

POLITECNICO DI TORINO
FIRST SCHOOL OF ARCHITECTURE
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Honors theses

Evaluating the university urban district: services and integration with the surroundings. The case study of the Politecnico di Torino

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There are a number of urban dynamics that involve the university campus as a spatial node: the exigency of adopting evaluation systems that provide the essential guidelines to define the university campus's sustainability level arises from the need to define the relationship between university and the city.

After having understood such dynamics, it has been essential to comprehend which was the right direction to follow in order to evaluate a university campus as the Politecnico di Torino, the case study, which is: (i) much more permeable if compared, for example, to the Japanese campus of Hokkaido (see Figure 1) (since, differently from this one, the Politecnico has not a physical separation from the outside); (ii) in a closer connection with the urban context (since it is a campus in which some essential services are needed, users search for them in the surroundings) (see Figure 2).



Figure 1 The *university campus of Hokkaido*



Figure 2 *The Politecnico di Torino and the connection with the urban context*

In this sense, actual evaluation systems have been described, verifying their possible suitability to evaluate the sustainability of a university campus in an urban context, by measuring the following aspects: (i) land use; (ii) integration with the surroundings; (iii) mobility; (iv) accessibility; (v) services.

Being absent a suitable system, it has been necessary to do a complete analysis of the metrics contained in the framework of the UNI-metrics project, by demonstrating their partial inapplicability to the case study. In this regard, the same metrics have been subdivided into homogeneous groups: (i) metrics being part of the actual building certification systems and the experimental ones, for which it has been necessary to modify the calculation approach or to make them more flexible, by adopting the instrument of the social research and defining the application limits by the isochrones lines (see Figure 3); (ii) metrics being part of the STARS protocol and the new ones, born to be applied to a university campus, but not suitable for the case study of the Politecnico di Torino and, for this reason, reworked.



Figure 3 *The Politecnico di Torino and the isochrones lines*

At the end of the metrics' calculation, general guidelines have been provided for a future evaluation of a similar university campus, in order to direct who wants to use them toward the necessary operations to obtain a result for each metric, by following a specific process and adopting the most suitable devices.

A possible future step of the work consists in the elaboration of a reference benchmarking. In particular, the metrics calculation allows to reach a value corresponding to the specific object's performance level; since the metric has to be calculated to understand this level, we need a reference parameter to establish whether the level is optimal or not. As a result, it is necessary to have benchmarking values, referred, if possible, to legislative standards and existent normative. Despite this, there are many qualitative metrics, for which the benchmarking is a more complex operation: it is essential, in this case, to find out the right parameter and to succeed in an objective evaluation.

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