

STATISTICAL CAPACITY BUILDING AND THE INTERNATIONAL STATISTICAL INSTITUTE: A WHITE PAPER

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1. INTRODUCTION

This document gives a brief background and outlines some topics in the area of Statistical Capacity Building (SCB) for the International Statistical Institute (ISI). It is intended to lead to the development of concrete actions for SCB in developing countries and regions by ISI. It has been greatly inspired by the UN-document [1]. It has also benefitted greatly from comments and suggestions by the members of the ISI Committee on SCB and various other individuals.

The body of this document is devoted to some background, a brief outline of possible activities and modalities of ISI involvement including financing of those activities.

Appendix A provides a brief history of the ISI family, including its Associations as well as committees and special interest groups that are relevant for SCB.

Appendix B summarizes ISI's recent activities in SCB. These include workshops for high-level statisticians in official statistics, other more specialized workshops, and support from the ISI World Bank Funds for Statisticians to attend the World Statistics Congresses and Association conferences. Over the past two or so years, ISI has been engaged in discussions with various groups and stakeholders in Africa, most notably with the *African Group for Statistical Training and Capacity Building* (AGROST). This is also described in Appendix B.

Appendix C provides a list of contacts and other groups of interest for SCB in Africa. This document will be regularly updated to bring in further information from Africa and also from other continents of the world.

Appendix D mentions a number of supporting documents that have been used in drafting the current document.

Appendix E gives a list of abbreviations used in the document.

2. WHAT IS STATISTICAL CAPACITY BUILDING?

Statistical capacity has traditionally been associated with official statistics – the capability to collect, analyze, and disseminate high-quality data in a timely manner and use the data for effective functioning of government, the economy and society. Capacity building refers to all activities in which a statistical agency is involved. The design, development and implementation of surveys and censuses for population, labor, economic, health, agriculture, crime, and other studies are at the core of statistical operations. In addition, it involves estimation of major macro and micro indicators as well as other indicators used to describe vital statistics and social and economic development. Good statistical capacity in this context will require adequate statistical systems and infrastructure (including a well-trained workforce), as well as the necessary support and environment for the use of best statistical practices. The international strategy for dealing with improvement in official statistics has been guided by a global action plan commonly referred to as the *Marrakech Action Plan for*

Statistics [2] agreed upon during the *Second Roundtable on Measuring for Results*, held in Marrakech, Morocco, February 2004. This plan was reaffirmed at the *Fourth High Level Forum on Aid Effectiveness* in Busan, South Korea in 2011.

The portfolio of the ISI, however, is much broader. It includes activities related to statistical teaching and education in schools and colleges, improving the state-of-practice in both the private and public sectors in areas such as data collection, data quality, data analysis, use of statistical software and computing technology, and so on. Of course, the statistical capacity of a country will also depend on (i) its physical and IT infrastructure (buildings and computers), (ii) legal infrastructure (laws, decrees), (iii) statistical infrastructure (registers, surveys and censuses) and (iv) human resource development (human resource policies, staff training).

ISI has different options on how to approach capacity building - to work from the demand side, from the supply side or from a combination of both. For the demand-side approach, the major challenges will be to work with the local stakeholders in different countries to identify the needs, determine which are common and which are unique, and select those that ISI can address. Of course, it is also important to gather information about on-going SCB activities in the different countries, decide what additional value ISI can provide and how, and if/how ISI should collaborate with organizations that are already involved.

ISI can choose to approach SCB from the supply side and decide what areas of statistical capacity it has expertise in. The initial areas which come to mind are related to official and survey statistics, in problems where ISI expertise is readily available: preparation of methodological materials as well as training materials; providing training to staff of NSOs and other data collecting agencies, and providing training at existing Universities and Colleges to improve and strengthen their undergraduate, and graduate programs.

ISI then has to communicate to the user community that it is able to provide those services and develop an appropriate mechanism for financing the activities.

Given the limits on ISI resources (in terms of funding, people and expertise), ISI must prioritize the areas where it can contribute and develop a strategy for maximum impact.

3. HOW TO BUILD CAPACITY?

There are many avenues that ISI can pursue to build statistical capacity. We have to consider the various options, keeping its resources in mind, and decide what and where it can contribute. The primary area of ISI's strength is its global and diverse membership: statisticians with a wide variety of backgrounds and expertise – statisticians from governments, international agencies, business and industries in the private sector, academics and other researchers from around the world. ISI's connections to *National Statistical Offices* (NSOs) in developing countries provide a vital advantage. In many of these countries, NSOs are the main point of entry, and official statistics is the primary driver of statistical activities and the source of funding.

There are a number of specific cases where ISI has the expertise and the comparative advantage:

a) Training and Education: This is one obvious area to start with, and possible activities include: a) training practitioners in official, survey, agricultural, health, and other areas of government statistics; b) training teachers in universities in modern methods of statistics and data analysis; c) helping to develop tailored statistics curricula and degree programs in academic departments; and d) arranging partnerships between academic departments in developed and developing countries that can lead to sharing of course material, joint degree programs, visits, etc. There are different models for

technology transfer: making course material available online to selected instructors in developing countries and working with them individually over a period of time; web-based delivery of courses and workshops; limited on-site workshops and courses; and funding selected individuals to go overseas for short and intensive training. ISI will have to examine which models are useful and in what environments and also learn from the successful experiences of others. At a later stage, ISI and its Associations can be instrumental to help local institutions in developing statistical research that is important for the local environment.

b) Mentoring: The ISI and Bernoulli Society have a fledgling virtual mentoring program for higher degree students in statistics, based at the University of Oslo that supports the initiative. The ISI should invest resources to broaden the scope of this program to care about mentoring of young statisticians in their workplace, to attract many more mentors and mentees and expand it to other regions and to non-academics. Resources are needed to update the website and for staff to monitor and track the mentoring experience.

c) Career Development of Women and Young Statisticians: The *ISI Committee on Women in Statistics* has been involved in mentoring women, including those from developing countries. The efforts of this committee should be accelerated, with more support from senior members both male and female. There is considerable effort in the developed countries to promote the careers of women in STEM (science, technology, engineering, and mathematics), in academia as well as in professional societies, and ISI can learn from these practices. The *ISI Young Statisticians Committee* is relatively new. It has founded the *Young Statisticians Satellite meetings* that have been successfully held in conjunction with the *World Statistics Congresses* in Durban (2009), Dublin (2011) and Hong Kong (2013). The ISI leadership is planning to invigorate this committee and engage its support in developing the careers of young statisticians.

d) Professional Ethics: Ensuring the independence and integrity of statisticians worldwide is an important element in capacity building. It is clear that crucial (local) ethical issues should be recognized by the international community, and ISI should take the lead in supporting the independence of statistical offices. Recent cases in Argentina, Canada, Greece and Mali illustrate the need for such actions. The *Declaration of Professional Ethics* and the creation of the *Advisory Board on Ethical Issues* will definitely help in this respect. It is of utmost importance to monitor the implementation of the declaration in developing countries and to encourage these countries to come up with examples on breaches of the principles.

e) Big Data: ISI members, particularly those working in the private sector and academia, have experience in working with big data. An important issue at this time is how to marry big and open data that are readily becoming available with the data from the official statistics generated by NSOs and other data collection agencies in the Government sector. It is important to advise NSOs in this field.

General: We have to harness the different groups and networks within the ISI family to position ourselves within the world of multilateral organizations, bi-lateral aid agencies, national statistical offices and other partners involved in technical cooperation. In particular, ISI needs to increase the involvement of its Associations such as the *International Association for Survey Statisticians (IASS)*, the *International Association of Official Statisticians (IAOS)* and *Bernoulli Society* as well as relevant committees such as the *Committee on Agricultural Statistics*.

The ISI also has to develop partnerships with sister societies, such as the *American Statistical Association (ASA)*, *Royal Statistical Society (RSS)* and the *International Biometric Society (IBS)*, that have on-going efforts in SCB. It should also reach out to statisticians in the respective diaspora – those with the right expertise and also the right cultural backgrounds and interests.

In addition, ISI should explore partnerships with other entities that are already involved in SCB. One such example is the *Survey Research Centre* at the *University of Michigan* which has been engaged in a number of different training and education programs. The ISI is discussing possible collaborations with this centre. We should identify similar organizations in other parts of the world and develop mutually beneficial collaborations.

Most importantly, ISI has to develop links to local organizations: NSOs, National Statistical Societies, universities, training centers – and also individuals, leaders in the public and private sector and academics, who can guide the discussions and planning and influence local decision makers. Together with these organizations, ISI should learn from any implementation and ensure itself about the impact of the program.

4. FUNDING

Funding is clearly critical to the success of the capacity development initiatives. ISI shall use two approaches:

a) After the ISI has agreed what kind of “services” in all the SCB areas described above it is ready to offer, a proposal has to be developed and presented to the donor community for funding. The mechanism of the financing will be an *ISI SCB Trust Fund* which will finance the ISI work in this area.

b) The second modality is to link ISI capacities with the SCB portfolios of the World Bank, IMF, AfDB, ADB, Paris21, FAO and other multilateral agencies. It has to be understood that ISI will not act as a consulting firm and will not go for bidding. It will have to find a way to agree with the funding institutions to be “recruited” on a non-competitive basis.

The details will have to be developed in consultation with potential funding agencies based on how they can be linked to their own strategic initiatives. Also, ISI needs to be aware of the inherent risks (medical, accidents, etc.) associated with trips to developing countries. ISI and the Associations should be protected if something happens to instructors while serving.

5. ISI COMMITTEE ON STATISTICAL CAPACITY BUILDING

This committee, which was launched formally after the WSC in Hong Kong in 2013, will undertake the planning of SCB activities and provide guidance to the ISI Executive Committee.

5.1. Objectives of the Committee

The central objective of the committee is to exchange knowledge on effective SCB and, through this, to propose suggestions on how the ISI can contribute to SCB in the developing world. The committee itself can undertake the following actions:

- Work with local and regional stake holders (universities, training centers, National Statistical Offices, statistical societies, ...) to identify on-going efforts in SCB in that region and determine the added value of the ISI over other institutions
- Work with other groups from developed countries to identify possible collaborations
- Work within ISI to assess and assemble the “work force” which is ready to engage in SCB
- Based on the above, develop recommendations for SCB efforts in specific regions
- Work with the EC and Council (and leadership of other societies) to finalize and implement the programs
- Approach possible sponsors for fund raising
- Assess the effectiveness of on-going efforts

- During a WSC, prepare an invited paper session on SCB problems for the region where the congress is held if appropriate
- Prepare a flyer on SCB for distribution during ISI-sponsored meetings
- Include information on SCB on the web-site of the ISI
- Organize workshops on conceptual and/or regional aspects of SCB
- During each WSC organize a closed meeting of the Committee and an open meeting where SCB problems can be discussed freely.

5.2. Composition of the Committee (October 2013)

Jef TEUGELS, BELGIUM, jef.teugels@wis.kuleuven.be -- Chair
 Misha BELKINDAS, USA, mbelkindas@verizon.net
 Grant CAMERON, USA, gcameron1@worldbank.org
 Oliver CHINGANYA, TUNISIA, o.chinganya@afdb.org
 Abdel EL-SHAARAWI, EGYPT/CANADA, elshaarawi@aucegypt.edu
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 Pali LEHOHLA, SOUTH AFRICA, palil@statssa.gov.za
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 Denise SILVA, BRAZIL, denise.silva@ibge.gov.br
 Jan Robert SUESSER, FRANCE, jrsues@wanadoo.fr

5.3. Further members

Apart from the members above the following two persons are ex-officio members:

Vijay NAIR, USA (President ISI), vnn@umich.edu ; isi-president@umich.edu

Ada VAN KRIMPEN (Director Permanent Office ISI), An.vankrimpen@cbs.nl

To facilitate cooperation with other groups active in capacity building we are currently expanding the committee with liaisons. The list of liaisons will be added once it is sufficiently representative.

Appendix A: Brief Background of the ISI

For extensive information on the ISI, consult its website [3]. The ISI was founded in 1885, following a series of International Statistical Congresses that were first convened by Adolphe Quetelet in 1853. The period from 1885 to 1938 was relatively quiet and stable. The September 1938 Session in Prague was cancelled in its second day because of the threat of war, and the ISI essentially went into hibernation. In 1947, at its biennial session in New York, then President Stuart A. Rice proposed and implemented major changes. He argued: *The ISI of the future must be regarded as more embracing than the single society of elected members that we have been in the past. On every hand there is a new dependence upon statistics and statisticians. There is a crying need for world leadership in this field. Such leadership will require the revitalization of our membership. It requires that we burst the bonds of our present statutes which restrict the capacity of our organization for evolution, growth and adaptation to the period in which we live.*

The new statutes brought a fundamentally new mission for ISI, emphasizing international communication among statisticians rather than with governments, and supporting the international promotion and dissemination of research on the theory and practice of statistics. ISI saw itself as an umbrella organization reaching well beyond its narrow base of elected members and facilitating international communication among groups of individuals with common interests.

Since then, the ISI has undergone various changes, including the formation of Sections (now called Associations), changes to its governing structure, and most recently the creation of regular (open) membership in 2011.

SCB has been incorporated as an essential ingredient in [4], the Strategic Plan 2011-2015 of the ISI.

Associations

ISI has a total of seven Associations (called Sections until 2011), with the first one established in 1973 and the latest joining the ISI family in 2008. These Associations have their own programs and conferences and participate in the scientific work of the ISI. The overall expertise of the ISI has been substantially expanded in key areas by its Associations.

Here is a brief description of the various associations. Additional information on the scope and recent activities of the Associations can be found in [5].

- *International Association for Survey Statisticians (IASS)*. IASS is the oldest of the ISI Associations, starting in 1973. It aims to promote the study and development of the theory and practice of sample surveys and censuses. It also aims to increase the interest in surveys and censuses among statisticians, among governments and the public in the different countries of the world and therefore carries an important responsibility for statistical surveys in developing countries.
- *Bernoulli Society for Probability and Mathematical Statistics*. The society, launched in 1975, is engaged in the advancement of the sciences of probability and mathematical statistics and of their applications to all those aspects of human endeavor, which are directed towards the increase of natural knowledge and the welfare of mankind. While other ISI Associations also have a research component, the Bernoulli Society is traditionally considered to be the society taking care of the needs of academic statisticians.
- *International Association for Statistical Computing (IASC)*. IASC, started in 1977, promotes collaborative efforts within international, national, regional and other organizations and institutions to evaluate statistical computing techniques and programs and to facilitate the exchange of computer programs and meetings.

- *International Association for Official Statistics (IAOS)*. IAOS, launched in 1985, provides a home to physical and legal persons who have scientific or professional interest in the field of official statistics. It fosters the development of effective and efficient official statistical services, particularly in developing countries, through international contacts among individuals and organizations, including users of official statistics as well as research institutions.
- *International Association for Statistics Education (IASE)*. The IASE, which started in 1991, seeks to promote, support and improve statistical education at all levels everywhere around the world. It is the international umbrella organization for statistics education. It fosters the international cooperation, and stimulates discussion and research.
- *International Society for Business and Industrial Statistics (ISBIS)*: ISBIS promotes applications, research, and best current practices in business and industrial statistics, facilitates technology transfer, and fosters communications among members and practitioners worldwide. ISBIS was created in 2005.
- *The International Environmetrics Society (TIES)*: TIES aims to foster the development and use of statistical and other quantitative methods in the environmental sciences, environmental engineering and environmental monitoring and protection. TIES started in 1990 as an independent society and became an Association of ISI in 2008.

Committees

The ISI also has a number of different committees. A survey can be found in [6]. Here we only mention those that are relevant to SCB.

- The *ISI Advisory Board on Ethics* advises the EC and Council on relevant ethical issues and to recommend or undertake activities for promoting observance of ethical principles in statistics.
- The *ISI Publications Committee* is one of the most important ISI committees. Its objective is to assess and coordinate publication activities of the ISI family on a continuing basis and advice the EC, Council and Associations.
- The *ISI Awards Committee* decides on several awards, prizes and certificates that cover various types of papers, presentations and accomplishments by statisticians in different statistical disciplines. These include the Jan Tinbergen Awards for Young Statisticians from Developing Countries; and the biennially Mahalanobis Award offered by the Indian Government to a statistician from a developing country who has worked there in recognition of his/her lifetime achievement in Statistics and the promotion of best statistical practices.
- The *Scientific Program Committee* and the *Short Course Committee* for the biennial ISI World Statistics Congress.

Special Interest Groups

These committees focus on: a) specific areas of statistics that are not represented by the Associations or that cut across different areas of interest; or b) special communities of statisticians. For a full list, see [6]. The most relevant ones for capacity building are mentioned here.

- The *ISI Committee on Agricultural Statistics (CAS)* promotes the development of and interest in agricultural statistics on an international basis. It goes without saying that agricultural statistics forms one of the most fundamental branches of statistics for most developing countries, in particular for Africa and Asia. More specific involvement of this committee is discussed in a later section. So far CAS has organized five with the sixth to take place on late October 2013 *International Conferences on Agricultural Statistics* [7]. It has been an essential partner in the production of [8] and [9] that are basic for the development of the Global Strategy for Agricultural Statistics.

- The *ISI Committee on Risk Analysis* is charged to improve and expand the role of statistics in risk analysis. The main focus of the committee will be on human health, welfare, and survival, but the committee also pursues activities as indicated in risks to the environment and ecology, physical structures, agriculture, and other matters of concern.
- The *ISI Committee on Tourism Statistics* stimulates the development of statistics in the travel and tourism industries and facilitates communications amongst those groups who are interested in or using travel and tourism statistics.
- The *ISI Committee on Women in Statistics* promotes and strengthens the representation of women statisticians in the ISI and its Associations and collects information among women statisticians.
- The *ISI Young Statisticians Committee* aims to identify ways of encouraging active participation from young statisticians within the ISI community.

Outreach Committees

Outreach Committees are intended to promote statistical activities in developing regions of the world. In some sense they are small-scale versions of the ISI and its Associations. They intensify the interaction between statisticians from countries in the region with the ISI and all of its Associations.

- The *ISI East Asian Outreach Committee*
- The *ISI Khwarezmi Committee on Statistics of Arab Region*
- The *ISI Latin American Outreach Committee*
- The *ISI Outreach Committee for Central Eurasia,*
- The *ISI Outreach Committee for South East Asia,*
- The *ISI Outreach Committee for South Asia.*

Appendix B: Prior Initiatives by ISI

B.1. First Actions Focusing on the African Continent

During the Executive Committee meeting in May 2010, a first draft was circulated on possible ways to involve ISI into SCB. The major point discussed was the development of a list of short courses that could be offered to developing countries. Titles should emanate from the needs of the countries and deal with any of the areas in which the ISI has expertise. Instructors should be asked to deliver courses in geographical areas that are easily reached by participants from neighboring countries. An essential advantage of such an arrangement is that these courses can be given in any of the languages, official to the region.

The ISI-Council endorsed the project during its meeting in July 2010 in Reykjavik, Iceland. Informal contacts between ISI and representatives from Africa took place during the UNSC meeting in New York in February 2011.

It was also recommended that the ISI work with the *African Group for Statistical Training and Capacity Building (AGROST)*, which is the coordination body for statistical training activities in Africa. The first direct contacts with AGROST and other stake holders from Africa took place during a special meeting in Dublin, August 2011 at the occasion of the WSC. It was recognized that the objectives of the ISI-initiative fit perfectly with the objectives and mandate of AGROST. As the coordination body for statistical training activities in Africa, AGROST could support ISI in the design and the implementation of the project. It was further proposed to start the implementation with a small pilot project during which AGROST and ISI could continue discussions on how to broaden and intensify the project into an initiative where many more institutions, subjects and world regions would be involved.

During the meeting of the *United Nations Economic Commission for Africa* (UN-ECA) in Cape Town in January 2012, ISI applied for membership of AGROST. The strategic portfolios in which the ISI was expected to contribute included:

- assist NOSs in African countries to acquire the best and most recent information on the collection, treatment and dissemination of statistical data
- participate in and contribute to up-to-date training programs
- intensify its initiatives for training in important statistical areas in official statistics but also in other branches of statistics. This is in branches such as in agriculture, environment, business and industry, software, health, tourism, actuarial science and finance, etc.
- work with the continent in the implementation of the code of practice as enshrined in the charter and underlying principles.

The membership was officially approved [10] and ISI was formally accepted as a Technical *and/or Sponsoring Partner* within AGROST with the above elements as goals.

B.2. Workshops for High-Level Official Statisticians

Up till 2004, ISI had organized seminars for heads of *National Statistical Offices* (NSO) from developing countries. ISI has renewed this activity recently with three recent workshops on up-to-date developments and practices for leaders of NSOs. In March 2011 the ISI organized the *ISI High Level Workshops Leadership in Modern Statistical Systems* in Addis Ababa, Ethiopia for the leaders of NSOs in English speaking African countries. A second workshop took place from 12-14 November 2012 in Daejeon, Republic of Korea for the management of NSOs in South East Asia. A third workshop took place from 12-14 December 2012 in Dakar, Senegal for the leaders of the Francophone African Countries. This workshop received grants by the *World Bank Trust Fund for Statistical Capacity Building* and the *African Development Bank* (AfDB).

B.3. Other workshops

B.3.1 Daejeon 2012

A two-day conference "*Expertise Builds Capacity*" was jointly organized by the ISI, the Korean Statistical Office and the Korean Statistical Society in Daejeon, Korea, 14-15 November 2012. A full report of the meeting can be found in [11]. The following is a selection from the practical recommendations that came out of the conference.

- In collaboration with IAOS, ISI should make a survey of the statistical knowledge needed in the NOSs. The ongoing initiative of EUROSTAT to develop a Master in Official Statistics could be used as a guideline. Also on the practical side, ISI needs to get much more precise information on the needs of NSOs in connection with data handling.
- Rather than working country by country, ISI should attempt to delineate regional areas in the world that have similar needs in connection with SCB.
- ISI can take initiatives to build bridges between NSOs and universities from the same region. Such initiative should help NSOs to properly define their needs with respect to statistical training while at the same time universities can offer curricula where such training can be provided. This collaboration should also lead to requests from NSOs towards universities for help in developing relevant research.
- Mentoring forms an area where ISI can take a leading role since it has the relevant expertise available.

B.3.2. Workshop in Cotonou, Benin, 2013

An ISI-cosponsored Conference on *Applied Statistics for Development in Africa (SADA)* was organized in Cotonou, Benin, Africa during March 5-8, 2013. It was preceded by a one-day workshop for Young Statisticians that was supported by the ISI World Bank Funds. The conference succeeded in facilitating interactions between researchers and professionals from university, scientific research organization, business, government and intergovernmental bodies. One of the main objectives of the conference was to promote scientific research in statistics that was relevant to Africa such as famine, population mobility, public health, agriculture, food science, finance, tourism, business and industry.

B.3.3 Workshop in Nashik, India, 2013

A workshop *Statistics in Action* was held during March 7–10, 2013 at Yashwantrao Chavan Maharashtra Open University, Nashik, Maharashtra State, India. The workshop was convened by Anil Gore and Madhav Kulkarni and was the first activity of the *ISI Outreach Committee for South Asia*. The meeting was preceded by winning presentations on 5th March for undergraduate students and on 6th March for graduate students. The main goal of the meeting was to build statistical capacity in South Asia and to bridge the major disconnect between the teaching and the practice of statistics.

B.3.4. Workshop at AIMS, Muizenberg, South Africa, 2013

At the *African Institute for Mathematical Sciences (AIMS)* in Muizenberg, Cape Town, South Africa, a *Workshop on Environmental Statistics* was held in the period 16-22 March, 2013. The workshop was supported by the *World Bank Trust Fund for Statistical Capacity Building*, the ISI and AIMS. The workshop was intended to improve the capacity of statistical officers and academics in developing countries in the relatively new area of environmental statistics and, through case studies, to encourage participants to apply it in the African context.

Appendix C: Groups and Individuals related to SCB in Africa

In this Appendix we have tried to collect all groups and groups of people that are connected to capacity building activities in Africa. For most of these groups we have addresses or/and e-mails. However to respect privacy we have not included them in the current document.

C.1. The African Statistical System (ASS)

a) At regional level: UNECA through

- *African Center for Statistics (ACS)*
- *African Development Bank (AfDB) Statistics Department*
- *African Union Commission (AUC) - Statistical Unit*
- *African Capacity Building Foundation (ACBF)* which is involved not only in capacity building but also in funding.

b) At the sub-regional level: the services in charge of statistics of the

- *Union économique et monétaire Ouest-Africaine*
- *Communauté économique et monétaire d'Afrique Centrale*
- *Economic Community of Central African States*
- *Southern Africa Development Community*
- *Economic Community of West African States*

c) At national level: the national statistical systems (NSS) with their Heads. The list of these offices and their heads are available at the Permanent Office.

C.2. Statistical Bodies in Africa

Governance of the African Statistical System Africa Region has set up a series of bodies for coordination, consensus building and information sharing including:

- The *Statistical Commission for Africa* (STATCOM-Africa) which is the apex body in Africa that discusses issues pertaining to statistical development (replication of the United Nations Statistical Commission for Africa region). STATCOM-Africa reports both to the Joint Conference of the UNECA Conference of Ministers of Finance, Planning and Economic Development and the AUC Conference of Ministers of Economy and Finance; and the UN statistical Commission. *UN Economic Commission for Africa* (UNECA). It aims at coordinating and integrating statistical activities in Africa and monitoring the recommendations of STATCOM-Africa. It reports to STATCOM-Africa and to the UN Coordination Committee of Statistical Activities (CCSA).
- *Africa Statistical Coordination Committee* (ASCC) which is composed of African Development Bank (AfDB), African Union Commission (AUC)
- *AFRISTAT, l'Observatoire Economique et Statistique d'Afrique Subsaharienne*, combines more than 20 sub-Saharan countries
- *African Capacity Building Foundation* (ACBF)
- In addition, there is a prominent country-led initiative which is the *Africa Symposium on Statistical Development* (ASSD) whose goal is to help restore statistical development in Africa and encourage the undertaking of a census in every African country towards enriching the information base on which decision-making in Africa can be made as well as monitoring the progress made towards the accomplishment of the MDGs.
- To ensure the coordination of activities and initiatives in support of statistical training and human resources development in Africa STATCOM has created the *African Group for Statistical Training and Capacity Building* (AGROST) on initiatives and programmes in support of statistical training and ensure their monitoring and to ensure a permanent forum for the exchange of information and best practices on statistical training and human resources development in African NSSs. ISI was accepted as a technical and financial partner in 2012.

C.3. Statistical Associations

Statistical development on a national level in Africa should be the endeavour of the entire statistical community. Therefore, statisticians are encouraged to join *National Statistical Associations* (NSAs). Currently the ones that we know exist are in the list below. For most of them we have information about the current Presidents.

- Botswana: Botswana Statistical Association)
- Burkina Faso: Association des Statisticiens et Démographes du Burkina Faso
- Cameroon: Associations des Statisticiens du Cameroun
- Congo: Association des Statisticiens
- Côte d'Ivoire: Association des Statisticiens et Démographes du Côte d'Ivoire
- Democratic Republic of Congo: Association des Statisticiens du Congo
- Equatorial Guinea: Association des Statisticiens
- Ethiopia: Ethiopian Statistical Association (ESA)
- Gabon : Association des Statisticiens du Gabon
- Ghana: Ghana Statistical Association
- Ghana Association of Statistics Students Alumni
- Kenya: Kenya National Statistical Society
- Madagascar: Association Malagasy des Ingénieurs de la Statistique
- Malawi: Statistical Association of Malawi
- Mali: Association Malienne de Statistique
- Mauritania: Association des Statisticiens de Mauretanie

- Morocco: Association Marocaine des Ingénieurs Statisticiens
- Mozambique: Associação de Estatísticas de Mocambique
- Niger: Association des Statisticiens et Démographes du Niger
- Nigeria: Nigerian Statistical Association
- Rwanda: Association Rwandaise des Statisticiens
- Senegal: Association Sénégalaise pour la Statistique
- South Africa: South African Statistical Association
- Tanzania: Tanzania Statistical Association
- Togo: Association des Statisticiens et Démographes
- Tunisia: (1) Tunisian Association of Statistics and its Applications (2) Tunisian Association of Statistical Engineers (3) Tunisian Statistical Society
- Uganda: Uganda Statistical Society
- Zimbabwe: Zimbabwe Statistical Association

Continental Statistical Association: An African Statistical Association was established in the late 80s but does not function any more. Plans are set up to revamp it or create a new association.

Because of the peculiarities of the Francophone system of statistical training and considering the vacuum left by the former AFSA, the few teachers of statistics in Francophone universities, in close collaboration with their colleagues in English-speaking universities, have taken important steps to establish a *Statistical Pan African Society* (SPAS) which already shows some activity (Website, Conferences). According to the latest available information the group has 131 members distributed over the continent. Also the journal *Afrika Statistika* has been launched (www.jafristat.net).

C.4. Training Institutions

In sub-regional or national *Statistical Training Centres* (STCs)

- *Ecole Nationale de Statistique et d'Economie Appliquée* (ENSEA), Abidjan, Ivory Coast
- *Institut Supérieur de Statistique et d'Economie Appliquée* (ISSEA), Yaoundé, Cameroon
- *Ecole Nationale de Statistique et d'Analyse Economique* (ENSAE), Dakar, Senegal.
- *Institute of Statistics and Applied Economics*, Kampala, Uganda
- *East African Statistical Training Centre* (EASTC), Dar-es-Salam, Tanzania
- *Makerere University* based in Entebbe, Kampala, Uganda
- *Kigali Institute of Science and Technology*, Kigali, Rwanda
- *Instituto Nacional de Estatística, Mozambique* (INE)
- *Ecole Nationale de Statistique et d'Economie Appliquée*, Rabat, Morocco
- *Ecole Supérieure de la Statistique et de l'Analyse de l'Information* (ESSAI), Tunis, Tunisia.

The three STCs in Abidjan, Yaoundé and Dakar are working through a network CODESA (Conférence des Ecoles de Statistique Africaines) that has adopted a LMD system that compares to the English Bachelor – Master – PhD system. They have good connections with Anglophone counterparts, in particular with Makerere University and EASTC. The three named STCs together with ESSAI are in partnership with GENES (Groupe des Ecoles Nationales d'Economie en de Statistique), the training branch of the French INSEE.

Demographers are trained in departments of demography in University or in sub-regional institutes of Demography such as

- *Institut de formation et de recherche démographiques* (IFORD), Yaoundé, Cameroon
- *Regional Institute for Population Studies* (RIPS), Accra, Ghana
- *Cairo Demographic Centre* (CDC), Cairo, Egypt.

C.5. Universities

Statistics is taught at universities (department of Statistics or Departments of Mathematics mostly in English-speaking countries). In [12] a survey is given of the statistics programmes that are offered in African universities. The statisticians with whom we have had direct contact are very limited. Almost all of them are related to ISI and are therefore listed below.

Apart from them we have contact with the following institutions:

- *Partnership for Africa's Next Generation of Academics and Professionals* (PANGeA): 6 African universities (Botswana, Nairobi, Stellenbosch, Makerere, Malawi, Dar-es-Salaam); (www.pangeaonline.org)
- *Strathmore Centre for Applied Research in Mathematical Sciences* (SCARMS), Kenya
- *African Institute for Mathematical Sciences* (AIMS): (1) Muizenberg - South Africa (2) Senegal, (3) Ghana, (4) Cameroon, (5) Tanzania

C.6. Subject Areas

In certain areas we have been able to establish personal contacts, in particular in agriculture, finance and biostatistics.

C.7. Individual Resource Persons

We have collected a list of individual people who have shown interest in statistical capacity building activities in Africa.

C.8. ISI-Members from Africa

The Permanent Office in Den Hague has information on the current African members of ISI and the Associations.

Appendix D. Supporting Documents

[1] *Indicators of Sustainable Development: Guidelines and Methodologies* United Nations publication, ISBN 978-92-1-104577-2, United Nations, 2007

[2] *Dakar Declaration on the Development of Statistics*, Paris 21, Nov. 2009

[3] <http://www.isi-web.org>

[4] <http://www.isi-web.org/images/about/2011-Nov-ISIstrategicPlan2011-2015.pdf>

[5] <http://www.isi-web.org/isi-associations>.

[6] <http://www.isi-web.org/sections/operational-committees/43-about/about/150-ethics-intro>

[7] *International Conferences on Agricultural Statistics* (ICAS) sponsored by the (CAS).

[8] *Global Strategy for Improving Agricultural and Rural Statistics*, United Nations 41st Session, 2010

[9] *Global Strategy for Improving Agricultural and Rural Statistics. Implementation Plan for Africa*, September 2010

[10] Resolutions from *StatCom-Africa III*, Cape Town, January 2012

[11] J.L.Teugels, Report of ISI Special Conference 2012, Expertise builds Capacity, Daejeon, http://isi.cbs.nl/events/2012ConferenceExpertiseBuildCapacityDaejeon/ISI_Daejeon_Conference%202012_Proceedings_110613.pdf

[12] *Proposal for a Statistical Training Programme for Africa (2011-2013)*, African Centre for Statistics, October 2010

Appendix E. List of Abbreviations

ACBF: African Capacity Building Foundation
ACS: African Center for Statistics
AfDB: African Development Bank
AGROST: African Group on Statistical Training and Capacity Building
AIMS: African Institute for Mathematical Sciences
ANSTI: African Network of Scientific and Technological Institutions
ASA: American Statistical Association
ASCC: African Statistical Coordinating Committee
ASSD: Africa Symposium on Statistical Development
AUC: African Union Commission
AVU: African Virtual University
CAS: Committee on Agricultural Statistics
CDC: Cairo Demographic Centre
CODESA: Conférence des Ecoles de Statistique Africaine
COPSS: Committee of Presidents of Statistical Societies
EASTC: East African Statistical Training Centre (EASTC)
ENE: Escola Nacional de Estatística
ENSAE: Ecole Nationale de Statistique et d'Analyse Economique
ENSEA: Ecole Nationale de Statistique et d'Economie Appliquée
EC: Executive Committee
FAO: Food and Agriculture Organization
GIS: Geographic Information Systems
GIZ: Deutsche Gesellschaft für Internationale Zusammenarbeit
IAOS: International Association of Official Statistics
IASC: International Association for Statistical Computing
IASE: International Association for Statistics Education
IASI: Inter-American Statistical Institute
IASS: International Associations for Survey Statistics
IBS: International Biometric Society
ICAS: International Conferences on Agricultural Statistics
IFORD: Institut de Formation et de Recherche Démographiques
IMF: International Monetary Fund
ISBIS: International Society for Business and Industrial Statistics
ISI: International Statistical Institute
ISLP: International Statistical Literacy Project
ISSEA: Institut Supérieur de Statistique et d'Economie Appliquée
MARM: Mentoring African Research in Mathematics
MDG: Millennium Development Goals
NGO: Non-Governmental Organization
NSO: National Statistical Office
NSS: National Statistical Society
OECD: Organization for Economic Co-operation and Development
OC: Outreach Committee
PANGeA: Partnership for Africa's Next Generation of Academics and Professionals
RASMA: Réseau africain de statistiques appliquées, de mathématiques et ses applications
RIPS: Regional Institute for Population Studies
RSS: Royal Statistical Society
SADA: Statistique Appliquée pour le Développement d'Afrique
SCARMS: Strathmore Centre for Applied Research in Mathematical Sciences
SPAS: Société Pan Africaine de Statistiques - Statistical Pan-African Society

STC: Statistical Training Centre
TIES: The International Environmetrics Society
UAF: Association des Universités Francophones
UN: United Nations
UN-ECA: United Nations Economic Commission for Africa
UNESCAP: UN-Economic and Social Commission for Asia and the Pacific
WSC: World Statistics Congress
YS: Young statisticians