

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.



Climate action: take urgent action to combat climate change and its impacts

Power plants are significant sources of greenhouse gasses, but with advanced sensors that can operate under harsh environments, could have substantial improvements in efficiency and a reduction of emissions. The use of optical-based sensors offers many advantages, including broadband wavelength interrogation and compatibility with remote sensing technologies.

Life below water: conserve and sustainably use the oceans, seas, and marine resources for sustainable development

The USA NOAA ship Okeanos conducts underwater explorations to better understand and protect the ocean environment. Two remotely operated vehicles are deployed from the ship and are loaded with numerous examples of optics and photonics including high definition cameras, video, sensors, and the capability to transmit data and images via satellite.

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 help women, men, and children learn what is possible with optics and photonics technology.

Life on land: protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss

Maintaining biodiversity in ecosystems is key to sustainability. Wolves and other predators play an important role, and diseases such as mange can threaten it. In the USA, researchers are tracking the extent of the disease with thermal imaging. Mange patches allow heat loss because of hair loss, impossible to see with the naked eye.

Peace, justice, and strong institutions: promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Light enabled communication systems, including smart phones and internet, work to build accountability and justice via apps and websites. Examples include an app that informs domestic workers of their rights in the US, a website in India that records instances of extortion by officials, and a way to report child abuse in Jamaica.

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