

## Strategic Plan for Mexico

### I. The Mexican 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 Mexico, we propose the following summary **Roadmap**:

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

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

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 enrollment in the NSLS-II and INCREASE ([increaseonline.org](http://increaseonline.org)) online course on beamline techniques, which is available to the *LAAAMP* Community.
  - c. Seek increased funding to support the travel of users to AdLSs to perform their measurements.
  - d. Provide training in the writing of proposals for beamtime at AdLSs.
  - e. Offer twinning programmes for new users to collaborate with experienced users from different countries.
3. Establish formal partnerships with existing international AdLSs.
  - a. Form Consortia with other countries in Latin America to become Collaborative Members at existing AdLSs.
  - b. Study the feasibility of establishing consortia to construct Latin American multinational beamlines at existing AdLSs, perhaps with partners from other regions of the world.
4. Promote the involvement of industry.
  - a. Identify an industrial leader.
  - b. Identify industries and private organisations that already have invested in AdLSs around the world (mainly by building experimental beamlines) to promote partnerships with Mexico.
  - c. Approach similar industries in Mexico 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 Mexico.
6. Build an AdLS public and media profile.
  - a. Identify a group of researchers willing to promote the utilisation of AdLSs in social media by publicising information on the impact that the Mexican Light Source would have in the country.
  - b. Produce two AdLS 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 AdLSs.
  - d. Promote the utilisation of AdLSs among high-profile media representatives in Mexico.

7. Promote outreach and communication around AdLS-based science and technology.
  - a. Send representatives to advocate for enhanced utilisation of AdLSs to top governmental officials.
  - b. Publish and widely disseminate videos, brochures, other materials, and whenever appropriate, visits to AdLS facilities to educate government officials and the public about the impact that AdLSs could have on their socioeconomic and health well being.
8. Establish and enhance the Mexico's critical feeder infrastructures that empower AdLS science.
  - 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. Northern
    - ii. Central
    - iii. Southern
9. Advocate for the Mexican Strategic Plan to top governmental officials.
10. Develop a dynamic (always current) professional quality Mexican Light Source Website.
11. Spread fluency in English throughout Mexico, 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. Design and construct a latest generation AdLS.

**Summary Remarks**

Mexico has the advantage of being close to a number of advanced light sources in Brazil and the United States. Thus, the Mexican government should appropriate sufficient funds to maximize its utilisation of those large research infrastructures, and especially enhance that utilisation by shoring up its local feeder infrastructures, such as crystallography research and training centers.