

WFUF TOPIC : 3.2 (FUTURE - Changing places and spaces)
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Seismic Green Infrastructure: EKSOTECTURES & EKSOSCAPES

Ferdinand Ludwig (TUM - DE) – Stefano Panunzi (UNIMOL - IT)

Italy is a highly seismically active region. Moreover, Italy has plenty of old buildings. When combined, the two aspects can lead to serious and fatal damage. Since demolition and reconstruction is not an adequate solution, many buildings are retrofitted by external supporting structures. These structures are obviously a technical emergency solution that denies any significant design contribution. At a second glance, however, this eksoskeleton construction offers great potential: it can be used to supplement missing spaces, add multiple additional uses and update technical infrastructure (EKSOTECTURES). Moreover, these elements could serve as support structures for vertical plant systems and thereby form new biotopes and thus can become an essential part of urban green infrastructure (EKSOSCAPES).

In a first step of the collaborative research project concepts for the Italian City of Campobasso were developed, among other things, an analysis of particularly earthquake-prone buildings was superimposed with the city's green developmental plan. Based on this a "seismic-green-masterplan" was developed. It consists of different strategies that use the technically necessary retrofitting of existing buildings as a chance to create and enhance green urban corridors – nature based solutions for urban health and safety.

In a second step we will examine in what way living trees could play a role in eksoskeleton structures to stabilize the buildings and to damp earthquake induced vibrations. This forward-thinking approach is based on finding that forest are able to mitigate the seismic waves, that strangler figs are able to strengthen their host tree and to protect it against hurricanes as well as on first findings on the supporting structures made of living tree roots by the Khasi People in India.

In our talk we will present results as well as the scientific and methodical basis for the upcoming research steps.

Keywords:

baubotanik, green infrastructure, earthquake, exoskeletal retrofitting, living architecture