

POLITECNICO DI TORINO  
SECOND SCHOOL OF ARCHITECTURE  
Master of Science in Land, Town and Environment Planning  
**Honors theses**

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**Environmental sustainability assessment at urban scale.  
Requirements, indicators and good practices in urban sprawl**

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The eco-sustainability at the urban scale is a relatively new and innovative theme. Building codes and rating systems have mandatory and voluntary standards aimed at improving the energy efficiency and environmental impact of buildings. Urban plans needed the require compliance of specific territorial requirements\*. The conjunction between urban planning and architectural design concern those portions of land that can be classified as town and city, access roads, public spaces, etc. For those areas rarely exists a system of energy and environmental requirements designed and planned to ensure comfort for users, with integration among the functions and established conditions of preservation and environmental protection.

The thesis was aimed at investigating the above mentioned conjunction described by: a process of land classification, identification and development of criteria and indicators appropriate to the scale considered, the development of good practices considered.

The research activity was organized in three parts. The former part found the scope of the assessment model based on an analysis of the various forms generated by the processes of urbanization of suburban areas, according to various levels of detail.



Methodological process flow-chart

In the second part, the AVA model was developed. The model placed its bases on the process of methodological and cultural hybridization between architectural design and city planning. It was necessary to define and develop a "code" of requirements and ad hoc indicators able to assess the urban space, divided according to thematic systems:

- outdoor spaces system;
- mobility system;
- waste system;
- green system;
- settlement system;
- land-use system;
- energy use system.

REQUISITO			
A. Attrezzabilità del sistema verde urbano			
INDICATORE			
A1. Dotazioni attrezzature gioco bimbi			
DESCRIZIONE			
L'indicatore valuta la presenza di uno spazio attrezzato per il gioco bimbi, appositamente delimitato in modo da assicurarne la protezione da utilizzazioni improprie [deve essere, ad esempio, impedito l'accesso ai cani].			
VALUTAZIONE	Ottimo	3	Dotazione di almeno 2 altalene e 1 scivolo, con panchine e cestini in prossimità dei giochi
	Buono	2	Dotazione di un solo scivolo o altalena con panchine e cestini
	Sufficiente	1	Dotazione di un solo scivolo o altalena, senza panchine e cestini
	Insufficiente	0	Mancanza totale di attrezzature per il gioco
MODALITÀ DI VERIFICA	Quantitativa	Presenza/numero di attrezzature [fonte dati: sopralluogo, rilievo fotografico]	
	Qualitativa		

Example of a datasheet concerning the assessment of the green system

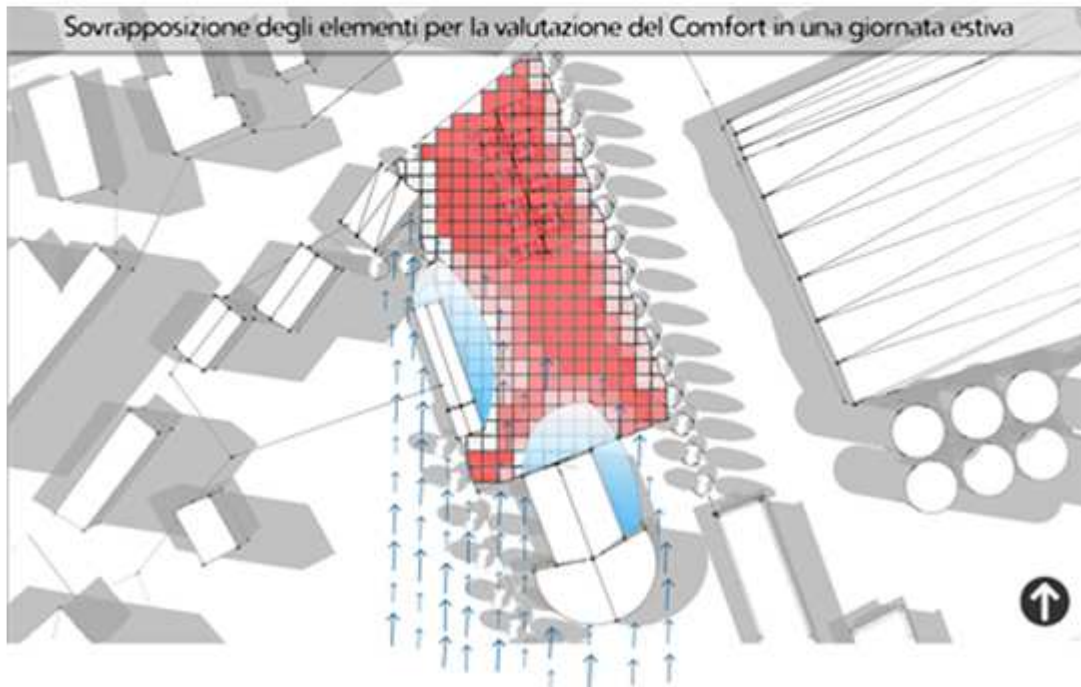
During the development of the thesis a Focus Group was organized. It aimed at “weighting” the requirements in relation to some specific objectives defined in the activity. The purpose of requirements-indicators system is to check what the area has to offer, with particular reference to the conditions of existing settlements.

**D. VALUTAZIONE REQUISITO: CONTROLLO DEI FATTORI D'INCIDENZA SUPERFICIALE DELLA RADIAZIONE SOLARE**

punteggio complessivo	1
D1. fattore d'incidenza superficiale della protezione solare	0
D2. fattore d'incidenza superficiale dell'esposizione solare	3

**E. VALUTAZIONE REQUISITO: CONTROLLO DELLA VENTILAZIONE**

punteggio complessivo	1
E1. fattore di esposizione ai venti estivi	3
E2. fattore di protezione dai venti invernali	0



### Case study evaluation

In the last part a case study was selected in order to apply the AVA model. The town assumed as case study was Cerrina Monferrato (AL).

The outcome of the analysis and assessment procedure allowed to identify the main problems characterizing the settlement studied. Such characterization was helpful in the following organization of meetings with citizens and stakeholders in order to set a first selection of retrofitting and requalification actions according to the AVA model and consistent to social needs.

\*Such as SEA (strategic environmental assessment)

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