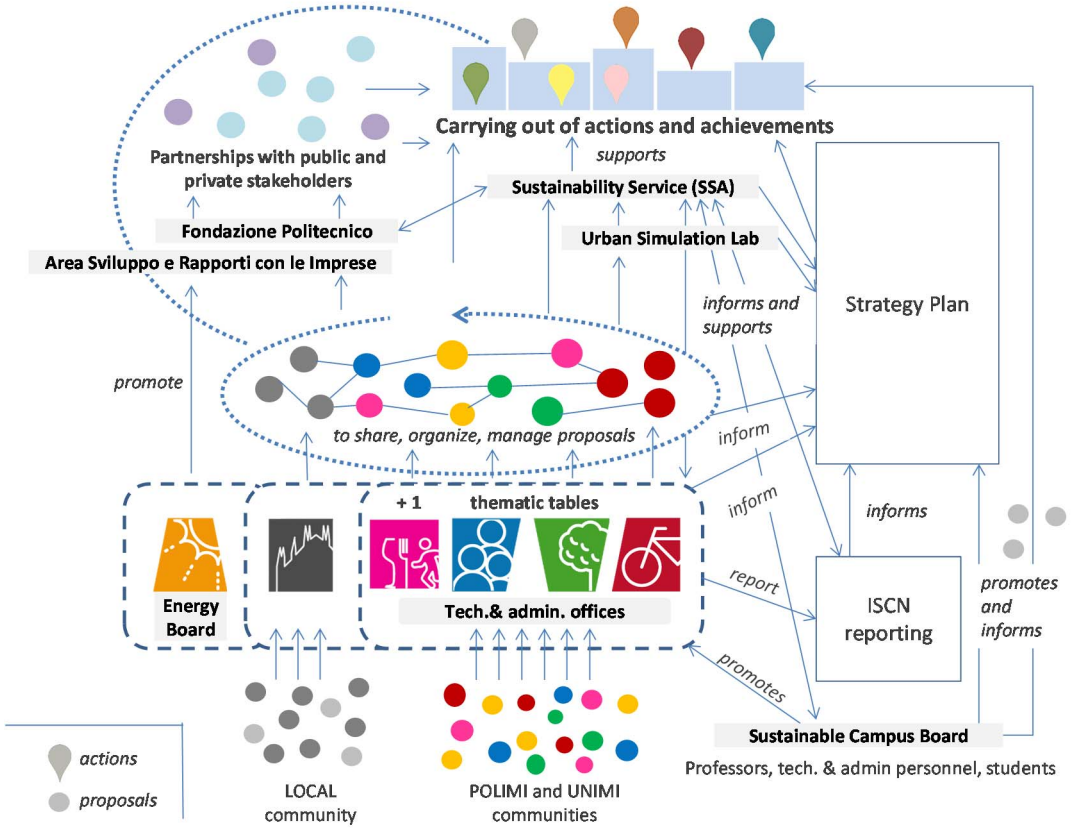
An agreement with the Area Sviluppo e Rapporti con le Imprese (POLIMI) was established and a protocol for partnerships with private sponsors was released to define rules for supporting cultural initiatives. Partnerships with private stakeholders follow POLIMI rules. Moreover, Fondazione Politecnico (POLIMI) supports the initiative for fundraising of research projects (two strategic projects, namely “Scuola” and “E-Waste” were sustained in 2013).

Governance and Management

The Politecnico di Milano Rector, prof. Giovanni Azzone, is the promoter of the initiative. The board that launched the project is composed by institutional representatives from POLIMI and UNIMI communities. In particular, project leaders on POLIMI side are Alessandro Balducci (Vice Rector) and Manuela Grecchi (Rector’s Delegate for Building and Properties). Since 2013, after the election of the new Rector of UNIMI, prof. Gianluca Vago, a new impulse to the initiative was given and a renewed board was appointed with the involvement of Claudio Gandolfi and Riccardo Guidetti (Department of Agricultural and Environmental Sciences), Federico Di Lauro (Mobility Manager, Direzione Generale UNIMI).

The management group of the initiative was initially kept quite small in order to be as flexible as possible, but the numerous initiatives activated during the years required a larger team for covering interdisciplinary competences and multiple tasks. Hence, the launch team and a support structure (credits below) was enlarged over time, and at the end of 2012 and beginning of 2013 two main steps have been taken as follows: firstly, the establishment of the Servizio Sostenibilità d’Ateneo (sustainability office) dedicated to the sustainability management of the institution, in particular for the promotion of policies and initiatives with the twofold aim to assist the community with a technical and administrative support and to translate the proposed projects into reality; secondly, representatives from students’ associations of POLIMI and UNIMI

were officially invited to join the campus board towards a stronger involvement and engagement of the students community.



Structure and management of the initiative: how proposals and ideas are shared, discussed and implemented by the POLIMI, UNIMI and local communities.

After the launch of the website and the involvement of more participants from the scientific community, we started to organize technical meetings (thematic tables since 2011); we immediately understood that a strong collaboration between innovative research expertise and technical and administrative offices was the basis for action, in accordance with the idea of experimenting our research outcomes directly on our campus. In fact, the academic community is very interested in involving the technical offices, because they are perfectly knowledgeable about campus management and the reasons for certain existing inefficiencies; on the other side, the technical staff is enthusiastic about the possibility to collaborate with academics and acquire a research perspective for the project. For instance, students, academics and technical staff sit together at the different tables and share ideas and proposals to improve our common good. Hence, we learn by doing and we redefine the management of the initiative at every step of the process while trying to keep the principles of the initiative in mind. During 2013 a special effort was dedicated to the reinforcement of public-private-people-partnerships (4P), aiming at consolidating a series of activities and shared visions launched by the “Tavolo City”, where local citizens meet with the university community.

Project management team

Project leaders Politecnico di Milano (POLIMI):
Alessandro Balducci, Vice Rector
Manuela Grecchi, Rector's Delegate for Building and Properties

Partners from the Università degli Studi di Milano (UNIMI):
Claudio Gandolfi, Head of the Dept. of Agricultural and Environmental Sciences
Riccardo Guidetti, Dept. of Agricultural and Environmental Sciences
Federico Di Lauro, Mobility Manager, Direzione Generale

Program Manager of Città Studi Campus Sostenibile (POLIMI): Eleonora Perotto
Program Manager for Research and Fundraising (POLIMI): Chiara Montanari

Support Structures
Laboratorio di Simulazione Urbana «Fausto Curti» (DASTU, POLIMI): Eugenio Morello, Barbara Piga, Valerio Signorelli
Servizio Sostenibilità d'Ateneo (POLIMI): Eleonora Perotto, Paola Baglione, Scila Ficarelli
Ufficio Progetto Campus Sostenibile (UNIMI): Nicoletta Rosati

Board in 2014:
Silvia Araneo, Paola Baglione, Mirja Calgaro, Luca Clerici, Grazia Concilio, Federico Di Lauro, Riccardo Guidetti, Eugenio Morello, Anna Moro, Giovanni Muttoni, Eleonora Perotto, Barbara Piga, Luca Studer, Antonio E. Pontiroli, Nicoletta Rosati, Esther Valzano

Thematic Tables facilitators in 2014:
Silvia Araneo, Ernestina Casiraghi, Luca Clerici, Grazia Concilio, Silvia Fargion, Manuela Grecchi, Anna Marozzi, Eugenio Morello, Giovanni Muttoni, Antonio E. Pontiroli, Luca Studer

Energy Board for Polimi (since June 2012):
Ennio Macchi (coordinator), Maurizio Delfanti, Gianpaolo Cugola, Mario Motta, Manuela Grecchi

Web-platform:
Concept and Web design: Andrea Manciaracina (Design, POLIMI); Technical concept and developer of release 1: Archeometra srl; Developer of release 2: METID, POLIMI; Manager: METID, POLIMI

Supporting technical and administrative offices:
Servizio Area Comunicazione e Relazioni Esterne (ACRE, POLIMI), Mirja Calgaro
Ufficio Comunicazione (UNIMI): Esther Valzano, Clara Antonucci
Centro Metodi e Tecnologie Innovative per la Didattica (METID, POLIMI), Daniela Casiraghi, Susanna Sancassani, Lino Scalabrini,
Area Sviluppo e Rapporti con le Imprese (POLIMI), Ivano Ciceri
Fondazione Politecnico (POLIMI), Manuela Pizzagalli
Multi Chance Poli Team - Servizio per studenti con disabilità (POLIMI), Silvia Sbattella

About 200 people participating to the activities (tables, and the webplatform as of Dec. 2014).

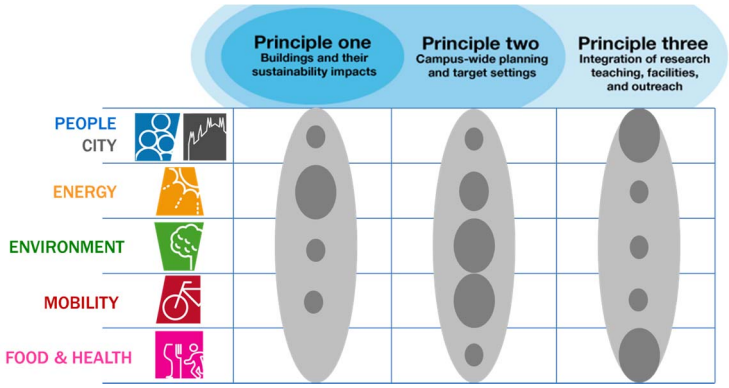
The proposed themes for sustainability

The “Città Studi Campus Sostenibile” project was initially structured into **four main themes** or areas of interest, namely People, Energy, Environment and Mobility (initially named Accessibility). The themes are identified in order to cluster the received project proposals and initiate thematic working groups, which are called the **Thematic Tables**. They are deliberately broad in order to encourage an interdisciplinary approach, in addition to being interrelated; they may overlap and can be understood as an opportunity for interaction between working groups. The four working groups and the way the themes will evolve will structure the whole project and encourage a convergent vision for the sustainable campus. The four themes are briefly introduced below.

In 2012 the new **Table City** was launched as an additional table derived from the work carried out within the activities of the Table People. For instance, this initiative was taken aiming at giving more relevance and visibility to citizens’ participation in the project. In fact, citizens registered at the Table City have open access to all the functionalities provided by the online web-platform.

in June of 2012 the Energy Table was flanked and then substituted by the **Energy Board**. Composed by five professors, the Energy Board has the mission of defining of university strategies for energy management, supporting the administrative offices for the achievement of (i) cost savings, (ii) conservation and rational use of energy, (iii) the verification of the conformity of the actions taken with current regulations, (iv) the analysis of the supply contracts for energy services, (v) the verification of proper operation and maintenance of facilities, (vi) monitoring of energy and water consumption (vii) Outlay and energy budgets.

In 2013 the proposal for the creation of an additional table, namely the **Table Food&Health** was supported by the new board from UNIMI, on the basis of specific disciplinary competences of the State university (among others: medicine, physiology, food science, agricultural science, chemistry).



The sustainability themes overlap with the ISCN-Charter principles and helped in organizing the management of the whole process and structuring the ISCN-report. The scheme shows the distribution of the projects so far.

People: users, participation and identity

- active participation of all campus users (students, researchers and administrative staff) in every situation of dis/abilities
- fostering education and lifestyle towards more sustainable behaviors
- construction of a dedicated web platform for e-participation
- creation of collective spaces being comfortable and livable for all
- creation of new accessible services for students, workers and residents (residences, sports, event locations) including web services
- strengthening of campus identity as an open but unitary place

Energy: energy efficiency and renewable energies

- implementation of innovative systems for monitoring energy consumption
- development of new procedures to increment energy savings
- use of renewable sources for covering part of the energy requirements

Environment: environmental quality

- enhancement of the wellbeing of people by improving the environmental quality of indoor and outdoor spaces
- improving the waste management increasing reuse, recycle and waste separation
- application of procedures for reducing emissions
- increase water saving, management of wastewater and storm water runoff from roofs and yards
- application of procedures for reducing emissions
- improvement of the activities for protecting soil
- upgrading of green areas and creation of ecological networks in the urban context

Mobility: transport terms accessibility and sustainable mobility

- promotion of the quality, safety and recognition of cycling and pedestrian routes
- promotion of sustainable mobility
- introduction of mobility credits
- reconnection and accessibility of campus spaces with the city
- regulation of car and motorcycle parking

City: transferring research from labs into urban life

- experimenting sustainability at the urban level
- putting research at service of urban life
- experimenting new partnerships for and in research
- widening the effectiveness of the project at the urban scale
- testing the masterplan of the sustainable campus as an artificial planning context managed with specific alignment tools
- producing public results in the public space of the neighborhood characterized by a strong effectiveness

Food&Health: sustainable lifestyle and sociocultural topics

- investigating topics related to food (nutrition education, nutrition and healthy lifestyle, healthy food)
- investigating topics related to health (food and diseases, diet therapy, eating disorders, alcohol and diet)
- advising on proper nutrition for athletes
- proposing food not only as a commodity but as a tie to land and nature
- deepening historical, social, ethno-religious and economic aspects associated to food

The main goals and topics of interest of the thematic tables.

3. IMPLEMENTATION

Phase 0 Mobilization of interests

As of February 2011 \ Call for participation and expressions of interest, mapping of (un)sustainability on campus, collection of documentation and information, contacts with potential donors. Reconstruction of the cartography and digital model of the campus under development.

Phase 1 Design and implementations

As of April 2011 \ Launch of the thematic tables, design and development of the dedicated web platform, establishment of collaborations with other institutions and private partners, the physical transformation of some areas in a sustainable manner.

Phase 2 Design and implementations

As of September 2011 \ Launch of the dedicated web platform, organized collection of project proposals, advancement of the thematic tables, development of ongoing projects and launch of new research projects.

Phase 3 Design and implementations

As of January 2012 \ Definition of the baseline: quantifications and initial analysis on the actual situation. Setting up of project proposals for catching and redirecting the programmed refurbishments promoted by the technical offices.

Phase 4 Consolidation, partnerships and fundraising

As of April 2012 \ The reinforcement of the partnerships with public and private stakeholders, and the implementation of dedicated policies for fundraising through the participation to calls of research proposals. Launch of meetings with public authorities in order to share our programs.

Phase 5 Dissemination and involvement of the local community

As of June 2012 \ The revision of the first year of work leading to the launch of the new release of the web-platform, and the launch of the Table City with workshops, and the launch of the “Giornate della Sostenibilità”, a two days events of seminars and demonstrations on sustainability on campus. Moreover, launch of a design competition open to students, was an additional attempt to involve the community.

The involvement of the community through the Table City and the activated partnership with the local public institution (the municipality and the district) is producing its first results, through the participation of all the stakeholders to a

common initiative for the renewal of Piazza Leonardo, the main public square and park in front of the campus.

Phase 6 Consolidation and reach-out

As of January 2013 \ After three years of initiatives and actions carried out by the university community and the local citizens, the project has reached a good level of visibility and recognition both at the community and city levels. The phase opened up in 2013 aims at consolidating the process through a series of actions as follows:

- the **physical realization of actions** and projects proposed by the initiative;
- the **institutional recognition** of the initiative through the establishment of the **sustainability office** (Servizio Sostenibilità d'Ateneo), and team building with technical offices: for instance, many of the unstructured and voluntary initiatives require continuity and will turn into permanent activities.
- Launch of the **master-planning phase**, which collects suggestions and proposals collected by the initiative in three years of work, for supporting the urban transformation through a **strategy plan** to be officially presented by the two rectors to the mayor of Milan in 2014.
- The proposal for a **national network of sustainable universities** to promote sustainability policies in higher education at the Italian level.

A new role was assigned to the tables: in fact, these are now more dedicated to research and cultural programs on sustainability and the contribution on real transformation projects carried out on site (e.g. Piazza Leonardo da Vinci and Via Celoria) identified by the strategy plan.

Phase 7 Self-sustainability

As of January 2014 \ After the institutionalization of the initiative with the establishment of the sustainability office, the project is now aiming at self-sustainability. This means that from now on, the sustainability practice has to become a recognized mission by the technical and administrative offices. This happens (i) through the constant alignment of the campus community in the pathway towards sustainability through communication and dissemination activities, (ii) through a rigorous and continuous data collection and monitoring of the actions carried out as part of the tasks of the administrative offices, (iii) through a stronger involvement of students in the numerous initiatives on campus, for instance by bridging activities in teaching, research and operations.

4. ONGOING RESULTS

Main initiatives of the project in 2014

According to the targets of the phases 6 and 7 of the project, we worked mainly on the **consolidation** of the initiatives and actions carried out during the first years and, thanks to the institutionalization of the sustainability project, we aim at achieving the **self-sustainability** of the project in the near future. No main changes in the organization and management of the project have been established in 2014, but a consolidation of the initiative at the institution level happened, with a parallel reduction of the bottom-up contributions by the tables.
In particular, we focused on the **reach-out** to the local community and the public authorities of the district (Zona 3, Comune di Milano) thanks to the fruitful collaboration initiated through the living lab promoted at the Table City. For instance, the renewal of Piazza Leonardo was a tangible and effective occasion to build for a common and shared strategy (**co-creation**), on a place that is relevant both for the university and the citizens. Moreover, dissemination of the initiative through seminars on campus and a calendar of events on the square helped in strengthening the collaboration with the district through sustainability practices. The long-term co-creation work on piazza Leonardo da Vinci led us to the release of the so called "**documento strategico**", i.e. the tentative strategic report containing the main directions for the future development of Città Studi, which was produced by the project board and delivered to the Rectors of Polimi and Unimi and offered to the local public authorities

Communication and dissemination:

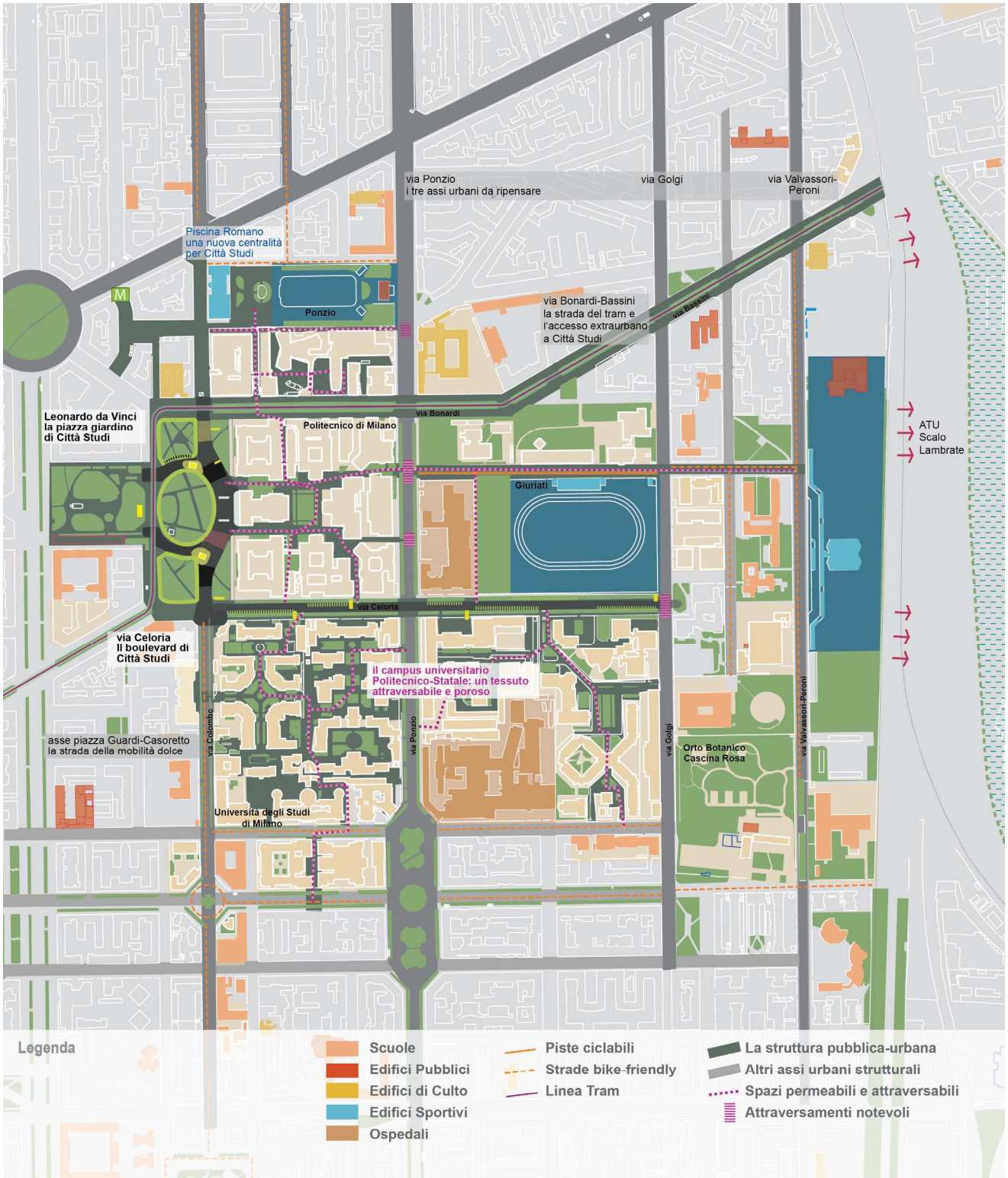
- The organization of the events "**Giornate della Sostenibilità**": the sustainable campus days became a recognizable brand and a tradition of the initiative, with seminars and demonstrations on campus open to the wide public. Under this umbrella a series of events were promoted, such as a main annual seminar, thematic seminars (on mobility and waste collection) and the thesis exhibition for a sustainable campus.
- The diffusion of the initiative through the participation to external fairs, seminars and conferences (among others: Ecomondo 2014, Forum della Sostenibilità 2014, ISCN 2014 Symposium, W2C University Network annual conference).
- The support to students' projects that best promote sustainable lifestyles on campus (among others: Policiclo, BEST design contest; teaching activities dedicated to the sustainable campus initiative).

Main tangible actions and initiatives:

- Institutional commitment for the purchase of 100% green electricity starting from 2014 (see Principle 1 for details).
- Energy savings interventions on technical facilities with the improvement of the heating system components and insulation of pipes (see Principle 1 for details).

- Retrofitting of buildings with the substitution of new windows with higher thermal insulation (see Principle 1 for details).
- A number of sustainable mobility actions including: the opening of Policiclo, i.e. the bike repair station on the Bovisa campus; the electric scooter promoted by Green Move; a first pilot agreement with BMW for renting 100% electric cars for traveling between the two main campuses.
- Promoting the creation of a national working group to sustain initiatives on sustainable universities and exchange experiences (see Principle 3 for details).
- The establishment and offered support to the Eco-Campus group within the consortium WC2 University Network committed to address the global issue of environment management and the challenges of climate change, in order to develop the 'Zero Emissions Urban University Model'.
- Improvement of the monitoring system through the web tool "Energy Sentinel" and new installed sensors in Building 4 for the Smart Campus EU project (see Principle 1 for details).
- The project for a new energy tri-generation plant (see Principle 1 for details).

Sustainable mobility actions carried out in 2014; from left: the opening of Policiclo, i.e. the bike repair station; the electric scooter promoted by Green Move; a first pilot agreement with BMW for renting 100% electric cars for traveling between the two main campuses.



The "documento strategico" scheme with the main directions for the future development of Città Studi released by the project board and delivered to the Rectors of Polimi and Unimi and offered to the local public authorities.

Fund raising with research projects

A significant boost was given to the promotion of the initiative as a possible framework and case-study for research projects proposal. Below, some successful proposals that got funded or joined the sustainable campus project:

- Currently, the sustainable campus project is partially funded by the European Commission under the CIP ICT PSP Programme (**Periphèria Project**: Grant Agreement number 271015).
- **Smart Campus: Building-User Learning Interaction for Energy Efficiency**. CIP: Competitiveness and Innovation Framework Program 2007-2013 – Pilot Action (start date: August 2012). This project aims at reducing energy consumption in the buildings of the campus enabling users' engagement towards more sustainable behaviors (see http://greensmartcampus.eu).
- Three projects launched with funding from taxpayers that decided to allocate a share of five per thousand taxes on personal income to POLIMI in 2011 were dedicated to the sustainable campus project, namely:
  - **Open innovation in urban discovery and planning for the Città Studi Campus Sostenibile project**: from master plan as alignment environment to urban digital footprints.
  - **Designing and implementing a wind machine for the urban environment and easy to install**: Micro-wind generation for the Sustainable Campus.
  - **Advanced fluorinated coatings for high-performance building surfaces.**
- The Project **PRIN-SENSE** (Smart building ENvelope for Sustainable urban Environment) will investigate the relation between microclimate and built environment and install a weather station on campus.
- **The GRU 2012 project** (management and reduction of waste within the University), funded by the Italian Ministry for the Environment, Land and Sea. The initiative works on setting up of message boards dedicated to the Sustainable Campus project and several activities for the promotion of correct waste reduction policies within the POLIMI community.
- The project "**La smart region tra Torino e Milano. I servizi mobili come driver di innovazione**" funded by Telecom Italia and POLIMI DiAP is investigating the use of ICT for providing an integrated system of services on the case-study area of the campus and the emerging collective behaviors and feedback on the territory.
- **VELUXlab**, the construction of the prototype for the "near-zero energy" buildings, represents the result of the synergistic work of VELUX with three departments of POLIMI (DEI, BEST, Energia).
- "**PROGETTO SCUOLA - Smart Campus as Urban Open LAbs**" aims at experimenting an advanced system in order to complete, with an integrated approach, different themes connected to the Smart Grid subject. The main objective of "SCUOLA" is to improve the electrical network thanks to insertions of innovative systems of communication, management and control and new generation of sensors for automation and control. Modern mechanisms for the production of electrical energy and heat (mainly through GD) will also be developed with the aim of strengthening the overall system and also to offer direct benefits to citizens.

- "**E-WASTE - the smart cycle**". The objective of the project is to strengthen and optimize the entire supply chain of WEEE recycling in order to recover rare earth metals, by processes with low environmental impact. A pilot plant will be built through the conversion of existing facilities in the area. The project will attempt to systematize what is already in possession of the network of SME involved, rather than building a new large centralized treatment plant, which is generally less flexible and very expensive and that requires long lead time.

Involvement of the community

At this time (as of December 2014) we collected numerous proposals and suggestions on the web-platform. We registered about 80 active participants at the Thematic Tables and a mailing list of about 1050 users registered on the web-portal (as of December 2014; details in the table below). For instance, the number of participants increased right after the opening of the new version of the website in Summer 2012; the new launch of the platform and the Sustainable Campus Days in October highly contributed in diffusing the initiative among the students. In 2013 and 2014, the collection of proposals through the tables is still ongoing even if less proactive, and the meetings are more conceived as an occasion to discuss urban transformations of the district (the renewal of piazza Leonardo da Vinci) and as a moment for cultural exchange and the promotion of seminars and research projects. In 2014, a deeper use of social media and networks enabled a wider dissemination and gathering of the numerous project initiatives, which is often impossible through the project web-portal alone. At the end of 2014 we registered 179 followers on Twitter, 384 “I Like” on Facebook with an average post reach of 109 people during the whole year.

Strengthening of internal collaborations

Since the beginning, this project revealed itself to be a great opportunity for strengthening collaborations and interdisciplinary research inside our scientific community. The trans-disciplinary work promoted through the launch of the Thematic Tables was already a significant achievement: building bridges between different competencies and departments and working together from different perspectives towards the common goal of sustainability enabled a great exchange of knowledge, allowing us to discover more about ongoing research and available skills at our institution. In particular, it is the first time that the collaboration of complementary knowhow from POLIMI and UNIMI were made possible under the umbrella of an official and joint initiative. Few more national and international project proposals have been submitted and we awaiting for grant decisions.
Another way to involve the students’ community is the activation of dedicated internships. These allow students to work together with operations and research on sustainability, giving them the opportunity to contribute in an effective and physical way to the campus sustainability pathway.

Allocated Human Resources

A number of staff members dedicated to the project from the technical staff (see the section Project management team) were involved since the beginning of the process. In 2012, the institutional position of the Manager of the Sustainabile Campus Project was officially introduced and another Manager dedicated to Research and Fundraising was hired. Since 2013, thanks to the establishment of the Servizio Sostenibilità d'Ateneo (sustainability office) with three full-time people dedicated to the sustainability management of the institution, the relevance of sustainability as one of the pillars of POLIMI was officially recognized. Moreover, the initiative reached a larger number of community members, such as the Amministrazione Centrale and Fondazione Politecnico with their competences in fundraising. The Energy Board composed by POLIMI professors was also established.

Construction of the baseline: measurements to monitor our actions

Creating awareness on the topic of sustainability among the technical and administrative offices of our institution was an opportunity to start feeling the need for a more efficient management of resources. In particular, construction of the baseline as a reference starting point was the crucial step for consolidating the analysis on the topic of sustainability and to measure the effects of our actions. In fact, we have promoted a series of activities and produced the following results:

- We have been working on the reconstruction of a digital campus model (CAD and GIS data), which will serve as the support center where we will collect incoming data and the basis for the new masterplan.
- Studies conducted on measurements and surveys and acquired new technical equipment for monitoring energy consumption and environmental comfort (indoor and outdoor) through pilot projects on campus.
- We have reconstructed historical energy consumptions in collaboration with the energy provider. Now, we can make use of a digital online interface to monitor energy consumptions of the building stock.
- We are now investigating a possible way in order to harmonize and integrate the indicators proposed by the ISCN Charter to with EU standards and other metrics that best express our targets towards sustainability.

Objectives in the near future

Future work of the initiative will aim at:

- The **extension of the initiative to all the other campuses** of Polimi, by identifying contact persons on each campus and diffusing sustainability projects.
- A pilot project on **mapping CO_2 emissions on campus** will be promoted at the level of the central administration office. This work will be crucial for achieving our sustainability targets.
- The organization of the **Città Studi 100 years celebrations**: this event in conjunction to the "Giornate della Sostenibilità" will be an occasion for re-launching the new (smart) masterplan for Città Studi with the direct involvement of the local municipality (forthcoming in November 2015).
- Following the good relationship carried on during the last two years of collaboration, promoting **more co-design and participatory initiatives with the local municipality** (Zona3), the next focus will be on the redesign of via Celoria, and on climate planning and climate change adaptation initiatives.
- Redesign and construction of the **open spaces of the "Area Bonardi"** following the students' contest of 2013.
- A more **robust involvement of students** through internships, contests and seminars, also aiming at improving their knowledge on sustainability topics.
- **Mapping sustainability behaviors** and lifestyle of the university community in order to inform future policies. This will mainly happen through online surveys on nutrition habits, mobility modes and sustainability knowledge (SULIT).
- Going **beyond the thematic tables**: sustaining more e-participation and work on specific hot topics. Tables will remain as reference contact points in charge of supporting and activating bottom-up initiatives emerging from the community (university or citizens).
- Providing **sustainability guidelines for construction** on campus, to support the technical offices in the definition of design requirements and negotiation with construction companies

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PRINCIPLE 1 - SUSTAINABILITY PERFORMANCE OF BUILDINGS ON CAMPUS

Principle 1: To demonstrate respect for nature and society, sustainability considerations should be an integral part of planning, construction, renovation, and operation of buildings on campus.

A sustainable campus infrastructure is governed by respect for natural resources and social responsibility, and embraces the principle of a low carbon economy. Concrete goals embodied in individual buildings can include minimizing environmental impacts (such as energy and water consumption or waste), furthering equal access (such as nondiscrimination of the disabled), and optimizing the integration of the built and natural environments. To ensure buildings on campus can meet these goals in the long term, and in a flexible manner, useful processes include participatory planning (integrating end-users such as faculty, staff, and students) and life-cycle costing (taking into account future cost-savings from sustainable construction).

Management Approach to Principle 1 Topics

The majority of buildings are owned by the institution and only few are rented. In any case, all the buildings and open areas on campus are managed and maintained by the institution. The initiatives promoted in the Thematic Tables aim at overlapping with the maintenance work plan and potentially redirecting and improving design choices. The initial stage of the work was mostly dedicated to create a baseline for measurements and the quantification of indicators. A list of objectives is shown below.

- The first challenge is a strong **commitment to reduce the energy consumption of buildings**. For instance, the campus is composed of old buildings (most of them are from the 20ies of the last century, some of the 60ies and only few were constructed in recent years); we are undergoing the **refurbishment** of our real estate and this should happen in the respect of the historical and architectural value of the buildings (some of them represent significant samples of the Italian modern architecture, designed by well-known architects).
  How: from now on, the **refurbishment program should be implemented with the contribution of academic expertise**; this might be the occasion to experiment innovative solutions or to propose a more conscious, environmental-friendly and inclusive design: the campus is intended as **the place where we can test our research ideas and products**, and offer them to the district and the city.
- A second aim is to improve the **energy efficiency** of the campus. The **first operation involves measuring** the performance of buildings in order to better understand and evaluate the livability and efficiency of our buildings. It will be crucial to identify the campus areas with low performance, i.e. higher consumptions, through the implementation of a monitoring system.
- A third scope will consider the potential production of energy on site through **renewables**.

Main initiatives and results

Energy

New in 2014

1	After the release of the feasibility study for a new tri-generation plant to be installed on campus using the current distribution network by the **Energy Board**, the construction of the **new tri-generation plant** started in 2014 and is already partly in operation. The construction will be completed in 2015.
2	The **heat distribution network** was rebuilt in order to enable the **low supply and return temperatures** for the functioning of the new heating system
3	**100% purchasing of green electricity** by POLIMI since April 2013 and for the entire year 2014 (Convenzione Energia 11 Consip) with certified ECODOC label by Edison Energia
4	**Indoor construction for the retrofitting of Buildings 3 and 4**: - Retrofitting of the classrooms according to **environmental comfort criteria** (this includes HVAC, artificial lighting, acoustic comfort). - New **thermal insulation with inner counter walls** to improve energy savings.
5	**Retrofitting of Building 4**: The updating of the interior spaces to current standards (energy, health, safety, comfort and accessibility) through restoration work and the installation of new service plant, new interior distribution of spaces, the new roof construction.
6	**Improvements on HVAC systems**: - The new efficient chiller unit system which groups Building 11 and Building 12 was installed and completed in 2014. We estimate electricity savings of 250,000 KWh_e/yr for the summer season (about 1,400 hours of operation).
7	Ongoing substitution of all the windows with **thermal broken wooden windows** with double glazing for Building 2 and Building 3 that preserve the original character of the historical buildings, as approved by the public authority responsible for the cultural heritage.
8	**Photocells to control artificial lighting** and enable energy savings were installed on all the restrooms on campus (completed in 2014).
9	The **Energy Board** is constantly **monitoring energy consumption** of buildings, by improving the entry points and analyzing trends and peaks for envisioning scenarios of improvement and intervention on the energy through the web tool named “Energy Sentinel”
10	**New heat pumps on the roof and wells using groundwater** were installed in the Building 25 as a result of the “Progetto Scuola”.

Still running or completed

- A series of **new sensors** were installed in Building 14 for the Smart Campus EU project in order to measure the effects of the implemented strategies aiming at reducing energy consumption by affecting people behavior
- **Retrofitting of buildings:**

  - New thermal broken wooden windows with double glazing (U-values of 1,6 W/m^2 K) have been installed in Building 7 (25 windows) and Building 3 (continuing, started in 2012)
  - Thermal insulation in Building 3 (continuing, started in 2012)
  - Partial installation of new windows of Building 4 (continuing, started in 2012)
  - Retrofitting of toilets with installation of photocells and dual flush toilets for water saving in parts of Building 12 (continuing, started in 2012)
  - New thermal insulation and new windows were installed and will improve the overall performance of Building 3 and Building 4; thermal broken windows with double glazing (U-values of 1,6 W/m^2 K) have been installed in Buildings 4, 5, 6 and 14.
- **Surveys on buildings** (mainly thermal imagery) have been conducted on pilot buildings (Buildings 12, 14 and 15) in order to program future intervention on the exterior walls. Two master theses have been completed on this topic.
- **Improvements on HVAC systems**:
  - Complete replacement of pipes, valves, pumps and insulation in the thermal exchange substation of Building 5.
  - Improvement of the steam plant in the Buildings 2, 4, 4A and 6. In particular, upgrading of the heating system with hot water circuits in Building 4. The equipment operates at lower temperatures, reducing energy waste and pollution.
  - New heating and cooling system and indoor air treatment in former Room F12.
  - Boiler replacement moving to methane in the Building “Casa dello Studente”
- The **Photovoltaic Test Facility** (PVTF) on the roof of Building 14 (Nave) was installed, aiming at testing and comparing the performance of different modules provided by producers.
- A **solar system** with the Dessicant Evaporativy Cooling (DEC) technology was installed on the roof of the dormitory Casa dello Studente for the climatization of the building both during the summer and the winter (extension of the modules150 m^2, production of about 60.000 thermal kWh).
- The installation of **new inverter air conditioning systems** were installed in Building 8 and in the conference Room De Donato (Building 3).
- **Data on Electricity, Natural Gas** were collected, then made visible on a map at the POLIMI campus level and organized in an online application, so that researchers and the technical staff can monitor the trends of consumption. The latter application revealed itself to be very useful in detecting anomalies and unexpected peaks of consumptions. The data is aggregated into buildings and parts of buildings, according to the installed counters, after the refinement and infilling of the monitoring system on campus completed in 2012.
- A **survey about the main characteristics of the 3700 building spaces** was conducted in 2007. The resulting database contains more than 100 fields for each zone, describing main characteristics of orientation, lighting layout and activation, heating and cooling devices, windows, shading devices, etc.
- Policies for the **reduction of artificial lighting** were already implemented in the past: photocells were installed in the restrooms, passages, corridors and common areas (indoors and outdoors), and currently most of them are covered

by this control system. This technology is used for all new or retrofitting interventions on campus.

- The introduction of **environmental and energy criteria for directing retrofitting interventions**, which take into account the different building typologies and ages of our real estate were proposed.
- Increase of energy production through **renewables** is under investigation. A PV plant on the roof of the main building of our Architecture School is already in place since more than a decade, and the use of more roof surfaces might increase our productivity.

Environment

Still running or completed

- Reinforcement of **EU green public procurements (GPP)** policies, in particular:
  - hygiene products (toilet paper, towels, etc.) in compliance with the EU directive and Ecolabel criteria.
  - in some tenders on the purchase of furnishing for departments
  - adhesion to a number of "green" treaties (Consip) for the purchase of copiers, meal vouchers.
- Adhesion to the convention promoted by the Lombardy Region for the purchase of printer paper according to green criteria.
- **Guidelines for waste collection** were introduced in the student residences. A correct collection is still one of the main issues among students with very different cultural habits.
- A series of seminars and initiatives towards the **EU green procurements** were carried out during the year 2012.
- The census of 26 counters of water was carried out in order to start collecting data on **water consumption**.
- The surveys on Building 14 (Nave) and Building 2 (Aule Nord) were completed and helped in the reconstruction of the overall **performance (heating and cooling demand) and environmental comfort of the indoor spaces**. In particular, a BIM model and environmental simulations along with comfort surveys in the summer and winter, and the monitoring of consumption data are used to inform the design of innovative solutions.
- **Differentiated waste collection** of paper and plastics is already in place in the classrooms and common spaces, as well in all the departments and offices. An overall reorganization of the waste management is under development. Hazardous waste collection in departments working with chemical products is mandatory (managed by the Office “Servizio Prevenzione e Protezione” together with the responsible for the waste management).
- In order to reach a right differentiated waste collection in the different buildings and departments, a series of **instructions** (posters) have been prepared to be put on the white garbage collectors for paper and on the green ones for the glass collection.
- A **census of the differentiated waste collection** was conducted in order to evaluate the status of the as-is (how many garbage collectors are new, how many are to be changed etc.) and to evaluate if the number of waste collectors

are enough to sustain the current garbage production for each single building and if they are compatible with the frequency of the garbage collection carried out by the municipal waste management provider (AMSA).

- A **pilot university residence** was chosen for introducing an improved waste management, in particular waste and water management, oil collection, increasing recycling with specific containers, along with awareness and training of the users. The pilot project was completed and now its application is waiting for the go-ahead by the by the managers of the students residences.
- The experimentation of **green roofs and hydroponic walls** technologies are under evaluation through the installation of sample solutions on selected campus buildings (Building 15).

Mobility

Still running or completed

- Quite all the buildings and rooms are already **accessible to people with disabilities** (the accessibility audit of the paths through all the buildings was verified). From 2004 the **refurbishment program** has to develop inclusive design approach and the Multi Chance Poli Team provided to special needs of accessibility personalization. From now on, **refurbishment buildings program** has to develop accessibility customization of different locations, services and activities.
- New elevators and entrances accessible to people with disabilities were installed in Buildings 2,4A, 11 and 14 and Casa dello Studente.

People

New in 2014

1 As an outcome of the Smart Campus EU project, **a smart classroom booking system** for students was implemented. This will allow a rational use of space and significant energy savings for HVAC are expected.

Still running or completed

- The implementation of the experimental part of the **Smart Campus EU project** was conducted in 2013 and worked on the behavior of buildings' users (case-study application on Building 14)
- The **guidelines for the correct waste collection** on campus was distributed as part of the Welcome Kit to all the new enrolled students during the Welcome Week since 2013.

The following initiatives refer to the potential reduction of energy consumption by acting on behavioral change and habits of the community in general. In particular:

- In order to make sustainable rules to be shared by all the actors the collective writing of a "**Code for sustainable behavior**" has been activated. A preliminary draft was posted on a **Wiki space** of the platform prepared with the support of other table members. The Wiki space will allow collaborative discussions and writings to be monitored and recorded as shared behavioral rules.

- Two services, related to the Behave! challenge have been co-designed and developed by the Alta Scuola Politecnica (ASP) students:
  - **&CO**. Starting from the need of the ARCHIMODEL Lab in the Campus where much residual materials are produced, the &CO services has been co-designed with students, citizens and other potential users. &CO is a web based Solidarity Purchasing Group focused on the **reuse and the collective buying of reusable materials**. This service grounds on the idea to elongate materials' life cycles and responds to two different needs: 1) remove residual materials from production space; 2) reduce the cost of acquiring new materials. In order to respond to these needs a network among groups and associations already working in this field has been activated. This collaborative service was launched during the "two days for sustainability" event and a dedicated web page is under development using facebook and twitter as clustering drivers.
  - **TOCTOC Movement**. The main goal of this service is to **reduce waste** and help to build a local community from which all citizens can take profit. Toc Toc actually comes from the sound (knock, knock) that represents the action on knocking on neighbor's door, this is the help that each and every one of us is willing to give in order to live in a sharing community. Therefore TocToc is a platform where every user can offer his/her possessions that he/she does no longer need and obtain in return something else, or simply avoid that used objects being in good conditions, being still useful, finish on the dumpster. TocToc is a service web application. By logging in with e-mail, or the credential of another social network, it is possible to enter and be part of the community, create your profile, see the others next to you on a map or do a research by subject; you can upload and geo-locate your own offers, propose an object exchange to other users, send private messages or comment on other's offers.
- The **Smart Campus project** has been proposed to European funding call and financed. Started on August 2012 it aims at improving energy efficiency in public building (as most of the campus buildings are) by changing users behavior.
- In order to crowd source activities and commitment towards Campus Sostenibile goals, Challenges have been identified starting from themes having a wider collective value. Among these challenges one is named "polinclusive"; it aims at collecting ideas or project proposals on possible transformations or services to be carried out or supplied in order to guarantee a comprehensive human approach to people, considering their different disabilities and abilities to access the campus life.

Principle 1 Targets for 2014

Continuing working on a more comprehensive **monitoring of energy consumption**	✓	The work is still ongoing. A researcher was dedicated to this task
After completing the monitoring and energy baseline, starting to work on a comprehensive **energy plan** for the retrofitting of buildings on campus (long term objective)	✓	Ongoing

Working on **guidelines with environmental and energy criteria** for the retrofitting of buildings and open areas.	✗	The task was not carried out because of lack of allocated resources for this topic.
Drinking water fountains to be installed in all the buildings	✓	This task was successfully carried out.

Principle 1 Targets for 2015

A bigger involvement of the community in energy aspects through the creation of the **Sportello Energia**, i.e. energy info points, open twice a month for reporting current conditions on campus and proposing new ideas.
The complete operation of the **trigeneration plan** according to the construction schedule.

Overview of Organization's Principle1 Goals

Theme	Topics	Related Indicators	Goals and Initiatives		Results	
	Priority Topics		Objectives and Targets	Key Initiatives	Performance 2013	Performance 2014
Themes and priority topics identified by the Città Studi Campus Sostenibile project		GRI and STARS indicators, indicators proposed by POLIMI	for reporting year, for the following year, and/or beyond	in reporting year, and /or planned for the following and beyond		
	Principle 1: To demonstrate respect for nature and society, sustainability considerations should be an integral part of planning, construction, renovation, and operation of buildings on campus.				Principle 1	Principle 1
	Resource use					
ENE	Energy use | direct energy consumption	- electricity: kWhe - heating: kWht	Monitoring and reducing consumption	Installing new sensors for monitoring buildings' performances and for building automation		a report by the energy commission will be released in 2015
ENE / PEO / ENV	Energy use | indirect energy consumption		Working on improving lifestyle	Collective writing of the "Guidelines for Sustainable Behavior" (wiki); EU project Smart campus		
ENE	Energy use | energy saved by conservation					
ENE / ENV	Embedded (grey) building energy					
ENE / ENV	Water use		Reducing consumption	Collection of data about water consumption on campus (26 counters)		
ENV	Wastewater	Residences: number of interventions/month	Reducing interventions on the sinks	Handbook of good practices for students living in the dormitories		
ENE / ENV	Periodic maintenance on the building		Energy saving , waste reduction and non-compliance management	Creation of control registers in use of S.P.P. for the ordinary monitoring;in case of emergency a specialized company will be called		
ENE	Energy and water costs, and savings achieved		Reducing consumption and investing the savings	Working on light solution (first), i.e. lifestyle		
ENV	Overall purchased products/materials (Auto emissions and green cleaning product requirements)		Improving the amount and the environmental quality of purchased products on campus	EU green procurements are mandatory for the acquisition of materials and products; committment to 100% green electricity purchase		
	Waste, recycling, local emissions, and non-compliance					
ENV	Solid waste	- Volume of different types of waste collected on campus For residences: - For all the categories of solid waste: number of containers/retire; - For oils: liters/month; liters/month/student. - To monitor the progresses of the collection of oils and organic waste: number of interventions on the kitchen sinks/month.	Monitoring and management of differentiated waste collection in the buildings/departments	- Census and posters - Census of garbage quantity produced at POLIMI (indoor and outdoor) - Re-organization of the ecological garbage collection area and optimization of the right waste collection and disposal		
ENV / PEO	Recycling		Already in place in the buildings, needs to be improved	Collective writing of the "Guidelines for Sustainable Behavior" (wiki)		
ENV	Re-use		Increasing the life cycle of materials by re-using waste materials	Study for the reuse of materials from construction or waste for the making of new products		
ENV	Waste costs, and savings achieved	For residences: number of fines/year	Improving the education and commitment for waste collection in the community	Handbook of good practices for students living in the dormitories		
ENE / ENV	Emissions contributing to local air pollution					

	Research/IT facilities and sustainability					
ENV	Energy use in laboratory/IT facilities					
ENV	Chemicals consumed					
ENV	Hazardous waste from research/IT facilities					
	Users					
MOB	Handicap access	-% of spaces accessible to classrooms and offices			100%	100%
PEO	Stakeholder participation in planning (integrated design)	- Number of external stakeholders - Number of additional meetings - Number of shared initiatives	To engage stakeholders out of the standard academic life in the envisioning and co-design activities	Activating a fifth non-academic work ta	Meetings and shared initiatives	
ENV	How present conditions affect users behaviour	Monitoring users' behaviour / built environment perfomances according to established Post Occupancy Evaluation (POE) criteria	Defining users' behaviour / built environment relationship patterns in order to support rehabilitation design strategies	Post Occupancy Evaluation (POE) techniques		
	Indoor Environmental Quality					
ENV	Indoor Air quality		To reach high IAQ levels	1. Adopt an IAQ management policy 2. Improve IAQ by considering it in design, operations and maintenance policies 3.Introduce a mechanism for occupants to register complaints		
			No toxic chemicals	Reduce the use of dangerous chemicals products		
ENV	Indoor Thermal Comfort		To reach adequate comfort levels	General condition assessment		
ENV	Indoor Ligthing Comfort		To reach adequate comfort levels	To apply sustainable solutions		
ENV	Increasing natural light performance	Interior design and fitting adequacy	Adaptive reuse to improve interior qua	Natural light performance evalution and monitoring; observation of users' behaviour related to natural light		
ENV	Indoor Acoustic Comfort		To reach adequate comfort levels	To verify sustainbility results		
	Building design aspects					
ENE / EN	Sustainable building standards applied and explored		To purify air by absorbing carbon dioxide, keeping biodiversity, improving thermic insulation	To adopt energy performance solutions (green walls, green roofs)		
ENE / ENV	Sustainable building standards applied and explored		Energy efficiency and environmental impact reduction	To adopt energy performance solutions		
ENV	Long-term use flexibility					
ENV	Life-cycle assessment (LCA)		To reduce building environmental impact: 1. To evaluate buildings LCA 2. To propose LCA reduction policies			
ENV	Life-cycle costing (LCC)		To reduce life-cycle costs: 1. To evaluate actual life-cycle costs 2. To propose LCC reduction policies			
ENV	Evaluation of design consequence on people well-being and on efficent use of space	Performance based technical and spatial evaluation according to established POE criteria	Adaptive reuse design guidelines to improve aspce efficency and quality	Actual use-condition monitoring (surveys, observation of users' behaviour related to use of space		
ENV	Landscape integration of building design					

Legend: POLIMI Proposed topics | Topics not discussed yet, but to be included as future work

PRINCIPLE 2 – CAMPUS WIDE MASTER PLANNING AND TARGET SETTING

Principle 2: To ensure long-term sustainable campus development, campus-wide master planning and target-setting should include environmental and social goals.

Sustainable campus development needs to rely on forward-looking planning processes that consider the campus as a whole, and not just individual buildings. These processes can include comprehensive master planning with goals for impact management (for example, limiting use of land and other natural resources and protecting ecosystems), responsible operation (for example encouraging environmentally compatible transport modes and efficiently managing urban flows), and social integration (ensuring user diversity, creating indoor and outdoor spaces for social exchange and shared learning, and supporting ease of access to commerce and services). Such integrated planning can profit from including users and neighbors, and can be strengthened by organization-wide target setting (for example greenhouse gas emission goals). Existing low-carbon lifestyles and practices within individual campuses that foster sustainability, such as easy access for pedestrians, grey water recycling and low levels of resource use and waste generation, need to be identified, expanded and disseminated widely.

Management Approach to Principle 2 Topics

The scale of the campus is the one that best leads to the aggregation and alignment of all the proposed initiatives. It is also the dimension that best embraces all the competencies activated in the Thematic Tables, thereby representing the contact point, in many cases, between the tables.

For instance, the projects uploaded on the web-platform together with the proposals discussed at the Thematic Tables are the raw materials for the design of the whole **Campus Masterplan**. The main goal is to make all the projects overlap and converge in a unique, comprehensive and coherent scheme. Energy and environmental aspects, together with social and cultural issues have to find a common ground and agreement through the physical design of the masterplan. The "**Documento Strategico**" includes the suggestions collected during the past years.

We focus significantly on the **environmental quality and accessibility of open spaces**. In fact, open areas are crucial for the overall usability and image of the campus, but are underestimated and underused by the POLIMI community. Hence, the sustainable campus project is a great opportunity to redesign outdoor spaces.

Main initiatives and results

Energy

Still running or completed

- "**PROGETTO SCUOLA - Smart Campus as Urban Open LAbs**" with the main objective to improve the electrical network thanks to insertions of innovative systems of communication, management and control and new generation of sensors was presented in 2013 (awaiting funding).
- "**E-WASTE - the smart cycle**". The objective of the project is to strengthen and optimize the entire supply chain of WEEE recycling in order to recover rare earth metals, by processes with low environmental impact. A pilot plant will be built through the conversion of existing facilities in the area.
- The proposal for an **electric car charging station with cogeneration** was completed but not yet located on campus. The project, totally financed and implemented, consists in a container for the cogeneration and storage of electricity and two charging columns.
- A **survey** that photographs the today's condition and the last four years in terms of energy, water and gas consumption.

Environment

New in 2014

1. The provision of new **waste management guidelines**, according to the **waste tracking** norms (SISTRI), is under development.
2. The installation of **garbage compactors** close to vending machines and dining areas contributes to the improvement of waste collection through the reduction of transport costs.

Still running or completed

- Coltivando, is a **university vegetable garden**, shared by the university community and citizens on the Bovisa Campus. It is conceived as a way to open public space on campus to the neighborhood in order to share knowledge, and facilitate the connection between the campus and the urban fabric (ongoing).
- **Poligarden** installation for temporary gardening on parking lots carried out by students in order to envision a better use of open spaces.
- **Green areas mapping**. Surveys and mapping of the vegetation and urban surfaces on the POLIMI campus (what we call the Green Cadaster) was completed in GIS aiming at delivering a tool that can be applied for the management and design of new green and permeable spaces.
- **The PIC project (Platforms for Intelligent Containers)**, aiming at introducing an innovative system for the management of waste collection (in terms of monitoring, quantification of production and optimization of collection) completed the pilot phase on campus (application on the ecological platform and in sample areas) in 2012 and is looking for funding opportunities.

- **Upgrading of the existing sewerage network** on the Campus Bonardi area aiming at improving the water collection.
- **Permeability and drainage** of large parts of the campus was mapped and possible solutions for a more rational and **sustainable water management** will be presented as part of a master thesis and internship (focus on the area of the Bonardi Campus).
- A first and comprehensive **CO_2 assessment at the campus scale** was produced and presented as part of a master thesis discussed in December 2012. This work will contribute to the definition of more informed sustainability scenarios for the near future.
- The introduction of **waste management outdoors** was completed on campus.
- The installation of **new urban outdoor furniture**, mainly benches and tables, was initiated in order to provide places for the campus community to study, meet and socialize.
- **Increasing outdoor thermal comfort**: Following the general goal to improve livability conditions at the Campus Leonardo, a methodology has been proposed which begins with environmental analysis of the open spaces and aims to provide design specifications and strategies to improve microclimate and comfort conditions. First of all, a study for the definition of the **protocol for comfort measurements and surveys** was carried out in 2011 in order to map the occurrence of critical situations. Secondly, and at the same time, thermal perception of users were collected through a questionnaire and answers were compared with the "answers" of the instruments thus aiming at defining a new score scale to "calibrate" the measurements with the people of our community. Thirdly, open space users' behaviors were observed in order to understand critical elements as well as the capability of specific spaces.
- **Waste management outdoors**. A more efficient management of waste collection in the open spaces was investigated in 2011 and enabled the introduction of differentiated waste collection outdoors in 2012**.** The activities included the following ones:
    - A **census of garbage quantity** (volume) produced on campus (indoor and outdoor) started in 2011 was completed. The data collected in the census derive either from the number of garbage bags that have been counted during the academic year or from statistical data that represent the garbage production per capita. This investigation should help in the reorganization for a more rational waste collection.
    - Moreover, **new compactors** for the reduction of waste volumes (dry waste, paper and cartons) were rented.
    - The monitoring of plastic consumption was scheduled in the near future.
    - The re-organization of the **ecological garbage collection area** was carried out in 2011. In particular: the overall layout has been changed and new containers, front loaders etc. have been introduced; a map has been designed with present, past and future layout, procedures, rules and registers have been introduced for the area management; adequate posters have been introduced to simplify the correct waste collection management.
- Re-organization of **green areas equipped for students' life**: after having mapped and proposed a new design and arrangement of garbage bins, benches,

tables, Wi-Fi access in 2011, the installation of furniture started in 2012 and will completed in 2013.

- Maps of the network and the services regarding the **wastewater and rainwater management** were prepared in order to define strategies to decrease of the rate of rainwater collection into sewer and the improvement of soil permeability.
- A **new weather station** as part of the PRIN SENSE project was installed on campus and will be used to increase the sensor network on campus.

Mobility

New in 2014

1	**Polibikes project (Policiclo)** on the Bovisa Campus was completed: promoted by a group of students, it supports the creation of a service for the repair of bicycles, including abandoned ones in the city, thus providing of a new fleet of bikes for the Polimi community
2	A pilot **agreement with the car sharing company** Car2go and in collaboration with Legambiente, for discounted rates for students was promoted.
3	An agreement with BMW and POLIMI was signed and enabled the staff to temporary use a small fleet of three **BMW i3 electric cars** for short travels between the campuses of Città Studi and Bovisa.
4	An **electric scooter** is now part of the POLIMI fleet within the Green Move project.

Still running or completed

- **Removal of the parking lot** (200 car-parking spaces) on piazza Leonardo and the introduction of a new pedestrian public spaces in order to improve the environmental quality of the campus and the district.
- The analysis and construction of **scenarios for the regulation of parking spaces** on campus started in 2012 is still under discussion. The aim is to gradually reduce the offer of parking spots for vehicles and promote other transportation modalities. A series of surveys on parking dynamics were promoted.
- **Survey and installation of bicycle parking**. For instance, 150 arch bicycle parking stands were installed on campus.
- The installation of **new BikeMI bike-sharing stations** in via Pascoli (by BikeMI company and the Municipality of Milan with the support of Campus Sostenibile).
- Launch of a **technic table with the municipality** (Comune di Milano) **and the mobility agency** (AMAT), together with the Tables City and People, aiming at coordinating the different interventions for the renewal of open spaces, road system and mobility in the district of Città Studi. For instance, the table promoted the following initiatives:
    - Reducing the space for the car-parking lots in Piazza Leonardo da Vinci in front of the main and historical entrance of the Politecnico. At the same time, promoting new ways of use of former parking lots as a reconquered public space through the management of temporary and experimental public

concerts, sports, markets with the engagement of the local community and citizens associations (carried out).
    - Securing the pedestrian crossing of via Ponzio is under investigation; a street dividing two parts of the POLIMI campus, which is currently crossed by a multitude of people in unsafe conditions.
    - Installation of new BikeMI bike-sharing stations in Piazza Leonardo da Vinci and in front of Lambrate railway station (installed by BikeMI company and the Municipality of Milan with the support of Campus Sostenibile) (carried out).
- Feasibility study of the **Polibikes Project** with the objective to establish a **bike repair shop** named Policiclo (similarly to the existing shop at UNIMI) that repairs abandoned bikes donated from the Municipality of Milan and to set up a bike sharing system for students, employees and teaching personnel.
- The delivery of the **map of the facilities for students on campus** as a static and dynamic map, carried out by students, was distributed to students during the Welcome Week
- Feasibility study of a project aiming at **monitoring bike journeys** of the students' community with mobile applications. The analysis of the overall routes enable to define the most used roads or bike lanes of the students in the neighborhood of POLIMI, the origins and destinations of these trips, the time schedules and other special requests and needs (mobility profiles). The results will support the definition of better and more user-focused measures towards sustainable mobility. Possible participation at the European bike challenge.
- New definition and **re-launch of the Carpooling Project** of POLIMI and UNIMI for students and employees and teaching personnel is under study due to the lack of participation to the previous initiative.
- Feasibility study of a project for the design and application of **mobility (or sustainability) credits** aiming at the delivery of a tool able to promote and reward sustainable behaviors.
- Beyond the boundaries of Città Studi, the Sustainable Campus Project is starting to involve the **other campuses of POLIMI**, thus initiating a series of activities with local municipalities, such as:
    - The launch of a **technic table with the municipality** (Comune di Milano) **for the requalification of the Bovisa area** where the Campus Bovisa of POLIMI is located. Main aim of the table is the reorganization of the viability of the area with special focus on POLIMI community needs, in particular the definition of sustainable mobility measures, walking and cycling itineraries and green areas.
    - The launch of a **technic table** for the requalification of the POLIMI **Campus in Lecco** in collaboration with the local municipality (Comune di Lecco).
- **GHG emissions and Transportation.** The GHG emissions can be reduced by replacing traditional vehicles, powered by fossil fuel, with green transportation. Many different projects are being studied to join this objective such as: the "Green move project" and the "bike sharing". Encouraging the staff to use public transport is another way to reduce pollution. A ticket discount has already been applied in some public transports, but only for few passenger classes. The aim will be to extend it to every kind of categories and type of public transport.

Improving system efficiency and using renewable energy (for example photovoltaic), will reduce total account of greenhouse gas emissions.

- **Surveys on mobility and mobility services** were conducted in October 2010 and concerned 2,624 workers and 12,919 students of POLIMI and UNIMI. The surveys were finalized to implement the commuting plan (home/work) needed to improve and to support sustainable mobility practices.
- **Cycling**: survey on the bicycles available for departments and administrative staff to improve the organization and to increase the use of bicycles to move inside and outside the campus; mapping of bicycles paths and "friendly roads" to identify a networks for cycling on a urban scale; offer of an itinerant bike-repair shop service (from October 2009 to March 2011, funded by the Cariplo Foundation).
- **Parking**: Survey on the time and the use of parking lots inside the campus and proposal of scenarios finalized to reorganize the internal parking lots to create new public spaces. A debate on the re-use of parking lots through a comparison of different scenarios and an assessment of the satisfactoriness was promoted.
- **Carpooling**: construction of the web portal www.carpooling.polimi.it where it is possible to enter travel requests. The software, according to the user preferences, automatically creates the crews. The goal is to improve the university accessibility through the provision of a car pooling service available to students, professors and administrative staff of POLIMI and UNIMI.
- **Electric Car Sharing**; Green Move project (www.greenmove.polimi.it): Proposal for a ZEV vehicle-sharing system based on an open and dynamic logic. The goal is to provide access within the service, both as consumers and as sharers of vehicles. Funded by the Regione Lombardia, involving eight departments and research centers of the POLIMI, has developed analysis of existing literature and best international practices; definition of parameters describing a system of sharing vehicles; organization of several workshops; identifying the most appropriate vehicles for experimentations. The project includes: design and implementation of service management platform; design of the device using the service; testing of a field test involving also the "Città Studi" area; estimated demand and potential supply; analysis of all the main stakeholders potentially affected by the service.
- **Usability of the offered services**: studies about the orientation and signposting design for an easier use of the main services on campus, also by the inhabitants of the neighborhood.

People and City

New in 2014

1. The "**Documento Strategico**" is a strategic vision for Città Studi, was elaborated in 2013 and completed in early 2014 by the project board. This document was delivered to the Rectors and offered to the public authorities of the municipality of Milan as a starting point for a future rethinking of the Città Studi district.

2. After two years of collaboration within the community and the promotion of temporary activities, the final **design project for the renewal of piazza Leonardo**

da Vinci, the public square in front of the Polimi main campus was delivered by Polimi and Comune di Milano in December of 2014.

3	**Guidelines** for the renewal and redesign of the piazza Leonardo da Vinci were delivered **by students** as a bottom-up contribution offered to the local community.
4	As part of the redesign process of piazza Leonardo da Vinci, an **agreement** between Polimi and the City of Milan for a more flexible **use of the square for organizing events** for the local community, is under study.
5	**"Ripensiamo insieme via Celoria"** is a new co-design initiative started in 2014 for rethinking the road at the core of the district, which connects the two universities of Polimi and Unimi and is currently serves as a linear parking lot only. The initiative started within teaching activities (design studios) but is going to be open to the local community in 2015.

Still running or completed

- The **Smart Plan project** has been completed at experimenting new forms of master plan as environment for aligning resources and activities towards sustainable transformation. This project, in coherence with the Periphèria project aimed at experimenting the effectiveness of open innovation in driving complex systems (as a university campus is) onto a common path towards sustainability without having the ambition to guide rather supporting synergizing and collaboration.
- Several services are under development to increase **accessibility for people with disabilities** (among others: multi-modal communication for internal and external users, design for everyone and multisensory design of open and indoor spaces; accessibility and customizability of services and places).

Principle 2 Targets for 2014

Consolidating the **CO2 accounting** of Polimi as a constant practice for setting up future energy scenarios	✗	The task was not carried out in 2014, but was approved as a task for 2015.
Investigating issues related to **environmental data collection** on campus towards the planning for the **adaptation to climate change**	✓	The work started in 2014 with master and PhD theses and will be further developed in 2015.
Updating the **waste collection management** (in particular hazardous waste) also in conjunction to new regulations (SISTRI) with the adoption of USB devices for the remote control of waste collection	✓	Ongoing work.
Introducing the **separated collection of glass** in the buildings and **organic waste collection** in open spaces	✗	Not carried out in 2014.
Investigating and proposing new solutions to promote policies on **mobility credits** in order to reduce the use of private car use	✗	Not carried out in 2014.
Working on the delivery of **environmental guidelines and criteria for the design and retrofitting of open spaces**.	✗	Not carried out in 2014

Principle 2 Targets for 2015

Consolidating the **CO2 accounting** of Polimi as a constant practice for setting up future energy scenarios.
Investigating issues related to **environmental data collection** on campus towards the planning for the **adaptation to climate change**.
Updating the **waste collection management** (in particular hazardous waste) also in conjunction to new regulations (SISTRI) with the adoption of USB devices for the remote control of waste collection
Introducing the **separated collection of glass** in the buildings and **organic waste collection** in open spaces
Investigating and proposing new solutions to promote policies on **mobility credits** in order to reduce the use of private car use
After several studies and internal discussions, the finalization of the **reorganization of parking lots** inside the campus with the reduction of cars in the central areas of the campus.
Working on the delivery of **environmental guidelines and criteria for the design and retrofitting of buildings and open spaces**.

Overview of Organization's Principle 2 Goals

Theme	Topics	Related Indicators	Goals and Initiatives		Results	
	Priority Topics		Objectives and Targets	Key Initiatives	Performance 2013	Performance 2014
Themes and priority topics identified by the Città Studi Campus Sostenibile project		GRI and STARS indicators, indicators proposed by POLIMI	for reporting year, for the following year, and/or beyond	in reporting year, and /or planned for the following and beyond		
	Principle 2: To ensure long-term sustainable campus development, campus-wide master planning and target-setting should include environmental and social goals.				Principle 2	Principle 2
	Institution-wide carbon targets and related achievements					
ENV	Carbon emissions (organization-wide)		Planning sustainability targets highly depends on the accounting of carbon emissions	The first campus-wide accounting of carbon emissions was completed at the end of 2012		
	Master planning					
ALL	Number of physical actions carried out on campus as reported on the activities map		Diffusing real physical actions in ordert to diffuse the spirit of the project and create awarness	A series of maps showing the actions carried out by the project are included in the ISCN charter since 2012	38	30
	Transportation					
MOB	Frequency of traffic surveys		Understanding and implementing strategies for sustainable mobility	Carried out in 2010, 2007, 2001. The survey is finalized to implement the commuting plan (home/work)		
MOB	bicycle/ebike and pedestrian access		Identifying a networks for cycling on a urban scale; offer of a mobile byke-repair shop service , improve the bicycle fleet available to departments and administrative staff	- Mapping of bicycles paths and "friendly roads" (cyclist app) - Survey on the bicycles available to departments and administrative staff		
MOB	Estimated commute distance or commute energy use per person	Average travel time				
MOB	Internal parking lots		Reorganizing the internal parking lots in order to create new public spaces	Surveys on the time and the usage of parking spaces inside the campus and proposal of transformation scenarios		
MOB	Facilities and promotions in favour of public transport	% Reduction for public transport tickets	Increasing the use of public transport by the community on campus			
MOB	Mobility Management	- number of electric vehicles owned by Polimi	- Management of the main mobility projects and programs - Commuting plan (home/work) useful to improve and support sustainable mobility practices	Activities promoted at the Table concerning the discussion of plans, programs and scenarios - electric mobility initiatives		- 1 electric scooter - temporary agreement with BMW for the use of 4 electric cars available to staff
MOB	Rehabilitation of traffic system and paths within the district of Città Studi		Improving the overall accessibility to the campus from an urban design perspective	Preliminary masterplan to reorganize the road system in the district of Città Studi (with traffic calming measures, securing the crossroads, new pedestrian and byke paths)		
MOB	Urban mobility | Electric car sharing		Implementing an efficient and environmental-friendly urban mobility	Proposal for a ZEV vehicle-sharing system based on an open and dynamic logic.		- agreement for discounted rates for students to subscribe to an electric car sharing company
MOB	Urban mobility | Car pooling		Implementing an efficient and environmental-friendly urban mobility	Online service (carpooling.polimi.it) where it is possible enter travel requests to automatically generate the crews		

	Social Inclusion and protection					
PEO	Diversity (faculty, staff, and students)	- % of faculty members/staff/students on the total number of involved people - % of gender participation	To keep the kind of participants at an appropriate mixed level	Policies already in place by the institution beyond the sustainable campus initiative		
PEO	Incidents of discrimination			Policies already in place by the institution beyond the sustainable campus initiative		
PEO	Access to education (in case of substantial fees)			Policies already in place by the institution beyond the sustainable campus initiative		
PEO	Open access spaces for interaction			Policies already in place by the institution beyond the sustainable campus initiative		
MOB	Access to services and commerce		To improve the reachability of services at the district level in order to reduce mobility patterns	A map with the campus facilities was created in order to orient students on campus		
PEO	Participative campus planning integrating users and neighbors	- number of co-design workshops - percentage of external participants on the total	To activate a wide external (non-academic) participation	Co-design Workshops and participation meetings (Table City)	Inclusion of co-design products in the Campus Sostenibile Plan	
PEO	Working conditions, including minimum wages, collective bargaining, and health and safety			Policies already in place by the institution beyond the sustainable campus initiative		
	Land use and biodiversity					
ENV	Land and building reuse (brownfield development, adaptive rennovations)		-	-		
ENV	Garbage area collection optimization		Improvement of garbage collection	Changing layout, introducing procedures, rules, registers and posters		
ENV	Landscaping impacts and biodiversity					
ENV	Increment of green areas		Reorganization of green areas by including facilities for the POLIMI community	Re-design scenarios for open spaces in progress		
	Outdoor Environmental Quality					
ENV	Outdoor Air quality		Monitoring air quality and working on a campus-wide sensing network	Regional Agency for Environmental Protection (ARPA) contributor and collaboration for air control through central measurement station		
ENV	Outdoor Thermal Comfort		Establishing a methodology to evaluate outdoor thermal comfort and conducting on field surveys (both microclimatic measurements and people interviews) in order to get a sensation map. The goal for the next year is to conclude the field survey with new microclimatic instruments and realize some sensation maps of some significants areas	- Acquisition of equipment for measurements - The proposed methodology to evaluate outdoor comfort was established and tested. Some critical elements were pointed out. The aim for the next year is to solve the critical issues and complete the field survey in 4-6 areas of the Campus in two different seasons (spring and summer)		
ENV	Outdoor Ligthing Comfort					
ENV	Outdoor Acustic Comfort					

Legend: POLIMI Proposed topics | Topics not discussed yet, but to be included as future work

PRINCIPLE 3 – INTEGRATION OF FACILITIES, RESEARCH, AND EDUCATION

Principle 3: To align the organization's core mission with sustainable development, facilities, research, and education should be linked to create a "living laboratory" for sustainability.

On a sustainable campus, the built environment, operational systems, research, scholarship, and education are linked as a "living laboratory" for sustainability. Users (such as students, faculty, and staff) have access to research, teaching, and learning opportunities on connections between environmental, social, and economic issues. Campus sustainability programs have concrete goals and can bring together campus residents with external partners, such as industry, government, or organized civil society. Beyond exploring a sustainable future in general, such programs can address issues pertinent to research and higher education (such as environmental impacts of research facilities, participatory teaching, or research that transcends disciplines). Institutional commitments (such as a sustainability policy) and dedicated resources (such as a person or team in the administration focused on this task) contribute to success.

Management Approach to Principle 3 Topics

The whole People strategy has been developed within a **Living Lab approach** also in coherence with the Periphèria European Project; i.e. it is aimed at looking at the Campus as an open innovation environment where collaborative design learning and assessment are fed by scientific knowledge rooted in the campus activities. One of the main characters of a living lab approach is the creation of **private-public-people (PPP) partnerships** that can guarantee diverse knowledge be involved, diverse interests, diverse approaches to collaboration and innovation.

This approach was possible thanks to the implementation of the **web platform**, which helped in creating awareness of the initiative and enabled the management of a large number of people in the initiative. For the moment, the portal is open to the POLIMI and UNIMI communities, and whose members can propose ideas and projects; nevertheless, everyone can visualize the uploaded comments and proposals. We are confident to open the portal to everyone (in particular citizens) soon, due to the new release of the website.

In addition to the above, surveys to map the **sustainability curriculum** of our university were started. In particular, we focused our attention on the following aspects of our green curriculum:

- mapping the **education curriculum for sustainability** (programmes, courses, workshops, etc.) offered to students. The intention is to map the future evolution of green classes offered by the school. In the year 2010/11, 126 classes – out of a total offer of 3117 activated courses at the POLIMI – are specifically related to sustainability and we are currently investigating the possibility of a labeling procedure (**green cv**).
- Monitoring of **projects started by classes and courses specifically dedicated on the Sustainable Campus project** since fall 2011. For now, about six classes in the Architectural Design programmes used the campus as the design area.
- **Mapping research groups on sustainability** and attempting to involve them to be part of the initiative.

Main initiatives and results

Energy

Still running or completed

- The introduction of a **carbon footprint calculator** on the web-platform is currently under investigation, and was proposed as a way to involve students and the community in general in a deeper understanding of the impact of our daily actions (still running).

People

New in 2014

2 **Advertisement** of the initiative through the presentation of the project inside the **Welcome Kit** given to all the students

3 **Participation to events outside POLIMI, among others**:
- Forum della Sostenibilità 2014 (May 20, 2014)
- Second Annual Conference on Climate Change by SISC (September 29-30 2014, Venice)
- Ecomondo fair (November 5-8 2014, Rimini)
- World Cities WC2 University Network Meeting, working group on 'eco-campus' (September 25-27 2014, St. Petersburg)
- ISCN Symposium 2014 (June, 1-4, Cambridge MA)

4 **Internal dissemination through the organization of seminars:**
- the one day long event with brand **"Giornate dellaSostenibilità 2014: Focus Ambiente"** (March 21 2014) included seminars, a debate, a poster sessions and stands.
- Seminar "Alimentazione e Sport" on nutrition and sport (May 13 2014) organized by UNIMI.
- "**Giornate della Sostenibilità - Le università e la mobilità sostenibile**" initiatives for the European Mobility Week (September 18 2014).
- The two days long event **"Giornate della Sostenibilità 2014: L'arte della Divulgazione: ricerca scientifica, cultura letteraria e comunicazione**

d'impresa." On the connection between the dissemination of knowledge and society (November 13 and 14 2014) mainly organized by Unimi within the activities of the Table Food & Health.

5	The adhesion, the little contribution to the development of the **Sustainability Literacy Test (SULIT)** and its submission to the students of Polimi was carried out in the Fall of 2014. This test was primarily designed to assess students' knowledge on sustainability before graduation. 502 Polimi students filled the form online. Outcomes show that knowledge on sustainability topics has to be improved at the university level.
6	The promotion together with other Italian universities of **a national network of sustainable universities** (Rete Italiana Atenei Sostenibili) to share experiences and sustain initiatives and policies towards sustainable campuses (started in Fall 2013 and ongoing in 2014; launch in 2015)
7	Stronger **communication and promotion of the project through social networks**, in particular through the Facebook page and the twitter account
8	Support to the "BEST Architecture & Design Competition 2014", a **design contest** organized by the Board of European Students of Technology of Milano, and having as the object the design of a sustainable and self-sufficient urban furniture for outdoor working on campus. The prototype of the winning design scheme will be constructed on campus.

Still running or completed

Communication, dissemination

- **Internal dissemination** of the project through:
  - The continuous **implementation of the web portal** www.campus-sostenibile.polimi.it and the plan for a new re-design of the platform in 2014, including the diffusion of the project through social media and networks
  - a series of main initiatives, now collected under the umbrella and brand **"Giornate della Sostenibilità"**
  - **Internal dissemination** of the initiative by installing **stands** and **dedicated showcases** on campus
- **External dissemination** of the project through:
  - presentations of the project outside POLIMI, in conferences and fairs.
  - **Erasmus Staff Mobility**: hosting of colleagues from the Environmental Office of the University of Cordoba, as an occasion of knowledge exchange on administrative and technical management of universities

Students' involvement

- Exhibition **of the theses for a Sustainable Campus** (October 23, 2013) as an occasion to link students' works and sustainability research.
- Exhibition of the **outcomes of the design competition for students** «*Riqualificazione degli spazi aperti del Campus Bonardi*» (March, 2013)
- **Wakhan Thanka**, **book-crossing and cultural exchange on sustainability** organized by students

- Collaboration to the implementation of the **second release of the web-platform**
- **"Stick Around" App**: an application for smartphones to support initiatives for the re-appropriation of public space, by linking events and public space, thus reinforcing the campus identity and social integration. Developed as part of the Smart Campus project and linked to the Periphèria CIP EU project by Archeometra srl.
- **Launch of the "Table City"** (see below the initiatives that were activated)
- Several courses (in the first semester of 2012-13), one of the School of Architecture, one of the School of Design and directly connected to Campus Sostenibile involved up to 100 students; about 30 new proposals have been developed by students and are being up-loaded on the Campus Sostenibile site.

Funding

- **Internal support for fundraising** An agreement with the Area Sviluppo e Rapporti con le Imprese (POLIMI) and Fondazione Politecnico (POLIMI) supports the initiative for fundraising of research projects.

Still running or completed

- "**Urban experiments**" aim at collecting and acquiring ideas to use the **Campus as an urban experimentation lab** to test sustainable, creative and innovative urban solutions, modes, lifestyles. The main goal of this challenge is to transform the urban area around the campus, and the campus itself, **into an integrated urban space**. The main results on this challenge are related to the activities carried out through the Table City in collaboration with the Smart Plan project. The conjunction of these two initiatives gave birth to the idea of a number of project by the Comune di Milano with our support:
  - **RiconquistaMI**, a collaborative services that helps citizens to re-conquest public spaces through the development of a collaborative calendar of activities (called "palinsesto") using and filling the public spaces. For this service, a dedicated app has been developed, "Stick around" tested during the early public events taking places in Piazza Leonardo da Vinci.
  - **MiMuovo**, a calendar of activities and sports for everyone, aiming at re-launching the piazza as a pedestrian public square.
  - **Porta le Margherite in Piazza**, in collaboration with the association "Ci vuole un fiore per Margherita" is an initiative for children aiming at promoting awareness on road safety in the occasion of the re-conquer of the piazza as a pedestrian public space.
- Open participation and discussion about the **renewal of Piazza Leonardo da Vinci**, through:
  - Dedicated meetings and workshops with the local community members
  - Activation of meetings with the municipality (Comune di Milano), the district for a shared redesign of the space
  - Preparation of POLIMI and UNIMI proposals as an integration to the project proposed by the municipal technical offices.
- Design, implementation and launch of the first release of the **web-platform** www.campus-sostenibile.polimi.it in 2011.

- **Activation of initial partnerships**: with UNIMI and with the City of Milano. Both institutions where presenting the Campus Sostenibile Initiative together with POLIMI when it was launched at a Press Conference in September 2011. Memoranda of understanding have already been signed with these two institutions.
- Launch of **challenges**. Challenges (two of which are described above) have two main goals: 1) to crowd source initiatives, ideas, perspectives and projects towards the sustainability perspective of the campus; 2) to activate PPP partnerships while specifying into a project and rooting some of the emerged ideas/solutions within the campus initiatives. They are considered powerful socio-relational activation means, characterized by widely shared goals and loose-coupled design perspectives.
- **Opening of the initiative to civil society** and to the district community with the aim of sharing our projects; in fact, citizens are interested in knowing more about our initiatives and could give us some positive feedback and suggestions. We launched regular meetings with the representatives of the municipality as well as the citizens of the district and the city. In 2011 three meetings have already been carried out involving local inhabitants and public agencies. This activity conducted to the establishment of the Table City in 2012.

Environment

New in 2014

An agreement with the local waste management utility AMSA allowed to bring on campus the CAM (Centro Ambientale Mobile), i.e. a **waste collection truck**. Once a month, CAM will inform the community and collect special and hazardous waste produced by the local community.

Still running or completed

- Reinforcement of **EU** green **public procurements (GPP)** policies, in particular:
  - hygiene products (toilet paper, towels, etc.) in compliance with the EU directive and Ecolabel criteria.
  - in some tenders on the purchase of furnishing for departments
  - adhesion to a number of "green" treaties (Consip) for the purchase of copiers, meal vouchers.
  - adhesion to the convention promoted by the Lombardy Region for the purchase of printer paper according to green criteria.
- The **Wiki** for the collaborative implementation of **guidelines for sustainable behavior** was re-launched during a public presentation and forms of replicability to other contexts are under investigation.
- The **design competition for POLIMI and UNIMI students** (November 2012) titled «*Riqualificazione degli spazi aperti del Campus Bonardi*» for the redevelopment of the open spaces of the Bonardi Campus was completed and design schemes by students were exhibited in March 2013 at the School of Architecture and Society and forwarded to the technical offices.

- In collaboration with the Table People a **Wiki** for the collaborative implementation of **guidelines for sustainable behavior** was proposed in 2011 and launched in 2012 (see above). The guidelines are going to be offered to the community (both students and staff) in order to promote the spread of more environmental-friendly actions on campus (under development).

Mobility

Still running or completed

- **Cyclist monitoring app**: that tracks cyclists' paths on a voluntary basis aiming at supporting the planning of cycling mobility
- **Opening of a web debate on the re-use of car-parking areas** inside the campus through a comparison of different scenarios and the assessment of acceptability. A first open discussion was activated during the Campus Days in October 2012.

Principle 3 Targets for 2014

Finalizing the work on the **green cv** in order to recognize the sustainability path of students	✗	The work was not carried out due to the lack of human resources.
Increasing and collecting the **scientific publications** related to the initiative.	✓	Ongoing work. A number of papers have been submitted for publication to journals and conferences. A number of national articles on pilot projects were published.
Continuing **promoting seminars** and at least two **initiatives** to promote sustainability behavior on campus.	✓	The organization of seminars and initiatives to improve sustainable behaviors is a successful task and became a tradition of the project.
Support **students' participation** to sustainable urban transformation on campus through dedicated competitions and workshops.	✓	Ongoing through: teaching activities, the involvement of students' associations in the redesign project for piazza Leonardo da Vinci, a design contest in 2014. More workshops and contests under study.

Principle 3 Targets for 2015

Continuing **promoting seminars** and at least two **initiatives** to promote sustainability behavior on campus. The 100 years of Città Studi celebrations represent a great opportunity to disseminate the project.
Increasing and collecting the **scientific publications** related to the initiative
Support **students' participation** to sustainable urban transformation on campus through dedicated competitions and workshops. Hot topics of 2015 will be the redesign of the open spaces of "Area Bonardi" and the initiative "Ripensiamo insieme via Celoria".
Continuing **mapping community lifestyle** and sustainable behaviors, for instance: nutrition habits, mobility modes, sustainability knowledge (resubmitting the SULIT)

Overview of Organization's Principle 3 Goals

Theme	Topics	Related Indicators	Goals and Initiatives			
	Priority Topics		Objectives and Targets	Key Initiatives	Performance 2013	Performance 2014
Themes and priority topics identified by the Città Studi Campus Sostenibile project		GRI and STARS indicators, indicators proposed by POLIMI	for reporting year, for the following year, and/or beyond	in reporting year, and /or planned for the following and beyond		
	Principle 3: To align the organization's core mission with sustainable development, facilities, research, and education should be linked to create a "living laboratory" for sustainability.				Principle 3	Principle 3
	Topical integration					
PEO	Programs and projects that connect facilities, research, and education	Number of internships activated within research units or operations	Improving the integration between academic research and students	Possibilities for students to do an internal intership in collaboration with the university research laboratories on the topic of sustainability	10 dedicated internships	14 dedicated internships
PEO	Labeling and number of courses that have an integrated perspective on sustainability as a key component	Number of green courses	Increasing the number of courses that deal with the theme of sustainability	A census of the green courses is ongoing		
PEO	Courses and/or research that transcends disciplines		Promoting interdisciplinary dialogue within the community	Organization of thematic tables and seminars		
	Social integration					
PEO	Programs and projects that connect campus users with industry, government, and/or civil society		Have a deeper influence and integration of the university reseach on sustainability and the society	Agreement of the initiative with different POLIMI offices devoted to enhance the connection between the campus and the external resources: Fondazione Politecnico, Career Service, the Press Office	3 projects funded	
PEO	Programs to further student interaction and social cohesion on campus	-Number of projects, theses by students involved in the project - people registered on the portal and social media analytics	To involve more students on the activated Sustainable Campus initiatives	- The use of social media to attract students in the initiative - A number of theses and projects that have the Sustainable Campus as topic were proposed; some are already concluded and inform the discussion at the tables.	10 MSc theses 1 PhD thesis	1054 users of the portal 179 followers on Twitter 384 "I Like" on Facebook 109 ave. Facebook post reach 2 MSc theses 1 PhD thesis
PEO	Courses that use participatory and project based teaching	Number of courses officially active on the Campus Sostenibile initiative	To enlarge the number of courses having practical involvement in the Campus Sostenibile initiative	Diffusing the initiative among the staff through the Thematic Tables		
PEO	Dissemination of sustainability knowledge produced on campus	- Number of seminars organized by the institution - number of external events attended by our project		- Organization of the 'Giornate della Sostenibilità' initiatives. - Attendance to external events, seminars, fairs on this topic	1 Sustainable Campus Day 3 events/seminars organized 8 internal seminars supported 4 external events attended	2 Sustainable Campus Days 3 events/seminars organized 10 internal seminars supported 4 external events attended
PEO / ENV	Behavioral programs aiming at more sustainable actions by students, staff, or external community members	- Number of initiatives involving students - Number of people involved in the writing of the Sustainable Behaviour Guidelines - Number of uploads in response to the challenge	To engage people in developing sustainable behavioural rules and in behaviours transformation	- Collective writing of the "Guidelines for Sustainable Behavior" - Launch of the Behave!Challenge - Launch of design contests for students - Adhesion to lifestyle surveys of our community (SULIT, nutrition, mobility)	3 design contests	1 design contest 3 surveys launched
	Research and education projects on laboratory/IT facilities and sustainability					
PEO	Research and education on mitigating energy use in laboratories/IT facilities					
PEO	Research and education on mitigating hazardous waste from research/IT facilities					
	Commitments and resources for campus sustainability					
PEO	Existence of an organization-wide sustainability policy that integrates academic with operational issues		Better integrating research, operations and campus-wide sustainability targets	- internal internships at the sutainability and technical offices		2 internships
PEO	Commitment to external sustainability principles and initiatives (this Charter and other)		External commitment to sustainability of our University	- ISCN reporting - Green Metrics reporting	2 international reports on sustainability	2 international reports on sustainability
PEO	Dedicated resources (processes, human and financial resources) for campus sustainability	-Number of people involved -Number of activated/funded projects -External money raised	Incremental increase of the dedicated resources for campus sustainability	- Dedicated research funds for projects on the campus (304,000 Euro from taxpayers donations) - Establishment of the sustainability office with 2 to 3 full-time people	3 HR (Sustainability office) 1 research fellow	3 HR (Sustainability office) 1 research fellow

Legend: POLIMI Proposed topics | Topics not discussed yet, but to be included as future work

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