1st INTERNATIONAL SUSTAINABLE STONE CONFERENCE
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**INTRODUCTION**

The Italian Stone Sector is composed of about 10,000 companies and 50,000 employees and produces every year a trade balance surplus of about 1.6 billions of euro. The Apuan Versilian District, or Carrara Marble District, is world wide known as the center of excellence in mining and processing of stones. However, in recent years the market shares of European stone prerogative of Non-EU countries are rapidly increasing. This raised a profound debate on the competition based on price advantages resulting from low production costs, largely due to an almost total lack of attention to issues of social type (low wages, safety at work, characteristics of employment) but also environmental pollution and land degradation. In response to this situation, in many European countries demand for stone eco-friendly products is growing. It is therefore essential that operators become aware of this new trend and that they to understand, as soon as possible, what is the frontier of innovation in this “new” sector so that they can intercept the growing demand for environmentally sustainable products.
The management of the marble districts and the definition of new environmental policies through the integrated contribution of Life Cycle Assessment and GIS

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Abstract
The aim of this paper is to show the results of a research work related to a different way to manage stone’s districts, in order to obtain environmental improvements. The extraction and the processing of natural stone imply a considerable environmental impact, both on the production area and on the global scale, with a consequent penalization of the environmental profile of the product. The main causes are related to the high production of pre-production scraps and to the high energy consumption. The research highlights the potential role that a “district” can have on the radical transformation of the current production system (linear model) in a more sustainable modus operandi (circular model) from the environmental point of view, but also more competitive in economic terms, through the reuse/recycling of scraps in the same or other sectors. The require of the proactive contribute of the “district” comes from the peculiarities of the natural stone’s sectors, currently characterized by many small companies, that, even if they excel from the production point of view, they fail in the effort to transform their business system in a more environmentally sustainable production system. In many cases, this shortage is due to the inability of small companies to set up an individual research and development area. Therefore, the concentration of research activities within the district and the structuring of a “management platform” for the government of the territory and of the flows deriving from the industrial activities, could stimulate various profitable initiatives for local companies, territory and environment. According to this logic, the research suggests a “management platform” prototype structure, to be implemented within the district, aimed at monitoring the district’s territory in order to find possible chain additions (industrial ecology) for the benefit of the whole territory. The research propose a management platform that, in order to assess the scenarios that can be pursued at a local and national level, collects data on environmental impacts and on materic flows through the Life Cycle Assessment and contextualizes them on a local scale with the helpful contribution of Geographic Information Systems (transposition of indicators on GIS mapping). A system structured in this way, allows a whole view of the impact of processes that can be activated on a territory. For example, referring to the impact generated by quarry activities, the combined contribution of LCA and GIS can provide information on the efficiency of the extraction system or the productivity of the quarry. Similarly, in order to identify strategic scenarios for the recovery of scraps/waste, the GIS can provide information on the location of the scraps/waste on the territory and the LCA can provide effective support to quantify the environmental improvement achieved through a supply chain innovation.