



THE AFRICAN LIGHT SOURCE CONFERENCE AND WORKSHOP

16 - 20 NOVEMBER 2015, ESRF GRENOBLE FRANCE



The role of International (Global) Physics Organizations





















Sandro Scandolo

*The Abdus Salam International Centre for Theoretical Physics (**ICTP**)
also Chair, Commission on Physics for Development,
International Union of Pure and Applied Physics (**IUPAP**)*



International Union of Pure and Applied Physics

African publications & citations in Physics (1996-2014)

	Country	Documents	Citable documents	Citations	Self-Citations	Citations per Document	H index
1	 South Africa	14.802	14.575	168.541	29.078	14,11	114
2	 Algeria	8.712	8.634	46.274	11.599	7,23	59
3	 Morocco	6.219	6.166	48.617	10.050	8,53	68
4	 Tunisia	6.209	6.147	37.373	11.010	7,77	54
5	 Nigeria	1.802	1.783	9.160	2.540	7,25	36
6	 Cameroon	848	843	4.739	1.506	7,54	27
7	 Senegal	349	346	1.903	434	7,84	21
8	 Ethiopia	304	301	2.397	353	11,49	23
9	 Sudan	301	300	1.401	247	7,29	16
10	 Libyan Arab Jamahiriya	261	260	1.223	85	5,88	19
11	 Kenya	254	252	1.912	145	9,71	24
12	 Ghana	252	248	1.117	166	5,36	17
13	 Benin	197	194	1.213	225	7,05	16
14	 Namibia	167	163	6.825	498	38,22	45
15	 Botswana	155	153	891	123	5,72	15
16	 Côte d'Ivoire	149	149	677	66	4,52	15
17	 Burkina Faso	125	122	653	92	6,75	14
18	 Tanzania	106	103	761	68	8,52	14
19	 Madagascar	93	92	118	17	4,65	5
20	 Mauritius	92	92	342	76	5,15	10

total: 45,000320,000

SESAME countries: 150,0001,500,000

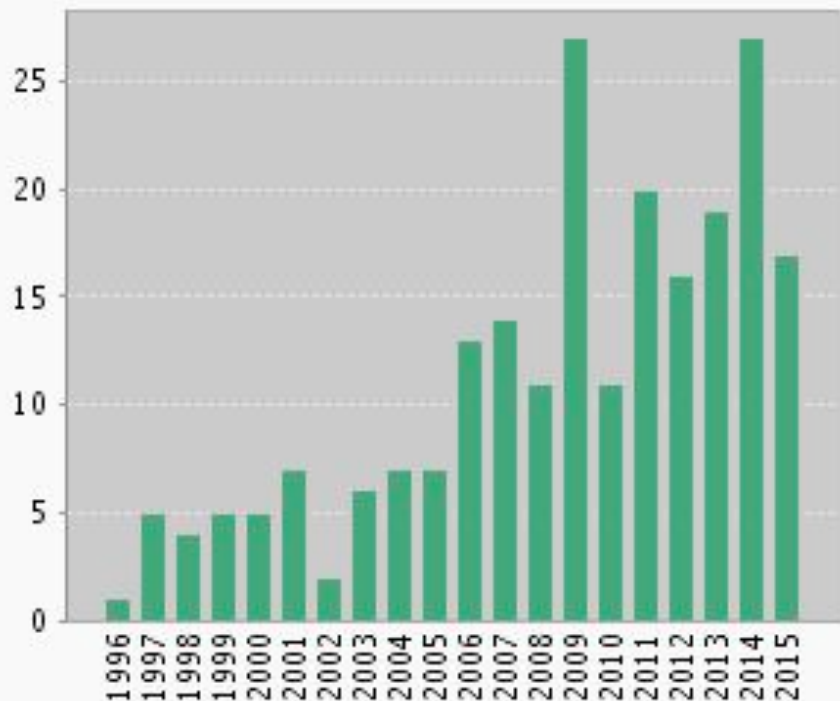
France: 300,0004,500,000

Source:
www.scimagojr.com
 (Scopus)

African publications & citations containing word "synchrotron" (1996-2015)

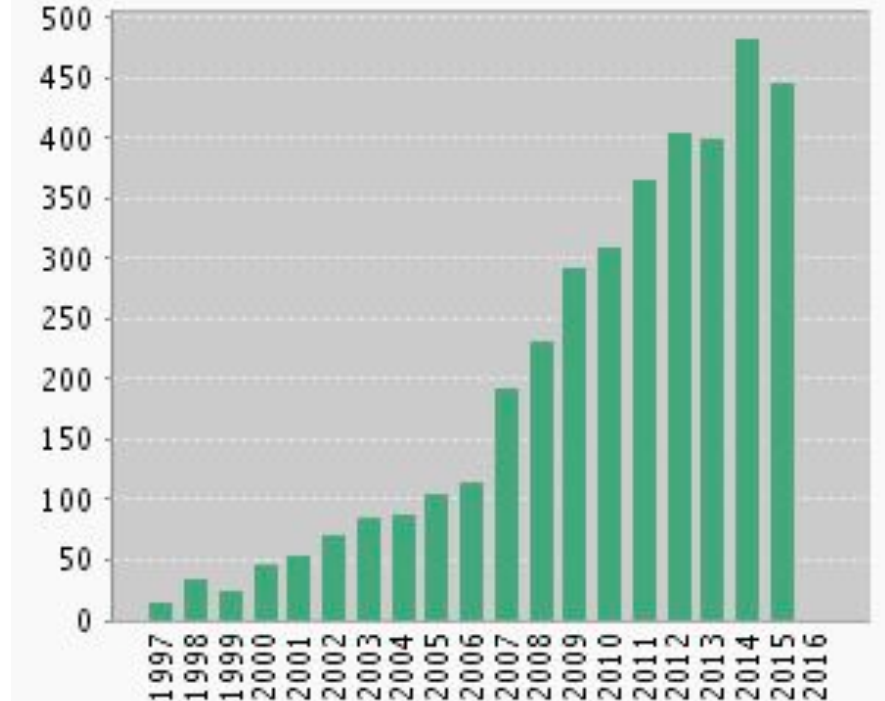
Source: WoK

Publications



total: 250
France: 10,000

Citations



total: 4,000
France: 130,000

Good news:
numbers are growing
citations/paper ~ 16 (good papers!!)



International Union of Pure and Applied Physics

Established in 1922 (first President: W. Bragg)

Scope: “To assist in the worldwide development of physics, to foster **international cooperation** in physics, and to help in the application of physics toward solving problems of concern to humanity”.

60 **member countries** (of which 9 African): Egypt, Tunisia, Algeria, Morocco, Ethiopia, Ghana, Kenya, Senegal, South Africa

24 **Commissions**, among which C13 (Physics for Development) and AC1 (International Commission on Optics –ICO)

Awards several **Prizes**, including young scientist prizes

IUPAP is a member of **ICSU**

C13 : Commission of Physics for Development

“African” members: Diale, Mensah, Mtingwa

Workshops supported in Africa recently:

LAM 10 International conference on Optics and Lasers in Science and Techniques for Sustainable Development, 14-18 January 2014, Dakar, **Senegal**

3rd Biennial African School of Fundamental Physics and its Applications, 3-23 March 2014, Dakar, **Senegal**

1st North African School and Workshop on Electron Microscopy in Materials, 1-14 August 2013, Tunis, **Tunisia**

3rd African School and Workshop on X-rays in Materials
23–28 January, Dakar, **Senegal**

African School on Electronic Structure Methods and Applications
May-June 2012, Eldoret, **Kenya**

2nd African School and Workshop on X-rays in Materials
19-24 January 2009, Dakar, **Senegal**



A successful model of international collaboration

- First and leading *global* research institution for scientific research and education (emphasis on developing countries).
- Founded 1964 IAEA+Italy
(Abdus Salam: Nobel Prize 1979)
- Since 1995: Tripartite: Italy+IAEA+UNESCO
(~ 85% of budget from Italy, ~10% IAEA, ~ 1.5%+administration UNESCO)

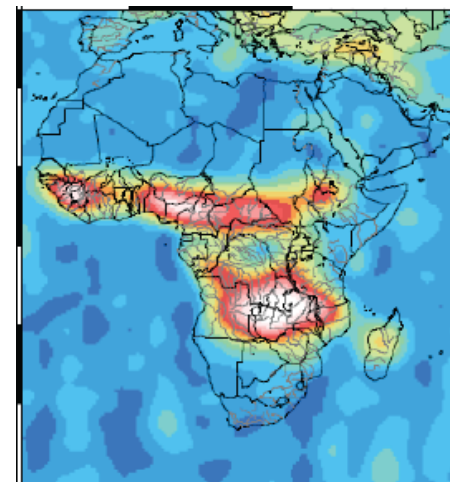
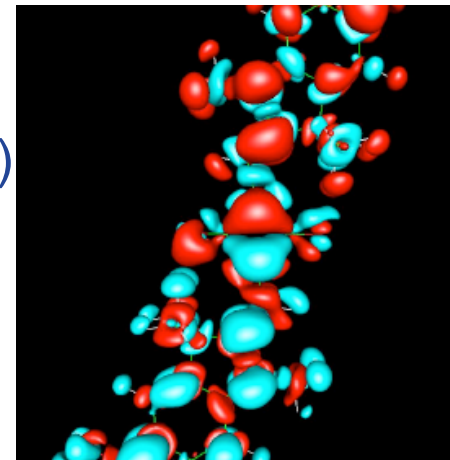
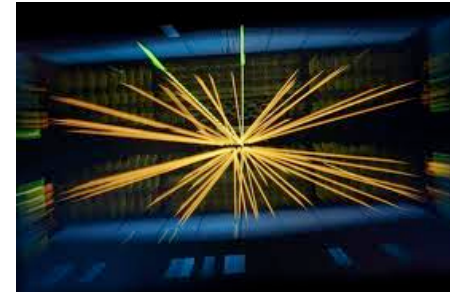


Research Sections

- High Energy, Cosmology and Astroparticle Physics
- Condensed Matter and Statistical Physics (including Synchrotron Radiation)
- Mathematics
- Earth System Physics (Climate Modeling+Seismology)

Other Research Activities

- Multidisciplinary Laboratory (microprocessors)
- Telecommunications/ICT for Development
- Renewable Energy, High Performance Computing, Quantitative Biology

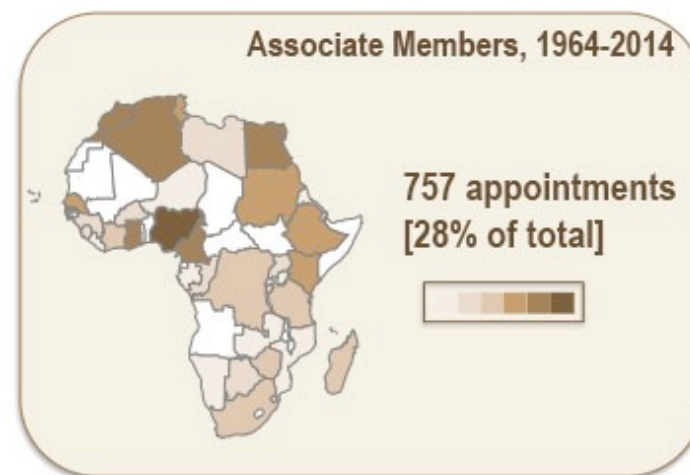


Postgraduate Education

- Post-Graduate Diploma in each of 4 main research areas
 - 40 students/year (with MSc or good BSc from LDCs)
 - 60% admitted in good PhD schools
- STEP (Sandwich PhD)
 - 10 students/year, mostly from LDCs
- PhD in collaboration with
 - International School for Advanced Studies (SISSA)
 - University of Trieste (PhD Fluid dynamics, MSc Physics)
- Master in Complex Systems (Paris, Torino, SISSA)
- Salam Lectures

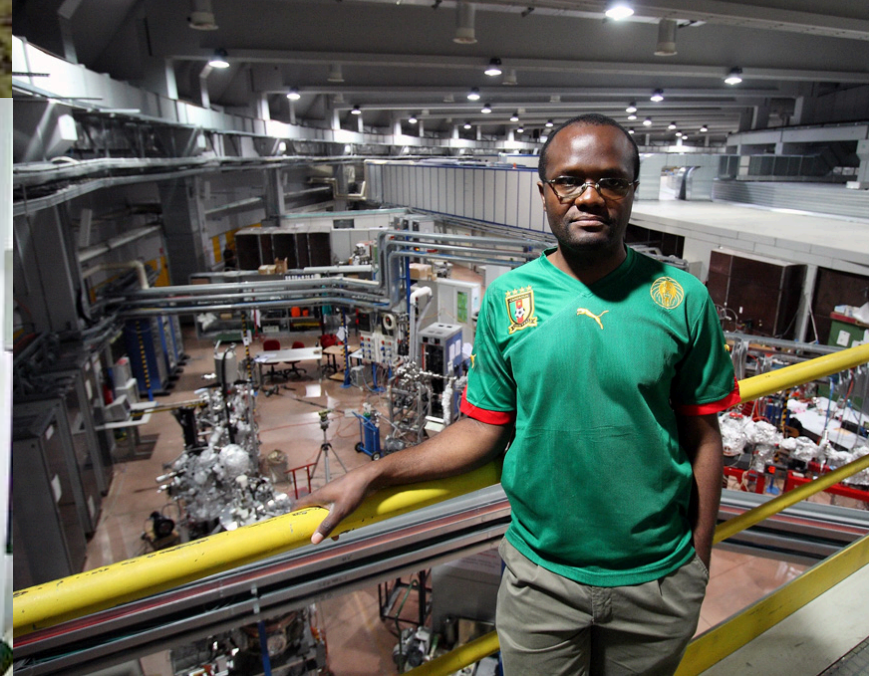
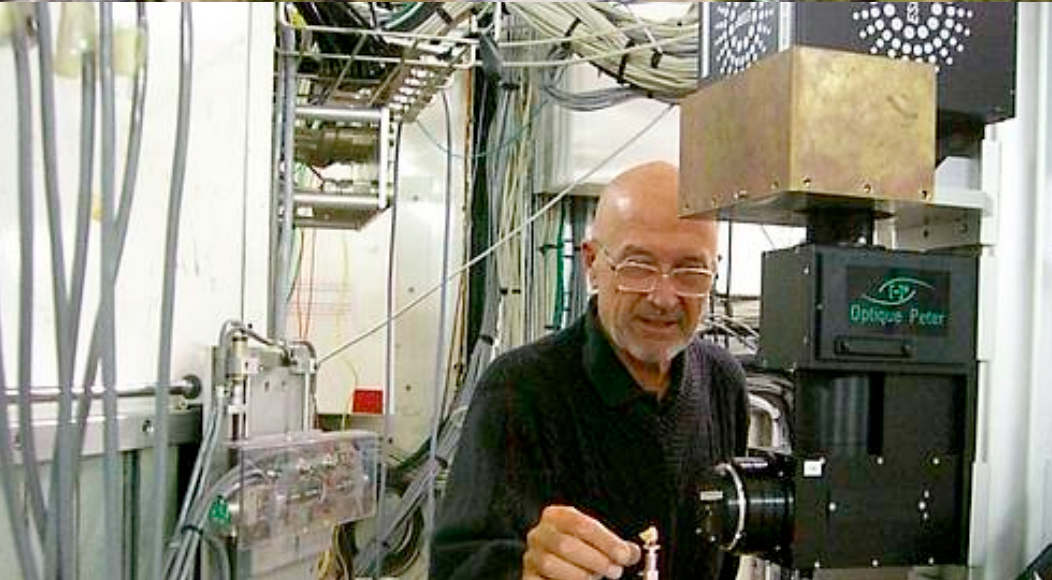
Fighting the "Brain Drain"

- Associates and Federation Scheme
- Office of External Activities
- Training and Research in Italian Laboratories (TRIL)



- Also, ICTP hosts the Academy of Sciences for the Developing World (TWAS), the Global Network of Science Academies (IAP) and the Organization for Women in Science for the Developing World (OWSD)

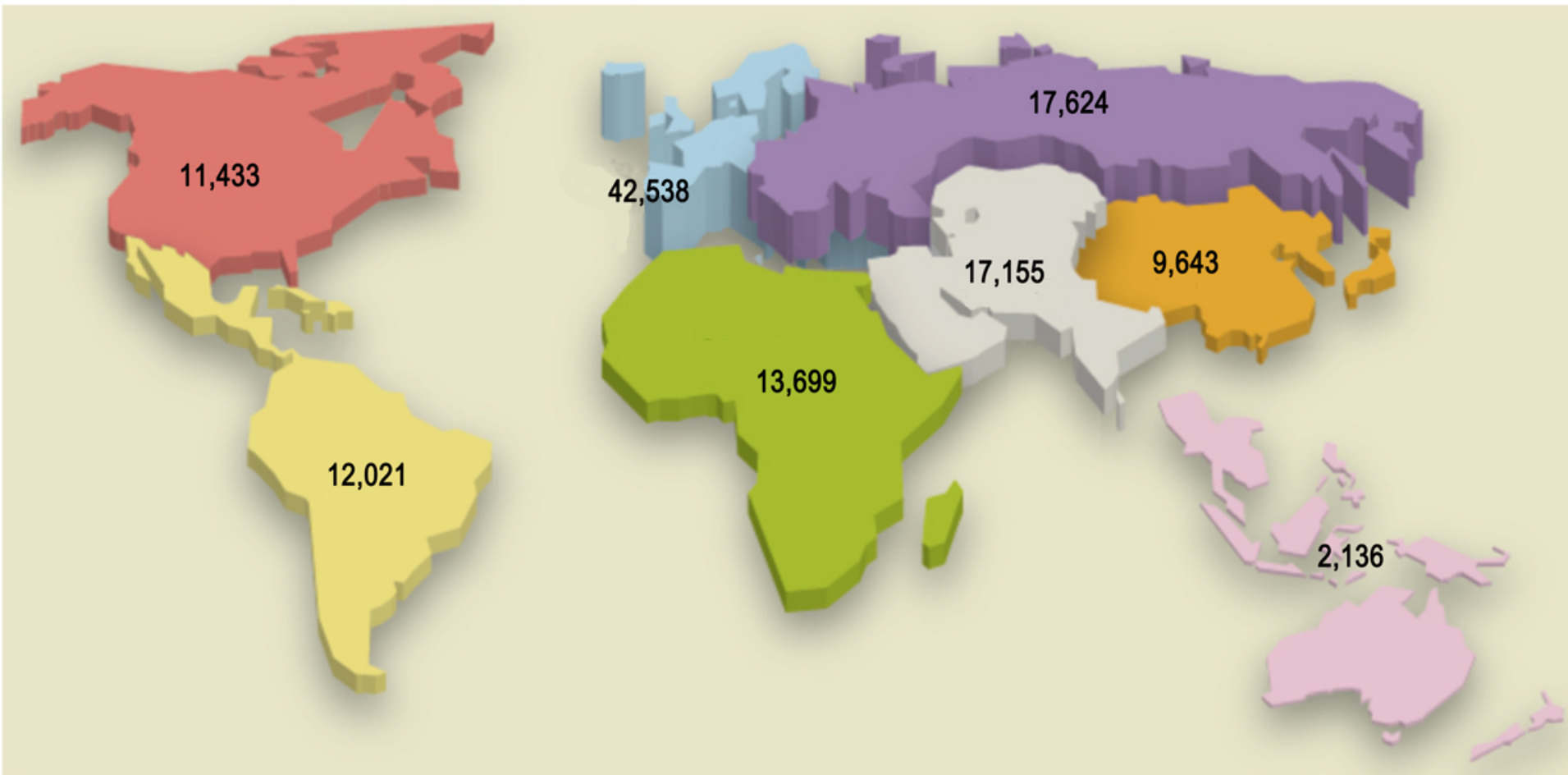
ICTP and ELETTRA Synchrotron facility



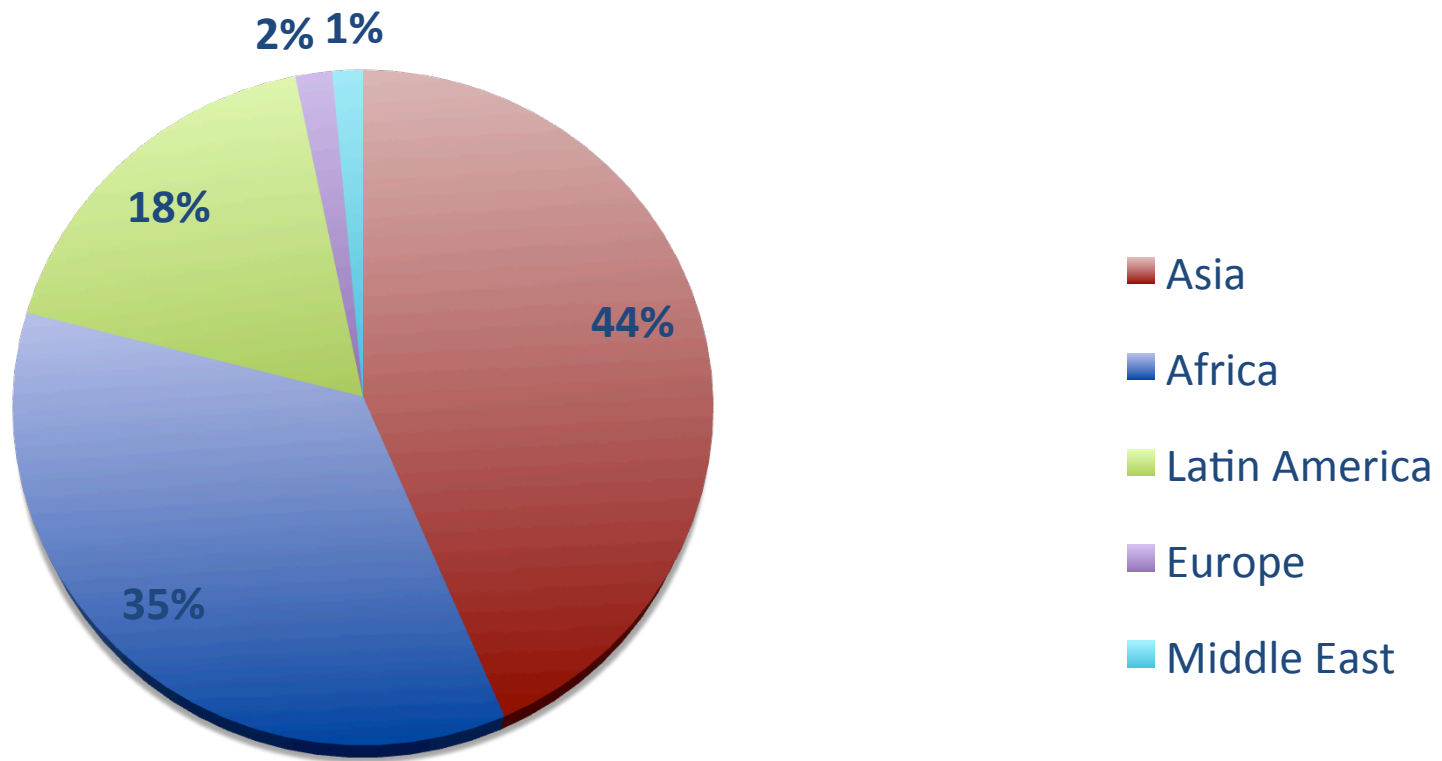


- Schools, conferences, workshops year-round
(~ 60 at ICTP, ~25 hosted activities, ~15 in developing countries)
- Half of them on subjects related to 4 core research areas
- The rest on many subjects: medical physics, optics, nano physics, plasma physics, electronics, high performance computing, biophysics, satellite navigation, science dissemination and e-learning, m-science, entrepreneurship, nuclear physics (IAEA), teacher training, etc.

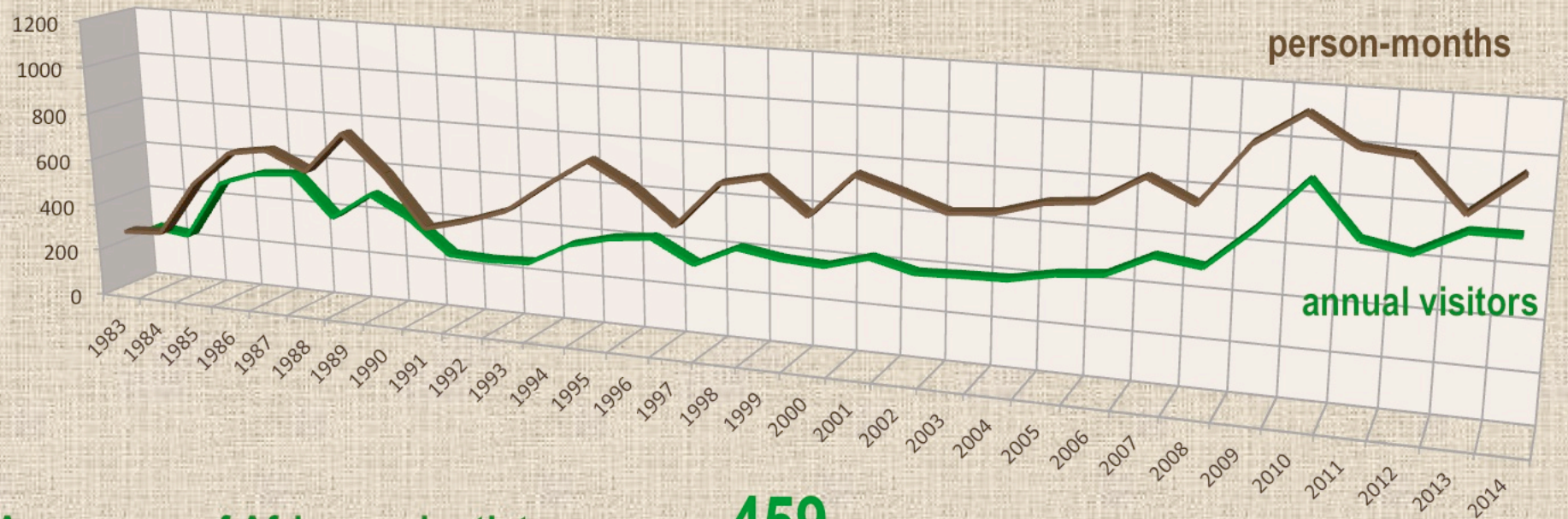
- More than 130,000 visits since 1970
- 190 countries represented
- 20% of ICTP visiting scientists are women



ICTP financial support, 1996-2010
Share by geographical area for selected countries



ICTP visitors and person-months from Africa, Trend 1983-2014



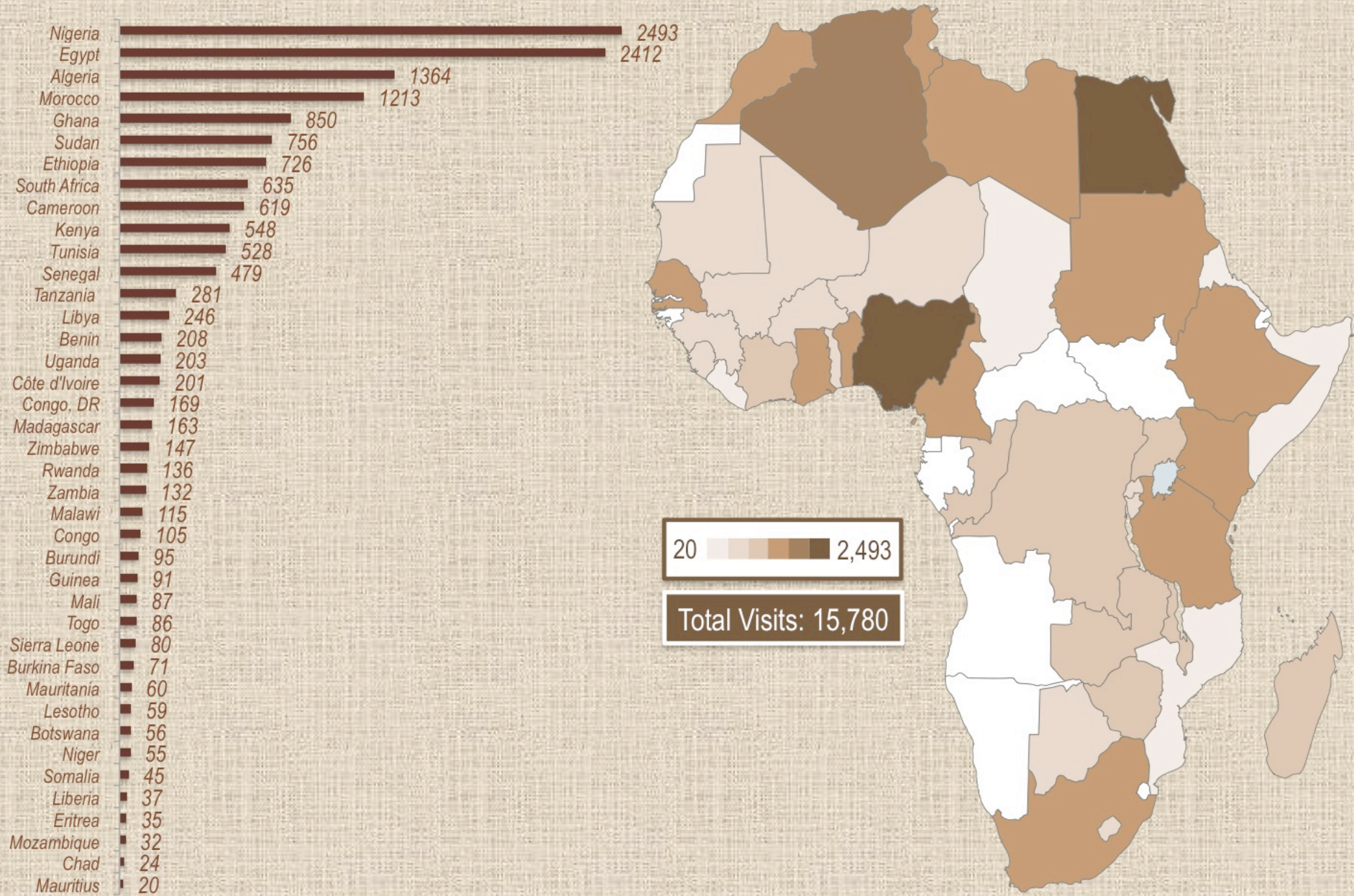
Average n. of African scientists per year: **459**

Average duration of visits: **50** days

Building Scientific Capacity in Africa



Distribution of ICTP visitors from Africa, 1970-2014



Kigali, Rwanda



ICTP branch to be established in Kigali

Main focus: Master program in Physics

Later: PhD and research

Also: Regional ICTP conferences

Size: 100 students

10 scientists/lecturers

5 visiting scientists

1 dedicated building



Looking ahead:

IUPAP and ICTP glad to partner with and support AfLS

Focus on training and networking => towards creation of users' community

Partnership with IUCr (IUCr-IUPAP-ICTP school in 2017 "under construction")

ICSU grant?

Elettra Light Source (Trieste) ?