

Strategic Plan for the Middle East

I. The Middle East region endorses the following **Universal Grenoble Resolutions**:

1. *Advanced light sources are the most transformative scientific instruments similar to the invention of conventional lasers and computers.*
2. *Advanced light sources are revolutionizing a myriad of fundamental and applied sciences, including agriculture, biology, biomedicine, chemistry, climate and environmental ecosystems science, cultural heritage studies, energy, engineering, geology, materials science, nanotechnology, palaeontology, pharmaceutical discoveries, and physics, with an accompanying impact on sustainable industry.*
3. *The community of researchers around the world are striving collaboratively to construct ever more intense sources of electromagnetic radiation, specifically derived from synchrotron light sources and X-ray free-electron lasers (XFELs), to address the most challenging questions in living and condensed matter sciences.*
4. *A greater utilization of advanced light sources will promote peace and collaborations among nations in the region and the wider global community, and enhance university education, the training of a new generation of young researchers, the growth of competitive industries, and advance research that addresses issues, challenges and concerns relevant to region.*

II. For the Middle East region, we propose the following summary **Roadmap**:

A. **Short-Term Goals (5 years)**

1. Train large numbers of Middle East scientists, engineers, students and technicians in the design and utilisation of advanced light sources (AdLSs).
 - a. Create a database of researchers having a Middle East background, or with special inclination to support the Middle East, who have been involved in the strategy, design, construction, operation, maintenance or usage of AdLSs.
 - b. Identify AdLS research projects in progress or completed that are relevant to the health, economic, social and industrial reality of the Middle East.
 - c. Develop case economic and social studies by discipline and by industry related to the health, economic, social and industrial reality of the Middle East.

2. Enhance the existing community of AdLS users.
 - a. Secure funding to expand *LAAAMP*'s Faculty-STudent (FAST) Team AdLS training programme, which began increasing the utilisation of AdLSs in 2017.
 - b. Increase enrollments in online courses on beamline techniques, such as the NSLS-II and INCREASE (increaseonline.org) online course, which is available to the *LAAAMP* Community.
 - c. Seek increased funding to support the travel of users to SESAME to perform their measurements.
 - d. Provide training in the writing of proposals for beamtime at SESAME.
 - e. Offer twinning programmes for new users to collaborate with experienced users from different countries.
3. Establish formal partnerships with existing international AdLSs.
 - a. Seek funding from both SESAME member and non-member countries to enhance the infrastructure of SESAME.
 - b. Seek funding to construct new beamlines at SESAME.
 - c. Enhance the involvement of users in the progress of SESAME via the Users' Committee.
 - d. Enhance existing partnerships between SESAME and other international AdLSs, such as the one with CALIPSOplus.
4. Promote the involvement of industry.
 - a. Identify an industrial leader.
 - b. Increase the awareness of the advantages of SESAME for applications to industry.
 - c. Enhance the involvement of regional industries in the progress of SESAME.
 - d. Identify industries and private organisations that already have invested in AdLSs around the world (mainly by building experimental beamlines) to promote partnerships with the Middle East.
 - e. Approach similar industries in the Middle East to explore the possibility of obtaining the same level of support/funding locally.
5. Obtain the support of international high-profile persons (VIPs), such as Nobel Prize winners, Heads of high-ranking universities, writers, ecologists, and filmmakers, to support the advancement of AdLS science and technology in the Middle East.
6. Enhance SESAME's public and media profile.
 - a. Identify a group of researchers willing to promote the utilisation of SESAME in social media by publicising information on the impact that SESAME is having and could have in the future in the Middle East.
 - b. Produce two SESAME videos of 3 minutes in length, with the first one targeting decision makers and the second one targeting the public at large.

- c. Collaborate with Science programmes around the world to promote the utilisation of SESAME.
 - d. Promote the utilisation of SESAME among high-profile media representatives in the Middle East.
7. Promote outreach and communication around AdLS-based science and technology.
 - a. Send representatives to advocate for enhanced utilisation of SESAME to member and non-member Heads of State and their Cabinets.
 - b. Publish and widely disseminate videos, brochures, other materials, and whenever appropriate, visits to SESAME's facilities to educate government officials and the public about the impact that SESAME could have on their socioeconomic and health well being.
8. Establish and enhance the Middle East's critical feeder infrastructures that empower SESAME's research programmes.
 - a. Micro Level
Collaborate with various entities to develop researchers' sample preparation and screening facilities.
 - b. Macro Level
Establish Regional Research and Training Centers
 - i. Western
 - ii. Central
 - iii. Eastern
9. Advocate for the Middle East Strategic Plan to Heads of State and relevant governmental Ministries.
10. Develop a dynamic (always current) professional quality Middle East AdLS Website.
11. Spread fluency in English throughout the Middle East region, since English is the international language of science, technology and business.

B. Long-Term Goals (5 years and beyond)

1. Continue all the Short-Term activities, as required.
2. Assist SESAME with funding and expertise for crucial upgrades.
3. Assist Mexico and Africa in designing and constructing a latest generation AdLS.

Summary Remarks

The Middle East region has the advantage of SESAME, namely an operating advanced light source with tremendous potential for the future. Thus, it is critical that governments in the Middle East maximize their utilisation of SESAME, and especially enhance that utilisation by shoring up their local feeder infrastructures, such as crystallography research and training centers.