

# 1/5 of the world's settlements have no lights, new research reveals

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19% of the planet's total settlement footprint has no detectable artificial radiance, a new study from a leading economist at Vienna University of Economics and Business (WU) has revealed, using light emission as a novel (and a lack thereof) indicator of poverty levels in a region.

The research, undertaken by Jesús Crespo Cuaresma, Professor for Macroeconomics at WU, and led by the International Institute for Applied Systems Analysis (IIASA), used light emission to map global economic wellbeing – a novel method for estimating poverty levels. The study also revealed that the majority of unlit settlement footprints were found in Africa (39%) and Asia (23%).

However, the researchers were surprised to find large numbers of unlit settlements in developed nations, particularly in Europe.

In almost all countries, the results indicate a clear association between increasing percentages of unlit communities in a country and decreasing economic wellbeing levels.

The study mapped data from unlit areas to estimate global economic wellbeing and predicted the wealth class of around 2.4 million households in 49 countries spread across Africa, Asia, and the Americas, with an accuracy of 87%.

Reflecting on the results of the study, Jesús Crespo Cuaresma, Professor for Macroeconomics at WU, said:

“The novel methods we are developing in this study will prove important for measuring poverty at a granular level. They can be used to monitor poverty dynamics and design effective strategies to improve the income levels of the poorest households in developing countries.”

Ian McCallum, lead researcher and IIASA Novel Data Ecosystems for Sustainability Research Group Leader, reflecting on the results from European settlements, noted:

“There were relatively large amounts of unlit settlements in developed countries, in particular Europe. There can be several reasons for this result, including the fact that the satellite overpass is after midnight, but it could also be due to conscientious energy and cost saving policies in Europe by homeowners, governments, and industry.”

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The paper, Estimating global economic well-being with unlit settlements, published in Nature Communications, can be accessed [here](#).

For more information, a copy of the research paper, or to speak with Jesús Crespo Cuaresma , please

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