

Science for Environment Policy

Understanding environmental consequences of population growth and consumption

Interactions between population growth, consumption and the use of natural products and services have created an unsustainable pressure on the environment. New research has provided a detailed investigation into the relationships between these three trends, providing insight into how to alleviate these pressures. It concludes they cannot be addressed by market mechanisms or technological advances alone.

In this study, researchers investigated the interaction of the decisions made by individuals on reproduction, [consumption](#), and the use of the natural environment. Unlike previous studies, the researchers constructed a theoretical framework within which to study data on these interactions using the concept of 'externalities'. Externalities are costs or benefits which are felt by individuals that are not involved in the activity or action which causes them. For example, [air](#) or [water](#) pollution as a result of industry is a cost borne by many individuals in wider society who are not directly involved in the industrial activity itself.

The study identified a number of externalities and interactions, providing a theoretical basis to understand them better. For example, it constructed scientific formulae to illustrate how conforming to certain social practices and competitive values can lead to reproductive and consumption decisions which can exploit natural goods and services. This offers valuable insight into these complex interactions and can help identify possible ways to address it. Some examples of the interactions that the study identified and formulated are described below.

Population growth can be driven by many different factors, including both reproductive decisions and social practices. For example, in the Sahel and north Africa, where the population is increasing, very few girls finish secondary school and marry young. The frequency of early marriage contributes to a higher fertility rate, particularly as family planning is not widely established. This leads to population growth and externalities, such as urbanisation, poor sanitation and increased consumption. These in turn are costly to the environment because of pollution and ecosystem degradation.

Social practices in modern consumption can also lead to serious environmental externalities. A classic example is the growing demand for cars, which are becoming increasingly popular due to our competitive values to 'be better than others' and our conformist values to 'have the same as others'. Such trends in consumption are leading to increased industrial activity and land use change, which in turn can have negative environmental externalities through pollution, greenhouse gas emissions and natural resource depletion.

Such externalities, arising through trends in population growth and consumption, are having severe impacts on the environment. As a further complication, these harmful environmental effects do not always progress gradually, and can suddenly accelerate or reach a tipping point, beyond which remedial action has little or no effect.

This unpredictability means simple market mechanisms do not apply, for example, increases in the price of a resource, owing to scarcity or reduced quality, do not necessarily reduce exploitation. Although technology will have a role to play in reducing externalities' impacts, new technologies can exploit natural resources with no guarantee that they can completely address the issues at hand.

The study's authors conclude that patterns of modern economic growth are unsustainable and will require a substantial shift in our consumption and reproductive trends both globally and locally to protect the environment. This requires collective action, which can be informed by better understanding and theoretical framing of these externalities.



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