

Welcome to the 1st African Light Source Workshop

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A SYNCHROTRON RADIATION RESEARCH FACILITY FOR AFRICA

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INTRODUCTION

Synchrotron radiation has revolutionized basic and applied research in many scientific and technological disciplines, leading to a proliferation of facilities around the world. The website lightsources.org has links to 47 synchrotron radiation research facilities based on electron storage rings in 23 countries in operation, construction or planning. Fig. 1 depicts the location of operating light sources worldwide. Several facilities operate more than one ring, so more than 47 rings are in operation. Also, the list of facilities in construction is not complete. For example, a 1.5 GeV facility nearing completion in Poland is not included. See tango-controls.org/Events/meetings/october-2010/polish-synchrotron-tango-2010.10.pdf.





Genesis of the ISC-AfLS

- On 1 August 2014, a group led by Simon Connell (University of Johannesburg) solicited nominations for a new Interim Steering Committee-AfLS.
- From those nominations, the ISC-AfLS was formed.
- On 18 August 2014, the ISC-AfLS was formally launched on the Forum Day of the *African School on Fundamental Physics and its Applications*, held at the University of Cheikh Anta Diop in Dakar, Senegal.



Genesis (cont'd)

- The role of the ISC-AfLS is to initiate a transparent, inclusive and democratic process, culminating in a Conference & Workshop, where it can dissolve itself as a more representative and inclusive **Steering Committee for the African Light Source** is born.
- With that foundation, the vision will gradually be able to take form and mature, attracting support.
- Since its launching, there have been several additions to the ISC-AfLS.

Interim Steering Committee of the African Light Source

Simon Connell (Chair)	University of Johannesburg, SA
Brian Masara (Exec)	SA Institute of Physics, SA (Zimbabwean)
Sekazi Mtingwa (Exec)	TriSEED Consultants, USA.
Tshepo Ntsoana(Exec)	Necsa, SA
Francesco Sette (Exec)	ESRF, Europe
Ahamadou Wague (Exec)	Universite Cheikh Anta Diop, Senegal
Mohammad S. Youssef (Exec)	Cairo University, Egypt
Tabbatha Dobbins	Rowan University, USA
Jonathan Dorfan	OIST, Japan
Esna du Plessis	SASOL, SA
Tarek Hussein	Cairo University, Egypt
Ken Evans-Lutterodt	BNL, USA
Krystle J. McLaughlin	Lehigh University, USA
Masresha, Fetene	Ethiopian Academy of Sciences, Ethiopia
Romain Murenzi	Exec Dir of TWAS, Rwanda
Lawrence Norris	NSBP, USA
Philip Oladijo	Int. U. of Sci. and Tech., Botswana (Nigerian)
Kennedy Reed	LLNL, USA
Herman Winick,	SSRL (SLAC) USA
Sverker Werin	MAX IV, Sweden



Brief History of Synchrotron Science in Africa

- The largest Light Source user community is in South Africa, and Simon Connell has documented that history.
- The first were Trevor Derry and Jacques Pierre Friederich “Friedel” Sellschop, both from the University of the Witwatersrand (Wits). In 1994, Derry performed studies of diamond surfaces at both the Synchrotron Radiation Source-Daresbury Laboratory and ESRF. During the same year, Sellschop participated in other diamond studies at ESRF.



Brief History (cont'd)

- In 1996, Giovanni Hearne, currently at the University of Johannesburg, used the facility at ESRF to study materials under extreme pressures.
- Bryan Doyle, now at the University of Johannesburg, served as a postdoctoral researcher at ESRF around 1999. From those early efforts, the synchrotron light source user community started to grow.
- South Africa convened Synchrotron Science Workshop, Pretoria, 1-2 Dec 2011, to commission development of Strategic Plan.

Synchrotron Science Workshop

Pretoria, 1-2 Dec 2011





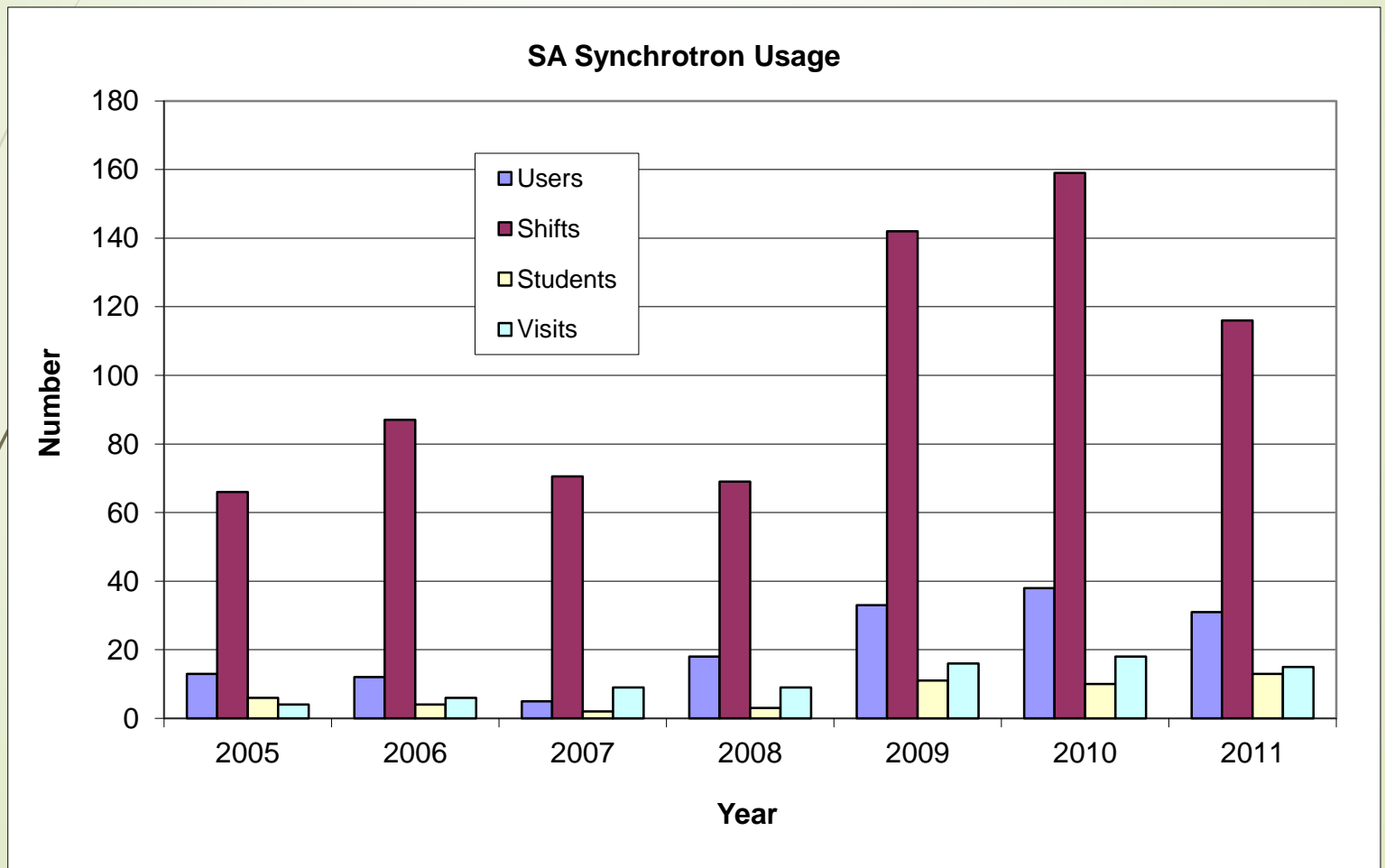
2 Outcomes of Strategic Plan Adopted by SA Government

- Commissioned the development of more detailed Business Plan, which is still in progress.
- On 21 May, 2013, South Africa signed a medium-term arrangement with the ESRF at a level of 0.3% and became the 20th country to join the ESRF.

South Africa Joins ESRF (2013)



1st Big Challenge is to Grow the African Light Source User Community



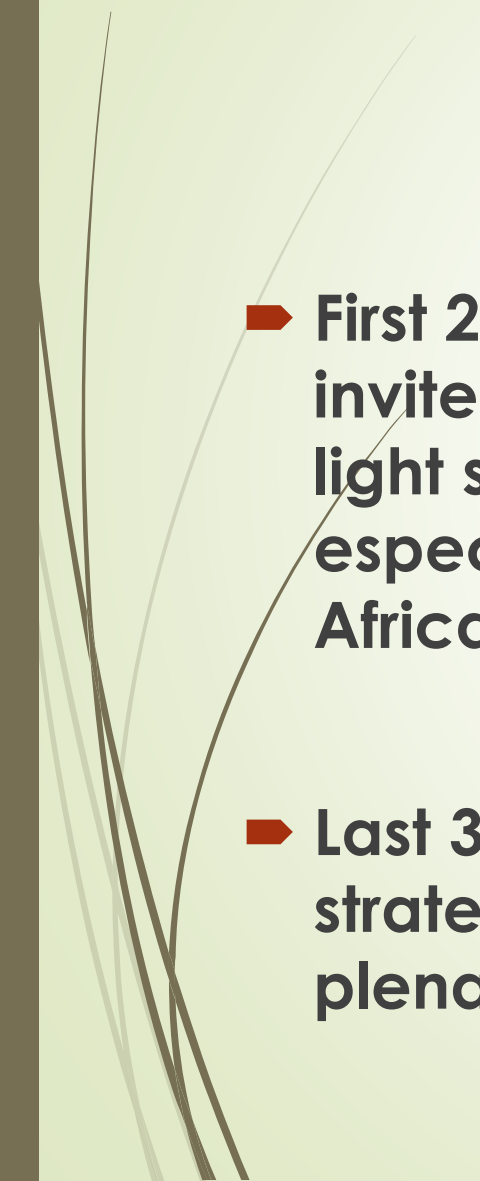
AfLS Conference & Workshop

(<http://www.saip.org.za/AfLS2015/>)

- **Venue: ESRF (Grenoble, France)**
- **Dates: November 16-20, 2015**
- **First in a series of conferences**
- **Venue is selected to be on the site of a premier international light source facility.**
- **Future conferences preferably will be held in Africa.**
- **Purpose is to develop Roadmap and replace the Interim AfLS-SC with a fully mandated Steering Committee.**



Conference & Workshop Agenda

- First 2 days will be the Conference, featuring invited speakers to review the world status of light sources and their achievements, especially concerning problems of interest to Africa.
 - Last 3 days will be the Workshop devoted to strategy and policy, informed by invited plenary presentations.
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Workshop Outputs

- Roadmap forward
- Election of a fully mandated African Light Source Steering Committee.

Observations

- The time scale is expected to be long.
- We cannot yet predict what the specific details of the African Light Source should be, especially since the accelerator technology, (multibend achromats, etc.) and beamline techniques are changing rapidly.
- Must first grow and enhance the Light Source user community throughout Africa.
- Governments must be convinced that a Light Source will be of tremendous benefit. (Malaria/HIV/Ebola cures, energy storage, palaeontology, heritage studies,)
- The time to act is NOW.