Manufacturing areas are lighting up the City

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Manufacturing areas in the city of Birmingham, which represent only a small percentage of the city's land area, are contributing significantly to urban lighting, according to research lead by James Hale and published in the journal PLOS ONE.

The team of researchers carried out the study by analyzing urban lighting using the finest resolution photographs ever taken of an entire city at night. They converted the aerial photographs into maps of lamp locations and surface illuminance. They undertook the research to find out which land uses tended to be most heavily lit and which were responsible for the most lighting at the city scale. They found that roads and car parks within housing and manufacturing areas were responsible for the majority of bright lighting in the city.

Bright outdoor lighting is often desirable, as it can bring a range of benefits such as safety and security, but there are financial implications in adopting this as a widespread policy. Moreover, studies have also shown that it can cause a nuisance and have an impact on wildlife and human health. These costs and benefits can be highly context dependent and it is hoped that aerial night photography may help these to be balanced at a very local scale.

James Hale said: *'Most city lighting is associated with roads and car parks – street lighting in residential areas and security lighting in manufacturing areas - but we didn't expect the lighting in manufacturing areas to be so important to the total contribution as they represent a small percentage of Birmingham's land area.'*

The researchers recommend that anyone managing city lighting or trying to reduce unnecessary lighting should broaden their focus from residential street lighting to include security lighting within manufacturing areas. Mr Hale continued: *'We started this research project to find out what kind of lighting exists in the city, and where the brightest areas are - it would be impossible to ensure we have the most beneficial lighting at the city scale, with the least impacts, without doing a comprehensive survey.'*

The researchers also found that lighting was greatest in heavily built up areas and that the most brightly lit land was found in retail, distribution, offie and servicing land use zones. A shift to denser cities with service-based economies might therefore result in increased levels of urban lighting.

View the abstract for the paper 'Mapping Lightscapes: Spatial Patterning of Artificial Lighting in an Urban Landscape' (http://dx.plos.org/10.1371/journal.pone.0061460) .

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