

The case study of the industrial Ceramics District: integrated analysis of land use changes

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SOIL AND PLANNING

The study area includes the municipalities of Casalgrande, Castellarano, Castelnuovo Rangone Castelvetro of Modena, Fiorano Modenese, Formigine Maranello, Rubiera, Sassuolo, Scandiano, Serramazzone and Prignano sulla Secchia: except for the last two, these Municipalities are all part of the so called "Sassuolo-Scandiano ceramic district".

This paper is intended to analyze changes in land use of an area characterized by a deeply-rooted industrial production vocation, which has remained unchanged over several years despite cyclical economic downturns.

This analysis pursues two objectives: first, to acquire and disseminate a deeper knowledge of the area and its history; secondly, to provide useful tools to assess the effects of that history on environmental, landscape and socio-economic components of the study area.

MATERIALS AND METHOD

The analysis consisted in comparing the "1954", "1976", "2003" and "2008" land use maps produced by the Emilia-Romagna Regional Authority.

Since they are characterized by captions and different minimum areas, a common caption has first of all been defined related to all maps (fig.2); then, maps with smaller areas have been generalized to make them comparable with the less detailed ones.

Land use changes have been analyzed with a specific focus on the caption "items" related to manufacturing activities and built urban areas.

Furthermore, since the phenomena that characterize land use evolution often significantly differ in lowland areas than those in hills or mountains, these two areas were separately studied.

A further analysis focused, instead, on so-called SIN areas (Sites of National Interest), according to the definition provided by the Ministerial Decree DM 26/02/03 under the project "Feasibility study for the remediation of surface aquifer in the ceramic district of Modena and Reggio Emilia" (Resolution 1838/2007).

As far as the latter are concerned, a specific land use caption was used, including 5 items (building, storage area or square, parking area, area for agricultural use, area devoted to other uses) and an interpretation of images related to 1974-78, 1998, 2003 and 2008 periods was provided.

RESULTS AND DISCUSSION

Observing the trends in land use changes in the ceramic district from 1954 (taken as the "year zero" of the analysis) to 2008, the phenomenon that emerges most clearly is the increase in production and residential areas to the expense of farmland (557 only between 2003 and 2008).

The new residential areas are located both in the territories in the foothills, concerned by the sprawling of the old urban centers especially during the 70s, and on lower hill slopes and lowlands, where the urban sprawl phenomenon is more evident.

Instead, since 1976, business and manufacturing areas are mainly concentrated in lowlands and vallies.

In the period between 1976 and 2003 (Figures 1 and 3), the farmland decrease is also attributable to the abandonment of arable land in hilly areas, followed by a re-naturalization and reforestation phase, which has substantially declined in the subsequent period.

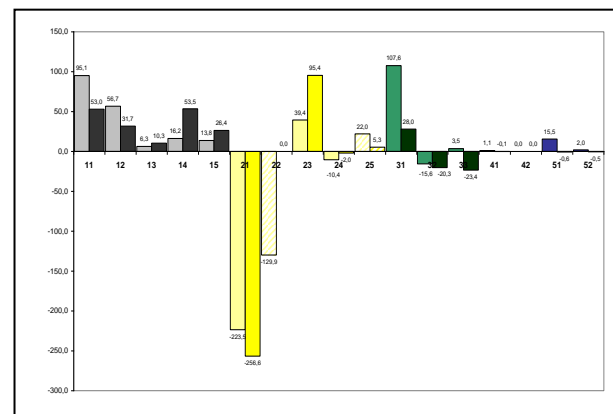


Figure 1 – Land use changes in ha/year in the study area between 1976 and 2008

Land use classification		
Artificial surfaces	Urban fabric	11
	Industrial or commercial units	12
	Transport units	13
	Mine, dump and construction sites	14
	Artificial, non-agricultural vegetated areas	15
Agricultural areas	Arable land	21
	Arable land planted with trees	22
	Permanent crops	23
	Pastures	24
	Heterogeneous agricultural areas	25
Forest and seminatural areas	Forests	31
	Scrub and/or herbaceous vegetation associations	32
	Open spaces with little or no vegetation	33
Wetlands	Inland wetlands	41
	Maritime wetlands	42
Water EBodies	Water courses	51
	water bodies	52

Figure 2 – Land use caption

1976-2003	% on the District area	Causes
Arable land consumption	from 59% to 48%	Urbanization and reforestation
Reforestation	from 8% to 14%	Abandonment of agricultural areas and growth of shrubs or herbaceous vegetation
Urbanization	from 4% to 8,9%	Arable land consumption
Growth of industrial and commercial units	from 3% to 5%	Arable land consumption

Figure 3 – Main phenomena between 1976 and 2003

The focus on SIN points out that land use changes in areas affected by contamination mainly occurred in areas adjacent to actual production activities (parking & storage).

The urban regeneration percentage, i.e. land re-use for manufacturing or residential purposes, is rather low (<20%) and it is mainly concentrated in the period between '76 and 2003, whereas it actually suffered a setback in the following period.

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