



# Natural and Environmental Amenities: A Review of Definitions, Measures and Issues



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## ABSTRACT

This study investigates the notions of natural and environmental amenities in the social science literature, the ways they are defined and measured, and related issues. We analyze 328 peer-reviewed articles published over a 40-year period (1974–2013). We observe an exponential growth in publications, with a small set of economics journals publishing most of the corpus. Despite this body of work, there are still no widely acknowledged definitions of these notions. Research objectives have changed from an initial focus on recovering the implicit prices of natural/environmental amenities, to a more recent and growing interest in evaluating their impacts on regional development and quality of life. Regarding measurement, most papers use unidimensional measures of natural attributes (esp. water bodies, land cover/use). This survey leads to a discussion of prospects for future research.

## 1. Introduction

For several decades, amenities have been of interest to economists, geographers and spatial planners, among others. Amenities have long been believed although not proven empirically to increase the value of land or housing (e.g., Rosen, 1979). More generally, it has been hypothesized that amenities enhance the attractiveness of a given location and contribute to local growth and well-being (e.g., Green et al., 2005). The interest in this area is not limited to academia; it has attracted the attention of local development practitioners and elected officials, who perceive amenities as a means to foster the image of their locale and attract households – whether permanent or temporary residents, and firms (e.g., Gottlieb, 1994). At the same time, there has been a parallel increased interest in disamenities, or how negatively-perceived local attributes affect various dimensions of local development.

Based on an extensive analysis of peer-reviewed articles published over the course of some 40 years, this study aims to provide a concise but comprehensive overview of publication trends, definitions, measures and research issues related to the notions of natural and environmental amenities. This survey should be of interest for several reasons: (1) It will allow academics (and practitioners) interested in the literature on natural/environmental amenities but not familiar with it, to rapidly grasp the many issues it covers, and the main related journals; (2) Scholars already involved in research on natural/environmental amenities will obtain insights into other related issues and the

importance and dynamism of their particular research field compared to other fields; (3) From a practical perspective, researchers working on other topics will find it useful to have a summary of the most frequently measured types of natural/environmental amenities, for instance, to include them as control variables in their models; (4) More specifically, several authors have pointed to the lack of commonly-accepted definitions of natural/environmental amenities (e.g., Chi and Marcouiller, 2011; Kahsai et al., 2011; Gutmann and Field, 2010; Ferguson et al., 2007). An extensive review of these definitions might perhaps confirm this critical assessment. It will also help academics to reflect on the differences among the existing definitions, and make more informed decisions about which to use; (5) Lastly, this survey should help to identify research gaps and needs in terms either of unaddressed or scarcely addressed issues, or indicators that have been ignored (or rarely) considered.

We address the following four main questions: (Q1) What are the trends in publications related to natural/environmental amenities, overall and in the main journals publishing research in this area? (Q2) Which of the related research issues have been addressed? (Q3) Are there clear and widely-acknowledged definitions of ‘natural amenity’ and ‘environmental amenity’; and what are the main differences and similarities among the existing definitions? (Q4) How are natural and environmental amenities measured in empirical studies?

To address these questions, we created a database of 328 peer-reviewed social science articles published before 2013, extracted from the

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**Table 1**  
Structure of the database of natural/environmental indicators.

Indicator name	Detail	Class	ID	Research field	Research subfield
Improvements to areas of open space	size (ha)	Green/Open/Parks	15	Valuation	3
Green routes	size (km)	Green/Open/Parks	15	Valuation	3
Amount of outdoor community facilities	frequency	Recreation	15	Valuation	3
Derelict properties restored	frequency	Urban	15	Valuation	3
Street cleanliness	Scale	Urban	15	Valuation	3
Improvement to public areas	dummy	Urban	15	Valuation	3

Web of Science (WoS), SCOPUS and Science Direct databases, based on the occurrence of the terms natural amenity/ies or environmental amenity/ies in their titles, abstracts or keywords. Using this database, we conducted a brief bibliometric analysis and a thorough qualitative analysis of the research questions, definitions and measures, and addressed some specific questions by analyzing a subset of 221 empirical articles that use indicators of natural/environmental amenities.

The next section describes the data and methods. Section 3 presents our findings related to the above four research questions. Section 4 discusses the results and Section 5 concludes.

## 2. Data and Methods

To analyze publications on natural and environmental amenities, we built a database of publications extracted from the WoS, Scopus and Science Direct databases, using the query “natural amenit\* OR environmental amenit\*” in keywords,<sup>1</sup> titles or abstracts of social science peer-reviewed articles published in English up to 2013. We do not claim that this method identified every publication on natural or environmental amenities since different scholars use different but related concepts to introduce their work. However, we believe we retrieved most of the papers in which these notions are central.

After eliminating duplicates,<sup>2</sup> the resulting body of work included 328 articles published during the period 1974–2013: 221 empirical studies using indicators of natural or environmental attributes, and 107 other studies (i.e. reviews, purely theoretical or qualitative studies, and quantitative studies which do not use these indicators; see Appendices 1 and 2 for the reference lists). In what follows, we refer to the first set of 221 papers, representing 67% of the corpus, as the ‘ESI subset’ - or subset of Empirical Studies on natural/environmental Indicators.

A brief bibliometric analysis of this literature database consisted of counting the number of publications per year, and their associated journals to start to address question Q1 and provide insights contributing to question Q2 (see Section 3.1). To address questions Q2-Q4 involved a second step of scrutinizing each article. To investigate question Q2 more thoroughly, we focus on the ESI subset. We read the abstracts, and whenever necessary the introductions and conclusions to identify the main research questions related to the notions of natural amenity or environmental amenity. This allowed us to group the articles into four research fields (see Section 3.2). The reason for our focus on a subset of the articles was to make the task more tractable. This introduced potential bias in the answers to our question. Theoretical and purely qualitative papers might explore other research questions than those identified here; however, our analysis covers more than two-thirds of the total corpus and more than three-quarters of the empirical literature. Thus, we believe it provides an accurate idea of the main research topics and their changes over time.

To examine question Q3, we checked for the term “amenit\*” in the 328 documents, and read the corresponding paragraphs to identify every definition of a natural and an environmental amenity. This allowed us to

distinguish among several types of definitions, and assess the frequency of each type (see Section 3.3). Last, to address question Q4, we built a database detailing all the natural/environmental amenity indicators identified in the ESI subset. Again, this allowed us to distinguish among several types of indicators, and assess the frequency of each type (see Section 3.4). Table 1 provides a snapshot of the structure of our database<sup>3</sup>; the first three columns report the name of the indicator, some information on its measurement, and its class in our typology of indicators. The two last columns provide the ID assigned to the article from which the indicator was extracted, and the research field and subfield (as defined in Section 3.3) associated to the focal article.

## 3. Results

### 3.1. Publication Trends

This section addresses question Q1 on overall trends in the number of publications related to natural/environmental amenities, and trends in the main journals publishing them.

First, we observe a clear trend toward an increasing number of publications per year using these notions (Fig. 1). During the period 1974–94, very few articles referred to either type of amenity. However, after 1994, this number increased steadily to reach 40 publications per year in 2013. Since 1989, empirical studies using indicators of natural/environmental amenities (i.e., from the ESI subset) have been the dominant proportion in the total published papers on the topic.

A further examination of this body of work shows that these publications are spread across a large number of journals: 148 journals publishing 2.22 articles each on average. The top five journals account jointly for around 25% of the total number, and account for more than 10 articles each (Table 2). The same journals are ranked in the top five positions in the ESI subset, and account for slightly more than 25% of the total number of publications. Fig. 2 shows the exponential growth in the number of articles referring to natural/environmental amenities published in these five journals; unsurprisingly, this matches the trend depicted in Fig. 1 for the whole corpus.

This increase in natural amenities research might be reflecting the overall growth in the number of publications in social science journals, notably those interested in environmental issues, rather than a more specific and increasing interest in natural amenities. To obtain a deeper insight into this issue, Fig. 2 depicts the total number of publications in the top five journals.<sup>4</sup> Over the period analyzed, the number of articles referring to natural/environmental amenities and the total number of publications experienced similar annual growth rates of about 12%. The literature on natural amenities experienced a specific ‘takeoff’ in the 1990s (see also Fig. 1) which does not mirror the trend in the total number of publications in these journals. This takeoff coincides with the focus on sustainable development issues at the 1992 Earth Summit in Rio.

<sup>3</sup> As an example, it shows the lines of the database that correspond to the indicators identified in the paper by Lanz and Provens (2013) to which we have assigned the ID number 15.

<sup>4</sup> The ‘Advanced Search’ and ‘Analyze search results’ functions of the Scopus website have been used to extract the counts of articles and reviews published in these five journals over the period.

<sup>1</sup> Including Thomson Reuters ‘KeyWords Plus’ from the WoS. These are keywords extracted from the titles of the cited articles and added by the editor to the authors’ keywords.

<sup>2</sup> 7 studies were excluded due to difficulties related to accessing them.

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