

Letters of Interest Submission



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Short Lol summarising the case for the African Light Source

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Africa faces significant challenges. These include its high disease burden, the exploration and beneficiation of its mineral wealth, development of innovation pipelines for competitive industry towards established African wealth, the need to urgently address all 17 of the UN SDGs, discovering and curating its rich evidence of global human heritage, both as the cradle of human-kind and also early human civilisation, the largest projected youth population of the world - requiring massive capacity building, amongst other challenges. Many of the sciences that address these challenges can be very well stimulated and enhanced continent-wide with a focus on an Advanced Light Source. Of course, here, "light" refers to electromagnetic radiation from the infra-red to the hard X-ray regime, enabling the most quantitative analytical microscopies down to atomic length scales.

The concept of a large scale research infrastructure benefits the entire continent. The African Light Source (AfLS) project leaves no African country behind. Each country benefits from the same upgrade in terms of human capital and improved local and regional research infrastructure. This infrastructure simultaneously offers premier training opportunities and competitive research infrastructure, as well as enabling feeder infrastructure to all light sources world-wide, but especially to the AfLS on the African continent. The country that wins the bid to host the AfLS will of course become a regional hub, but in many cases, the COVID era has boosted our capacity for remote work. Researchers can take advantage of 4IR technologies in science experimentation, as robotic technologies allow experiments to be planned and controlled remotely from the home institution.

The mega-innovation hub that will spring up in the science-industry park that surrounds the AfLS will benefit all industry on the continent. There are other socioeconomic benefits. One particular current focus for Africa is to have its own Intellectual property in its own vaccine for a future pandemic. In the current pandemic, Africa has the capacity to produce vaccines under license at several pharmaceutical installations on the continent. However, for a safer planet, as shown in the current pandemic, it is preferable that all habitable continents have independent capacity to develop their own medical interventions, which then compliment the global search for solutions.

Furthermore, the AfLS represents successful Pan African science diplomacy. Boosting Africa to participate fully in the global science endeavour will lead to the increased profile for African Science, as well as increased professional travel and communication. This ultimately builds appreciation of our human diversity. Ubuntu holds us all to be one human community.

Africa is now the last habitable continent which does not have a light source. Other continents not only have several such large scale infrastructures, but they are implementing or planning the upgrade to the so-called fourth generation instrument. This upgrade is not a factor of two superior, as might be expected, but a factor of ten thousand superior, considering the product of improvements in both beam and detector instrumentation. It is also the case that the training of students at such facilities has long since overflowed to industry, leading to the concept of second generation of student training. The Industry supervisors now demand a next generation of young emerging scientists at the Advanced Light Sources. The Advanced Light Source has become a premier research solution for these countries. It is therefore imperative that Africa get started on a light source of its own. It is also worth noting that the African User Base of such facilities, and their excellence in their own scientific communities, in Africa and in the Diaspora, has long surpassed the custom-of-practice threshold for the minimum size of User base for the initiation of a continental Advanced light Source programme, the AfLS. Indeed, an AfLS would be an essential feature of reducing the current brain drain, and encouraging some of the African science diaspora to return.

Taking the contributions to capacity building, research, technology, innovation, wealth generation and Pan Africanism all together, this also contributes to the goal of the final decolonisation of Africa and the deracialisation of the world.

Primary Category

Light Sources

Secondary Category

Light Sources

Subgroup categories

LightSources—AcceleratorPhysics

Did you / will you submit this LOI to another category?

NO

Additional Information

Really is Socio-Economic motivation of a Light Source

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