MONITORING SOIL CONSUMPTION: STRENGTHS, WEAKNESSES, AND EFFECTIVENESS OF DIFFERENT MONITORING APPROACHES IN ITALY

Aldo Treville [(1)];

(1) PhD candidate in Territorial Design and Government (GPT) at Department of Architecture and Planning (DiAP), Polytechnic University of Milan, p.le Leonardo da Vinci 32, I-20133, Milan, Italy
aldo.treville@gmail.com

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ABSTRACT

The oral contribution aims to review some of the monitoring approaches in soil/land consumption available in Italy.

The first part introduces the judicial framework, the theoretical and practical approach to the definitions of soil protection and soil/land consumption.

The second part focuses on indicators and monitoring soil/land consumption, briefly presenting some experiences ongoing in Italy, and critically highlighting their potential and their limits in the pursuit of limiting soil/land consumption.

The last part provides suggestions about exploring the potential of using specific indicators in Strategic Environmental Assessment of urban and territorial planning, such as evaluating the baseline scenario, assessing alternatives and monitoring.

SOIL PROTECTION AND LAND CONSUMPTION LIMITATION

Soil has a generally underestimated value in land use planning, and it should be considered as important as other resources in the pursuit of sustainable development.

Studies from the last 50 years have provided lots of references to the soil/land value as a “common”, and its intrinsic fragility (Hardin, 1968, Diamond, 2005), bringing up the issue of a consequent need for governing and protection (Ostrom, 2006). Recent Italian judicial cases (i.e. TAR Brescia 16/11/2011) have confirmed the interpretation of soil as a common, as a non-renewable resource.

Besides the strong social and cultural value, from an environmental point of view, soil has demonstrated a fundamental contribution to several functions in the fields of climate change/ CO2 sequestration, ecology system and biodiversity, groundwater recharge, food and agriculture, landscape.

Considering official and draft European documents (i.e. Report on best practice for limiting soil sealing, 2011), soil consumption refers to the concept of “land take”, also known as “urbanization”, “increase of artificial surfaces” and represents an increase of settlement areas (or artificial surfaces) over time, usually at the expense of rural areas.

Given the evidence of the need for governing land consumption while preserving soil value, soil protection has consequently become an increasingly important objective.

From this perspective, the European Commission adopted a “Soil Thematic Strategy” (COM 231, 2006) and a proposal for a “Soil Framework Directive” with the objective to protect soil across the EU, acknowledging its socio-economic as well as environmental importance for the community (COM 232, 2006).

INDICATORS AND MONITORING SOIL/LAND CONSUMPTION IN ITALY

In the last few decades in Italy, there has been massive urbanization disproportionate to the demographic increase, and mostly in the Po Valley, where each day 200.000 m2 are urbanized, “about 30 soccer fields” (CRCS Report, 2011)

Italy, unlike most European countries, does not have a national spatial development plan, nor a definition of soil sealing limits and targets (like in Germany, UK, Austria).

The availability of data on soil/land consumption is the starting point for any further consideration and assessment on land use policy.

While land consumption is on the agenda of various European governments and integrated data is available, in Italy there is neither a national framework nor a database on land use despite the high number of territorial IT systems (Pileri, 2009).

Different approaches coexist in monitoring soil/land use and consumption in Italy, each with different aims and tools.
Among the most relevant approaches for the purpose of this presentation there are:

- European Corine Land Cover (data created in 1990, 2000, 2006);
- Eurpoean LUCAS (Land Use/Cover Area frame Statistical Survey done in 2001, 2003, 2006,

- 2007, 2009);
- Eurpoean ETC-LUSI-Eionet HR Built-Up Areas (project ended in 2008);
- European and Italian statistical approach (Eurostat, Istat), i.e. ISPRA and Consiglio per la ricerca e la sperimentazione in agricoltura (a statistical approach, report about soil sealing published in 2011);
- Sistema Informativo Nazionale per lo sviluppo dell'Agricoltura (SIN project, promoted by the Italian Minister of Agriculture);
- Tavolo interregionale per lo sviluppo territoriale sostenibile dell'area padana-alpino-marittima (an interregional agreement on analysis, tools and policies for limiting land consumption, 2011,);
- Regional experiences, such as the monitoring system of Regione Lombardia (DUSAF, a database with a detailed characterization of land use and land cover for 1999, 2005, 2006, 2007), Emilia Romagna (vectorial maps 2003, 2008), Friuli Venezia Giulia (maps 1980, 2000), Sardegna (2003, 2008);
- Osservatorio Nazionale sui Consumi di Suolo, ONCS (report done in 2009) and Centro di Ricerca sui Consumi di Suolo, CRCS (reports done for 2009 and 2010);
- local experiences at Province level (Provincia di Trento) and at Municipal level (such as monitoring in Masterplan);
- ONG experiences, such as Fondazione Cogeme Onlus (monitoring land consumption in Pianura Sostenibile project);
- Universities (Geostatistical approach at university of Bologna) and other contributes (Società Geografica Italiana, etc.)

The presentation will explore strengths and weaknesses of these different approaches, and will critically highlight their potential and their limits for the pursuit of limiting soil/land consumption.

They are extremely different in their main purpose (economic, environmental) and especially in their methodology and choice of indicator.

For instance, some of them consider a methodological approach based on "the transition matrix" (Pontius et al., 2004), bearing in mind the "triangle of transformation" (Pileri, 2009). Besides the "flow model", also the "difference model" is currently used; it evaluates only the cumulative difference of land cover change in two different years. The interpretation of the results may significantly differ, on the basis of the different aggregation of data.

The selection of indicators is also fundamental; among the others, the evaluation of land use/cover transition can be represented by indicators that measure: land use at different times (i.e. every year), change of land use (different timeframe), land take per capita, rapidity of the transformation, incidence of the transformation compared to the original land cover stock.

A thoughtful analysis of the different approaches might be useful to have a comprehensive idea of the available status quo and to understand their validity and their effectiveness towards the aim of monitoring land consumption limitation, as defined at European level for all the members.

MONITORING SOIL CONSUMPTION IN S.E.A. FOR LAND USE PLANNING

According to SEA Directive, competent planning authorities are obliged to accomplish a systematic assessment of all significant environmental impacts of regional land use plans (Art. 3 para. 2). Using appropriate indicators, SEA:

- evaluates the likely significant effects on the environment, including issues such as soil, water, air, landscape;
- includes monitoring (i.e. on land consumption): the SEA Environmental Report, part of the Plan official documents, must include the "monitoring plan" (Article 10, SEA Directive).

SEA has the potential of including specific indicators in land use planning for monitoring land consumption (useful also in evaluating the baseline scenario, assessing alternatives and monitoring effectiveness).

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