

## Introduction

Scientific research addresses many pressing challenges in society. However, scientific research also consumes many resources and energy. Governments and organizations are urging actions towards sustainability to diminish the frequency of extreme weather events, lower transmission of infectious diseases, and maintain water security. In comparison to the same-sized office space, research laboratories have a large environmental footprint, consuming 5- to 100-fold greater amounts of energy. Life science research laboratories also consume 1% to 2% of global plastics, as well as many chemicals and consumables such as purified water while running equipment. Numerous concerned researchers and senior-level management are implementing strategies that conserve energy and resources while maintaining the health of workers and the quality of research. Increasing energy efficiency and reducing waste also provide cost savings which are repurposed to support research activities. The main topics for increasing the sustainability of laboratories include water conservation during the purification or sterilizing of equipment, efficient energy usage, waste reduction beyond common recycling programs, decreased impact of procurement, and moderation of the carbon impact of annual international conferences. In addition, improving sustainability also involves motivating coworkers to reduce their laboratories' environmental footprints and sharing the knowledge with the scientific community. Furthermore, research facilities can promote sustainability in the entire facility with adjustments in one or more of the six areas such as energy generation or repurposing lab supplies and equipment. For example, they may provide a database of surplus equipment and/or reagents for laboratories to procure items, save capital, and reduce waste.

The accompanying article initially describes the environmental impacts of humans including pollution, climate change, biodiversity reduction, and habitat destruction. It subsequently highlights the large environmental footprint of scientific research due to the high energy usage and resource-intensive activities of laboratories. Because scientists understand these complex interactions and seek solutions, scientists and their facilities can reduce their environmental footprint in their own laboratories and experience cost savings. This accompanying article provides strategies and resources to encourage scientific colleagues to initiate, plan, discuss, and implement one or more readily available measures to increase sustainability in their laboratories.

Durgan *et al.* share insights on initiating a sustainability program at a research facility and implementing one or more of the numerous available solutions that can reduce energy usage and/or waste. They discuss how several scientists organized and motivated teams at their three laboratories, inspired suggestions from colleagues, and implemented several improvements. The main topics ranged from increasing energy efficiency to reducing waste, water usage, and the impact of procurement. In addition, they discussed the engagement of senior-level management and provided references to numerous resources. Additional strategies to promote sustainability in the entire facility were also presented.

Through the methods and insights presented in this article, we hope to educate researchers on new technologies, techniques, and approaches to sustainability. Considerations for choosing corporate vendors can include their ambitions and progress in improving water and resource utilization, efficiency of their manufacturing and designed end-products, sustainability of consumables, reduced impact of procurement, corporate mission statement, and commitment to continual improvement. To gain a deeper understanding of available options for improving the sustainability of your research, we encourage you to visit [Sartorius](#).

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