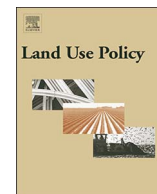




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Land use: The perception of risk by the citizens and local administrators in the North of Italy

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ABSTRACT

Soil is a non-renewable resource and a very dynamic system, which delivers vital services to human activities for example guaranteeing food autonomy of countries and ecosystems survival. Nevertheless, in recent years the "land use", a negative and multidimensional phenomenon that still does not have a univocal definition, has become a critical issue. The most evident characteristics of this issue are represented by the expansion of urban areas (urban sprawl) and the impermeability of agricultural land and natural areas, which often occurs in valuable plain areas, which are most fertile and productive. The knowledge and the analysis of technical and objective data are essential to understand the evolution of "land use" but, on the other hand, it is equally important to undertake research on the perception of this phenomenon in citizens and local administrators. In this regard, we assessed the dimensions of "land use" in a definite territory of northern Italy and evaluated the perception of this problem in citizens and local administrators of the same geographical area. The results of our study showed that raising awareness in the population is a very helpful tool to stimulate sustainable actions oriented to human development. A new cultural paradigm could help to encourage reflection on local sustainability and new policies that go farther than individual administrative mandates, promoting social responsibility of local administrators towards future generations.

1. Introduction

Soil, a non-renewable resource, is a very dynamic system that carries out many different functions and supplies essential services related to human activities and/or to the survival of ecosystems (EC, 2006a). The deterioration of soil can be determined by several agents or factors such as landslides, desertification, erosion and floods (Amato et al., 2015). However, in recent years the major concerns regarding this issue have been raised by the gradual and inappropriate land consumption caused by the progressive urban sprawl (Giovannini, 2012; Amato et al., 2015). The "soil consumption" or "land use" is a multi-dimensional concept, that currently has not yet a single and univocal definition. The most obvious and important characteristic of this phenomenon is represented by the significant expansion of urban areas that, consequently, caused the waterproofing of natural surfaces (Giovannini, 2012).

Actually, the term of "soil consumption" is an incorrect expression, since land is not consumed, but it changes the intended use. Therefore, this uninterrupted modification of land use determines an irreversible loss of mainly agricultural land. Obviously, considering that farmland is

a productive resource and a common good, the continuing impoverishment of this irreplaceable environmental heritage gives rise to a critical problem (ISPRA, 2014, 2015). However, in this regard it is important to note that not all the models of urban development involve the same impact. For example, the molecular town pattern has a significantly more inefficient relationship with its primary resource (soil) with respect to the compact city model (Pileri, 2011). In any case, and regardless of the type of urban development, it should be kept in mind that the land use is not just a numerical relationship between the two parameters of growth (that is population and urbanization). On the contrary, it is the result of the interplay of many factors and variables such as density, social and landscape values, urban projects, local morphological conditions, political intentions, special interests, design of infrastructure and welfare (Virto et al., 2015).

Since 1950, European cities have expanded by about 78%, while in the same period the increase of the population did not amount to 33% (EEA, 2006a, 2006b). Already in 2006 Europe, extending its political strategy, underlined the importance to develop and implement best practices and guidelines to mitigate the negative effects of urban sprawl on soil functions (EC, 2006b). Indeed, the European Union (EU) invited

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Table 1
Main European Union policies and documents regarding the urban sprawl and soil consumption.

Type of document	Author	Date	Status	Title	Description
Directive	European Parliament, Council of the European Union	27/06/2001	In force	Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment.	The objective of this Directive is to ensure a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes by means of environmental assessments that must be carried out for the plans and programmes which are likely to have significant effects on the environment. (http://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:32001L0042)
Decision	European Parliament; Council of the European Union	22/07/2002	No longer in force	Decision No. 1600/2002/EC of the European Parliament and of the Council of 22 July 2002 laying down the Sixth Community Environment Action Programme	In this document, a programme of Community action on the environment has provided. It addresses the key environmental objectives and priorities such as climate change, nature and biodiversity, environment and health and quality of life, natural resources and wastes. (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32002D1600)
Directive	European Parliament, Council of the European Union	26/05/2003	In force	Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending regarding the public participation and access to justice Council Directives 85/337/EEC and 96/61/EC – Statement by the Commission	The objective of this Directive is to contribute to the implementation of the obligations arising under the Aarhus Convention. In particular, this aim should be obtained by providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and improving the public participation and providing for provisions on access to justice within Council Directives 85/337/EEC and 96/61/EC. (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32003L0035)
Directive	European Parliament; Council of the European Union	15/03/2006	In force	Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries and amending Directive 2004/35/EC – Statement by the European Parliament, the Council and the Commission	This Directive deals with the management of waste resulting from the prospecting, extraction, treatment and storage of mineral resources. The main aim is to establish measures, procedures and guidance to prevent or reduce as far as possible any adverse effects on the environment, in particular water, air, soil, fauna and flora and landscape, and any resultant risks to human health. (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32006L0021)
Communication	European Commission	22/09/2006	In force	Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions – Thematic Strategy for Soil Protection	The main purpose of this document is to identify measures to protect soil and to preserve its ability to carry out its functions by means of a strategy that includes setting up a legislative framework for the protection and sustainable use of soil, integrating soil protection into national and EU policies, improving knowledge in this area and increasing public awareness. (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52006DC0231)
Impact assessment	European Commission	22/09/2006	In force	Commission staff working document – Accompanying document to the Communication – Thematic Strategy for Soil Protection – Summary of the impact assessment	This accompanying document to the Communication from the Commission to the Council related to the “Thematic Strategy for Soil Protection” analyses the extent and the costs of soil degradation and concludes that the adoption of a Soil Framework Directive is the best option for addressing existing soil threats. (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52006SC0620)
Proposal for a directive	European Commission	22/09/2006	No longer in force	Proposal for a Directive of the European Parliament and of the Council establishing a framework for the protection of soil and amending Directive 2004/35/EC	In the wider context of the “Thematic Strategy for Soil Protection”, the proposal for a Directive is a key component that enables Member States to adopt measures tailored to their local needs. It provides for measures to identify problems, prevent soil degradation and remediate polluted or degraded soil. (http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52006PC0232)
Directive	European Parliament; Council of the European Union	14/03/2007	In force	Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)	In this Directive are defined and established general rules for the constitution of the Infrastructure for Spatial Information in the European Community (INSPIRE) to help and guide the Community environmental policies and activities which may have an impact on the environment. (http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32007L0002)
Directive	European Parliament and of the Council	23/10/2007	In force	Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks	The purpose of this Directive is to establish a framework for the evaluation and management of flood risks to reduce the adverse consequences for (continued on next page)

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