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Light pollution news analysis (April 2013)

When night descends on Hong Kong, it is not stars that shine brightly but the neon lights of the city's skyscrapers and billboards. According to a recent study, the night sky above Tsim Sha Tsui, a tourist mecca, was 1,200 times lighter than a normal dark sky, earning Hong Kong the reputation of having the world's worst light pollution.

The study compared the brightness of Hong Kong's night sky to the International Astronomical Union's standard for a normal dark sky. A sensor took a measurement every minute over a three-year-period at sites across the city. Light pollution is most severe in Tsim Sha Tsui, yet even the site of the Astropark sky-gazing facility at Sai Kung measured 20 times brighter than a normal dark sky.

Adverse health effects, damage to eco-systems, and energy wastage are all bi-products of light pollution.

For the public, the most noticeable impact of light pollution is the nuisance factor. Intrusive lighting, known as "light trespass," in residential areas can cause headaches, fatigue, stress and reduced sleep quality, according to Dr. Jason Pun Chun-shing, leader of the research team from the University of Hong Kong's Department of Physics that conducted the study. Glare from excessive night lighting can be a public health hazard, leading to unsafe driving conditions, according to a 2009 report published by the American Medical Association.

Most outdoor lighting installations use non-renewable energy generated by burning fossil fuels. The carbon dioxide emissions contribute to the greenhouse effect and increase a city's carbon footprint. A study by the National Oceanic and Atmospheric Administration revealed that light pollution contributes to air pollution by reducing a nitrate radical that cleanses the atmosphere of exhaust and hydrocarbons.

Several recent studies have linked excessive exposure to light at night to heightened cancer risk. Woman night-shift workers are particularly

vulnerable, according to a 2010 study by the University of Connecticut and University of Haifa.

Light pollution also has harmful ecological consequences. Nocturnal animals are more exposed to predators, migratory patterns and reproductive behaviour change, and habitats fragment.

However, no meaningful action has been taken in Hong Kong to combat the city's light pollution. Hong Kong does not regulate outdoor lighting unlike other major cities, such as London, Shanghai and Sydney. Voluntary guidelines on outdoor lighting issued by the government have done little to encourage industry to commit to social responsibility and reduce light usage, said Gabrielle Ho, Project Manager of environmental NGO Green Sense. A task force established by the government to tackle the issue has achieved little in the twenty months since its conception.

In recent times, the government has focused its energy instead on curtailing the city's worsening air pollution. And although the public is becoming more environmentally conscious, industry has failed to move with the times. Light pollution is not a consideration in urban planning, according to Paul Zimmerman, CEO of Designing Hong Kong. "Lighting designers brought in to assist with new developments or lighting up infrastructure will probably consider energy cost," said Zimmerman. However, he added, their objective is to save costs, not minimise light pollution.

Experts say light pollution can be reduced through government regulation, environmentally-friendly design, and more efficient use of lighting fixtures. They agree that legislation is required to properly regulate light levels and to educate the public on acceptable light usage. "There should be some regulation," Ho said, so there is greater awareness of the type of lighting that is permissible. To effectively control and manage light pollution, cooperation between government, industry and the public is essential.

According to Dr. Pun, light pollution can be reduced by efficient design. "If we can...use better design to direct the lighting at a better angle and use the right amount of light," he explained, "then we can reduce a lot of this light pollution." In less populated areas, motion sensors that switch on light when movement is detected are also an effective tool, said Dr. Pun.

Light pollution has slipped under the government's radar, but public pressure for action is starting to mount. Some Hong Kongers displayed their commitment to sustainable living by participating in Earth Hour on March 23. For one hour Hong Kong's skyline darkened as part of an international action run by the World Wildlife Fund to promote energy conservation. "The night sky got darker by about one-third", said Dr. Pun. Hongkong Electric calculated a 4.27 percent drop in electricity consumption.

"I can see people's attitude changing over time, as reflected by a lot more complaints to the EPD [Environmental Protection Department] about... intrusive lights," said Dr. Pun. Registered complaints to the government in 2011 totaled 361 compared to nine in 2003.

The image of Hong Kong Island's world-famous skyscrapers cloaked in darkness raises the question of how a dark skyline would affect tourism, however. Tourism plays a critical role in Hong Kong's economy. The bright lights and towering skyscrapers are synonymous with the city. "The Hong Kong Tourism Board market it as Asia's World City," said Dr. Stephen Pratt of Hong Kong Polytechnic University's School of Hotel and Tourism Management, adding, "The skyline is part of their destination image and product." Accordingly, he does not expect the latest study on Hong Kong's light pollution levels to influence the city's tourism strategy. "I don't see that [reduced lighting] being an option in the near future," said Dr. Pratt, "given the brand of Hong Kong."

The Symphony of Lights - a popular tourist attraction using laser beams, searchlights, and brightly lit building-facades - takes place every evening. Its purpose is "to showcase the vibrancy and glamorous night vista of the harbor," according to Jennifer Ho of the Tourism Commission.

Toning down the light used in the show would minimise the nuisance factor but is unlikely to curb pollution, according to experts. "Even without the Symphony of Lights it is still bright," said Dr. Pun. His research revealed no significant difference in light levels at Tsim Sha Tsui before, during, or after the light show.

Environmentalists acknowledge the challenges they face but say it is important to strike a balance between economic development and the environment. If marketed correctly, a darker skyline may not discourage tourists, Gabrielle Ho said. "It might be an attractive reason for them to

come to Hong Kong,” she said, “to see how we work on the balance between sustainability and development.”