




# The role of universities in supporting institutions to the target of net-zero emissions

COP27 – side event - Italy Pavilion  
Sharm el-Sheikh - November 16, 2022


Michela Gallo

University of Genoa


UniGe is one of the oldest major European universities and one of the most renowned multidisciplinary public universities in Italy, with excellence in various scientific and technological fields.




**1481**  
year of foundation



**5**  
Schools



**22**  
Departments




**4**  
campuses




**32.000+**  
students including 3000+ international students



**3.000**  
international students



**5.000+**  
graduates per year




**130+**  
degree programmes including 17 in English



**28**  
PhD courses




**120+**  
Agreements with private enterprise and public institutions




**110**  
different nationalities




**4.300+**  
researchers including 1200+ tenured professors



**450**  
research fellows and post-docs



**3°**  
among big Italian universities in internationalisation



**28 M€**  
research grant funding per year



**Top 1.5%**  
international ranking



# UniGe for sustainability

2013	First inventory of UniGe GHG emissions
2015	Creation of permanent Rectoral Commission on Environmental Sustainability
2016	UNICA GREEN PLEDGE subscription
2016	UniGe membership of the RUS
2020	Creation of UniGe Working Group on Sustainability
2021	In its Strategic Plan, UniGe explicitly adheres to the 2030 Agenda and identifies Sustainability as one of the 5 strategic lines
2022	Approval of the Climate Strategy - Climate Neutral by 2030 Creation of the SUSTAINABILITY SECTOR and staff



# Research - RUS Best practices

Universities create synergies and partnerships on the topic of circular economy, identifying topics of interest for businesses and territory, and identifying research topics

“**UNITI - CIRCULAR ECONOMY**” is a place of meeting and co-development where universities, territory and enterprises meet to activate synergies and partnerships on the topic of circular economy. The programme envisages the collection and identification of topics of interest for businesses and the territory through interviews with the organisations belonging to the “UNITI-circular economy” ecosystem, and identification of research topics with the highest application potential - **Università degli Studi di Padova**

[The UNITI-Circular Economy project is launched - UniPadova Sostenibile \(unipd.it\)](https://unipadova.it/it/temi/la-proiezione-della-circular-economy)

“**DEMANUFACTURING LAB @ POLIBA**” at Polytechnic of Bari wants to teach students about recycling and reusing of everyday items. To date it’s focusing on a project about extracting secondary raw materials from photovoltaic panels. This new process is more efficient and sustainable, using clean technique based on cryogenic temperatures, that reduces the use of virgin raw materials and damage to the environment and health risks - **Politecnico di Bari**



# Research - RUS Best practices

Universities support best practices on renewable energy that can be implemented and reproduced at the city level, designing residential and industrial districts characterized by distributed generation units and efficient buildings

“**RENEWABLE ENERGY COMMUNITY**” of the Politecnico di Milano is supporting the development of photovoltaic energy on its buildings with the creation of a **Renewable Energy Community** that will involve dozens of buildings outside the University and hundreds of citizens, in order to maximize the use of energy from the plants and return benefits to citizens, consistent with the role of each public body - **Politecnico di Milano**



# Savona Campus Living lab

Universities realize smart grid to provide electrical and thermal energy and plan self-sufficient zero emission buildings

In the “**LIVING LAB of the Savona Campus**” different projects on sustainability have been deployed with the collaborations of public and industrial organisation. In particular, two infrastructures have been created: a **Smart Polygeneration Microgrid** providing electrical and thermal energy to the Campus area and a **Smart Energy Building**, a self-sufficient zero emission building. These projects allowed to reduce the energy bill and the CO<sub>2</sub> emissions as well creating at the same time a comfortable working environment for the Campus users. Moreover, different companies, public entities and universities are developing Research and Development activities in collaboration with the researchers with the goal of creating innovative hardware and software products for smart microgrids and smart buildings. This “**living lab**” allowed to define several sustainability best practices to be reproduced at the city level designing residential, tertiary and industrial districts characterized by distributed generation units and efficient buildings - **Università degli Studi di Genova**



# Savona Campus Living lab

## The Smart Polygeneration Microgrid



### Natural gas turbines

- Production of electricity
- Production of thermal energy



### PV plant

- Production of electricity
- 395 panels



### Absorption chillers

- Buildings cooling in summer



### Electrical storage system

- Electrical energy storage



### EV charging stations

- 2 quick AC charging stations
- 1 V2G type



### Grid control

- Smart meters
- SCADA system
- Energy Management System

## The Smart Energy Building



### Geothermal plant

- Production of heating energy
- Production of cooling energy



### PV plant

- Production of electricity
- 85 panels



### Solar thermal collectors

- Production of hot water



### High efficiency lighting

- low-consumption LED lights
- presence sensors



### Rainwater collection system

- recycled water used for irrigation purposes and toilet flushing



### Mechanical ventilation plant

- Cleans and humidifies the air inside the building



### Technological Gym

- 2 quick AC charging stations
- 1 V2G type



### Building control

- Building Management System interacting with the Energy Management System of SPM

# The Re-Generation Platform

## Ecological intelligence for regenerative development

The re-generation platform facilitates the system-wide ecological transition to regenerative economy by:

- introducing a voluntary system facilitating access to ESG and GHG reporting;
- linking environmental footprint disclosure and investment in local climate contributions;
- stepping up net-zero emissions and transformative climate resilient development;
- highlighting local initiatives to contribute to climate global challenges;
- enhancing the catalytic role of finance for scaling up climate action.

{Adriana Del Borghi, Vienna Eleuteri, Michela Gallo}





# The Re-Generation Platform



**CARBON FOOTPRINT**

**WATER FOOTPRINT**

**ECOLOGICAL FOOTPRINT**

**REGENERATIVE DEVELOPMENT**  
net-zero emissions and transformative climate resilience

- ✓ THINKING GLOBAL, ACTING LOCAL
- ✓ RESULTS AND MONITORING ORIENTED
- ✓ ROBUST METRIC
- ✓ SCIENCE BASED METHODOLOGY
- ✓ BEYOND OFFSETTING
- ✓ RESTORATION
- ✓ BACK TO TERRITORY
- ✓ IN LINE WITH EU DIRECTIVES ON SUSTAINABILITY AND ESG

**CARBON UPTAKE**

**CLEAN WATER**

**LAND**

[www.re-generationplatform.com](http://www.re-generationplatform.com)      [info@re-generation.com](mailto:info@re-generation.com)



Michela Gallo

University of Genoa

[michela.gallo@unige.it](mailto:michela.gallo@unige.it)

[unigesostenibile@unige.it](mailto:unigesostenibile@unige.it)