

Sustainable development at the city-region level: a broad analysis of the Porto Metropolitan Area

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1 ABSTRACT

Cities generate the majority of society's ecological footprint. Their environmental impacts stem not only from the concentration of people and economic activities, but also from the aggregated consumer and mobility behaviour which is highly demanding in terms of materials, water and energy. At the same time, cities are places of innovation, cultural evolution and debate, which are fundamental requirements for a sustainability transition.

This paper reviews the sustainable cities literature, its main lines of thought and results, and applies it to the Porto Metropolitan Area. The analysis was carried out by applying a novel indicator framework that is based on urban system's needs and integrates insights from other sustainable development approaches such as the sustainability triangle, social-ecology concepts and the panarchy theory. Statistical information was collected for the whole region at the parish scale (that is, a higher scale than that of municipality).

Results show that most indicators are characterized by geographical patterns of distribution and by clustering. Some parishes concentrate high levels of human capital and economic activity, while others lack these resources but are still occupied by significant natural capital. Environmental impacts are usually higher in the first group of parishes but these are offset by relatively better environmental performances which are associated with more sustainable land uses.

It is argued that some of the conditions for a sustainability transition are present in parts of the Porto Metropolitan Area. A combination of high levels of human capital and of sustainable planning yields the most promising result, although significant uncertainties remain such as long-term outcomes.