

Optics and Photonics and the U.N. Sustainable Development Goals

At the United Nations Sustainable Development Summit on 25 September 2015, world leaders adopted the 2030 Agenda for Sustainable Development, which includes a set of 17 Sustainable Development Goals (SDGs) to end poverty, fight inequality and injustice, and tackle climate change by 2030. Optics and photonics are important tools in this endeavor.



Industry innovation and infrastructure: build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation

The exciting industry of green photonics encompasses technologies that can generate or conserve energy, cut greenhouse gas emissions, reduce pollution, or yield environmentally sustainable outputs. It covers a range of applications: photovoltaic electricity, highly efficient solid-state lighting (SSL), new energy-efficient communications, optical sensing for energy efficiency & reduced pollution, and clean manufacturing using laser processing.

Reduced inequalities: reduce inequality within and among countries

As world markets develop, newly created jobs often require an education. Communities can be hampered by lack of resources to support students, down to the lighting in homes that enable homework. The availability of solar lighting has increased significantly due to technological improvements, and is proving to be sustainable around the world.

Sustainable cities and communities: make cities and human settlements inclusive, safe, resilient, and sustainable

LED lighting in cities can enhance safety and quality of life in multiple ways, and new smart systems that utilize sensors can increase or reduce lighting as needs vary throughout the day. Other optics-enabled technologies, such as sensors and LIDAR, enable self-driving cars that have the advantages of increased safety, lower fuel use, and improved mobility for non-driving citizens.

Responsible consumption and production: ensure sustainable consumption and production patterns

The use of metrology in manufacturing, including health and safety products, has a multitude of positive benefits that ensures sustainable and efficient production, the safety of products and workers, environmental protection, and health. Light-enabled 3-D printing is another opportunity; products are made locally, which minimizes the energy footprint and uses minimal raw materials.

SPIE is a not-for-profit educational organization that supports sustainable development via optics and photonics. By establishing formal and informal partnerships throughout the world, SPIE enables sharing of information between scientists and engineers, supports students and educators via scholarships and grants, and runs global programs that support women and constituents in both developed and developing nations.

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