

2023 African Light Source Conference



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SESAME, a perspective view

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SESAME (Synchrotron-light for Experimental Science and Applications in the Middle East) is a “third-generation” synchrotron light source that was officially opened in Allam (Jordan) on 16 May, 2017. It is the first synchrotron light source in the Middle East and neighbouring countries, and also the region’s first major international centre of excellence.

It is a cooperative venture by scientists and governments of the region set up on the model of CERN (European Organization for Nuclear Research) although it has very different scientific aims. It was developed under the auspices of UNESCO (United Nations Educational, Scientific and Cultural Organization) following the formal approval given for this by the Organization’s Executive Board (164th session, May 2002).

SESAME is designed with an eye towards sustainability. Since 26 February 2019, when SESAME’s solar power plant was inaugurated, SESAME is the world’s first large accelerator complex to be fully powered by renewable energy. Energy efficiency is only one aspect of the concept of sustainability, that extends beyond environmental concerns to include long-term viability, equitable access, and capacity for positive societal impact.

SESAME provides scientists from the region and worldwide—many of which have limited access to high-quality research facilities—the opportunity to conduct cutting-edge research. This democratization of access contributes to social sustainability by leveling the playing field and facilitating equitable scientific advancements. By bringing together scientists from various countries, SESAME promotes efficient utilization of intellectual and material resources. Researchers share not just the equipment but also expertise, thereby fostering an ecosystem where resources are maximized.

SESAME’s various educational and training programs aim to build local and global capacity in scientific research. This human capital development is a cornerstone of sustainability, ensuring that the facility has a lasting impact beyond immediate research outcomes.

SESAME advocates for open-access publishing and data sharing, ensuring that the benefits of research extend beyond the immediate scientific community. This enhances the sustainability of the scientific enterprise by broadening its impact and reducing duplication of effort.

The infrastructure is designed to accommodate future technological advancements, making it adaptable and resilient. In summary, SESAME serves as a model of sustainable scientific infrastructure, embodying principles of environmental stewardship, social equity, and long-term viability. Its multi-faceted approach to sustainability ensures that it will continue to serve as a valuable asset for the global scientific community for years to come.

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