

From Territorial to Consumption-Based Metrics: Assessing the Predictive Power of Environmental Performance and Ecological Footprint on Global Happiness

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1. Introduction

The global understanding of development and prosperity is undergoing a profound transformation. While Gross Domestic Product (GDP) has long served as the dominant indicator of national success, increasing attention has shifted toward multidimensional measures of human well-being. In this context, the World Happiness Report and the Happiness Index have emerged as influential instruments for evaluating societal progress beyond economic output alone.

At the same time, environmental degradation and climate change have intensified debates regarding the sustainability of contemporary growth models. Traditional environmental accounting systems rely primarily on territorial CO₂ emissions, assigning responsibility according to domestic production activities. However, globalization and fragmented supply chains have substantially altered the geography of environmental impacts. High-income economies increasingly externalize carbon-intensive production to developing regions, thereby reducing domestic emissions while maintaining consumption patterns with significant global ecological consequences.

Against this background, this study investigates whether consumption-based environmental indicators provide a stronger explanation of cross-national variations in happiness than traditional territorial measures. The paper contributes to the broader regional science debate by examining how environmental quality, ecological efficiency, and globalized consumption structures influence subjective well-being across countries and regions.

The research directly aligns with the ERSA 2026 Congress theme, “Global Challenges and Regional Responses in a Transition Era,” by addressing the spatial inequalities generated by

environmental externalization and by exploring how different development trajectories shape sustainable well-being.

2. Theoretical Framework

The analysis is grounded in the concept of “Sustainable Well-being,” which argues that long-term human flourishing must remain compatible with planetary ecological boundaries. The study extends the literature on the Easterlin Paradox and environmental economics by integrating subjective well-being with ecological performance indicators.

Five environmental dimensions are incorporated into the analysis:

1. Territorial CO2 emissions per capita – measuring domestic carbon intensity.
2. Consumption-based CO2 emissions per capita – reallocating emissions according to final consumption patterns.
3. Environmental Performance Index (EPI) – capturing environmental health and ecosystem vitality.
4. Ecological Footprint (gha per capita) – estimating the biologically productive land required to sustain national consumption.
5. Natural Environment Index (Legatum Prosperity Index) – reflecting environmental quality and biodiversity preservation.

The paper introduces the concept of “happiness leakage,” referring to the capacity of affluent economies to maintain high levels of internal well-being while transferring environmental degradation to external production regions through global trade networks.

Theoretically, environmental quality affects happiness through multiple channels: public health outcomes, urban livability, environmental security, social trust, and perceptions regarding intergenerational sustainability. The study therefore positions environmental governance not as a secondary policy concern, but as a structural determinant of societal well-being.

3. Data and Methodology

The research employs a longitudinal panel dataset covering more than 140 countries over the period 2012–2024. The database combines subjective well-being indicators from the World Happiness Report and Gallup World Poll with environmental and macroeconomic indicators obtained from Yale University’s Environmental Performance Index database, Global Footprint Network, Our World in Data, and the Legatum Prosperity Index.

The dependent variable is the national Happiness Index score.

The empirical strategy relies primarily on Fixed-Effects (FE) panel models, allowing the analysis to control for unobserved country-specific characteristics such as culture, historical institutions, and geographical conditions. Random-Effects (RE) specifications are additionally estimated for comparison.

To isolate the environmental contribution to happiness, the models include the standard determinants identified in the well-being literature:

- GDP per capita (PPP)
- Social support
- Freedom to make life choices
- Healthy life expectancy
- Perceptions of corruption and governance quality

The study applies clustered standard errors at country level and tests multicollinearity through Variance Inflation Factors (VIF). Robustness checks include subgroup estimations for OECD versus non-OECD economies and different income categories.

The analysis also investigates potential non-linearities and “tipping points” in the relationship between environmental pressure and happiness.

4. Preliminary Findings

Preliminary estimations reveal three major patterns. First, environmental quality indicators—particularly the Environmental Performance Index and the Natural Environment dimension—show a consistently positive and statistically significant relationship with happiness levels, even after controlling for income and institutional variables.

Second, the Ecological Footprint demonstrates a more ambiguous effect. In high-income economies, larger ecological footprints are initially associated with higher happiness levels due to greater material consumption. However, this effect weakens considerably once environmental quality controls are introduced, suggesting that ecological intensity alone does not ensure sustainable well-being.

Third, consumption-based CO₂ emissions display a stronger explanatory power for happiness than territorial emissions. This finding suggests that well-being is increasingly connected to global consumption systems rather than domestic production structures alone.

The results point toward the existence of an environmental “tipping point,” beyond which the negative externalities of ecological degradation begin to offset the short-term utility gains derived from material consumption.

5. Contribution to Regional Science and Policy

This paper contributes to regional science in three principal ways. First, it demonstrates how subjective well-being indicators can be integrated with environmental and territorial data to evaluate sustainable development trajectories.

Second, the study highlights spatial inequalities embedded in global production-consumption systems, showing how environmental burdens are unevenly distributed across regions and economies.

Third, the findings provide empirical support for policies associated with the European Green Deal and sustainable regional transitions. The results suggest that environmental governance, pollution reduction, and ecosystem protection are not merely ecological objectives, but also central components of long-term societal well-being.

By emphasizing consumption-based environmental accounting, the paper proposes a more equitable framework for evaluating sustainability and regional responsibility in the context of globalization.

6. Conclusion

The study argues that future prosperity will increasingly depend on environmental efficiency: the capacity of societies to generate high levels of happiness while minimizing ecological pressure.

The findings support the concept of “Sustainable Well-being” as a measurable empirical reality rather than a purely normative ideal. Countries that successfully combine environmental protection, social cohesion, and moderate ecological consumption appear better positioned to achieve resilient and durable forms of prosperity.

Ultimately, the paper demonstrates that happiness should be understood not only as a social outcome, but also as a territorial and environmental phenomenon shaped by global consumption patterns, ecological governance, and regional development pathways.

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