

The Ecological Footprint of the University of Siena

The University of Siena participated to the design, creation and implementation of the University Footprint Calculator (<https://eusteps.footprintcalculator.org/>) as a partner of the Erasmus+ EUSTEPs project (<https://www.eusteps.eu/>). The University Footprint Calculator is an open digital tool, that allows calculating the Ecological Footprint of universities based on their consumptions for running the activities and operations needed to provide education, conduct research and raise awareness in the civil society and identifying interventions area for reducing their environmental impact.

The EUSTEPs University Footprint Calculator is the first digital tool that allows Universities to monitor and manage their consumption of natural resources and ecosystem services via a standardized methodological approach – Ecological Footprint (EF) Accounting – specifically tailored for the use at the HEI level.

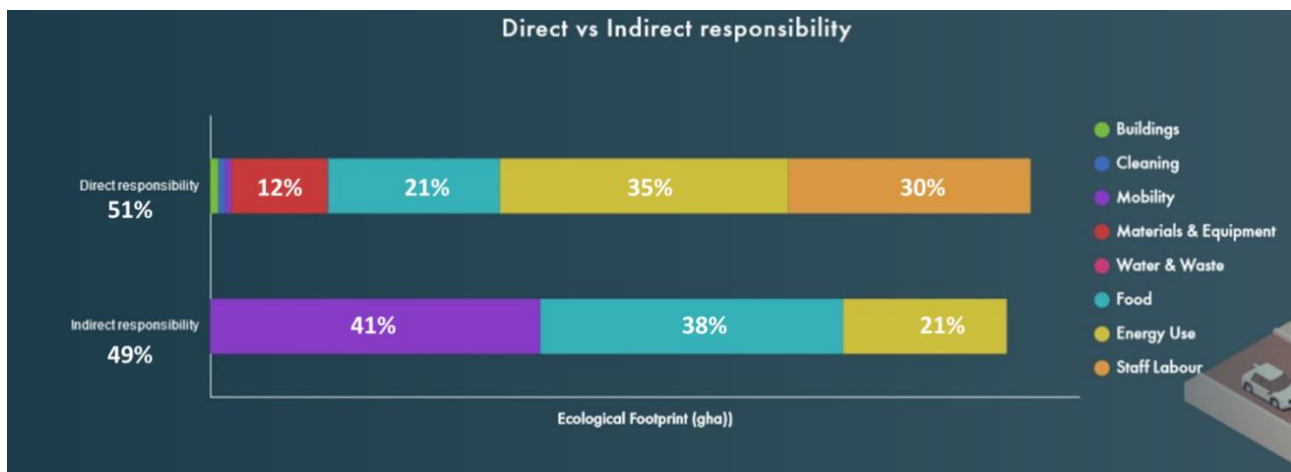
The Ecological Footprint of a University considers two domains:

Direct, that groups together services, operations and infrastructures necessary for the University education, research, and administration activities. These services are directly managed and/or controlled by the University administration, which is responsible for making decisions relating to them)

Indirect, that includes activities made by the University's staff and students that take place outside the campus, but related to studying, research, or teaching programs. These activities, such as, for instance, mobility, food and electricity consumption, are not under the direct control of the University administration, which can only have a minimal and indirect influence on them.

Based on this, within the **direct control domain**, services considered are: consumption related to the **energy use** (for running infrastructure and facilities within the campus); **University buildings and recreational areas** (in which facilities are located); **food for staff and students** (provided in University canteens and cafeterias); cleaning services (within the Campus); **travels** (within and away from the University for teaching, research, or administrative purposes); **water use and waste management; materials and equipment** (key purchasing). Within the **indirect domain**, three categories are considered: **commuting** (from home to the University and vice versa) depends on individual choices and travel options to reach the place of work or study); **energy at home & internet connectivity** (when staff and students work or study from home, they consume electricity and heating energy and use internet traffic data for working, browsing and researching on internet for education or teaching purposes); **food at home** (which is consumed outside the University specifically when studying or working from home).

The first year for which the Ecological Footprint of the University of Siena was assessed is **2019**.



In 2019, the University of Siena had a total Ecological Footprint of 9,295.45 global hectares (gha). About **51%** (4,716.4 gha) of it was due to the implementation of activities under the **Direct Responsibility** of the University's administration, and the remaining **49%** (4,579.05 gha) to activities under the administration's **Indirect Responsibility**.

Regarding the Ecological Footprint under the administration's Direct Responsibility, energy consumption was found to be the main driver (1,658.66 gha - 35%), followed by staff labour (1,393.32 gha - 30%), the provision of food in University canteens and cafeterias (978.13 gha - 21%) and, finally, materials & equipment (549.69 gha - 12%). Carbon uptake land (67% of the total), cropland (18%) and forest (5%) were found to be the ecosystems under the highest anthropogenic pressure.

To estimate the Indirect responsibility, default calculation is applied (namely daily per capita consumption Footprint in each country – calculated by the Global Footprint Network – GFN allocated on the basis of the share of time spent at home for work (staff) or study (student). To this aim, 3 indirect categories are considered: food (1,741.75 gha - 38%), commuting (1,896.11 gha - 41%) and energy use at home (941.19 gha - 21%). The ecosystems under the highest pressure are carbon uptake land (64%), cropland (22%) and forest (6%).

To sum up, UNISI Footprint results, broken down for each activity, are now an instrument that helps the administration understand to what extent each activity and operation contributes to the total Footprint of the campus, and identify the priorities to lower such impacts. Conversely, results by land type indicate the ecosystems that are most impacted by the operations and activities of the University of Siena.

The year 2019 represents the baseline for future evaluations and monitoring purposes of the Ecological Footprint of the University of Siena.