



HORIZON 2020

IST-AFRICA 2016 – 2017
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Workshop Report prepared by IIMC and Agence Nationale des Technologies de l'Information et de la Communication, Cameroon

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1. Workshop Context

Horizon 2020 commenced in January 2014 as the new Framework Programme to implement research and innovation with funds of €80 billion from 2014 - 2020.

Horizon 2020 addresses all research and innovation funding that was previously provided through the Framework Programmes for Research and Technical Development (e.g. FP7), Competitiveness and Innovation Programme (CIP) and European Institute of Innovation and Technology.

Three main priorities:

- **Excellence Science** – Research Infrastructures, Marie Curie (Mobility Grants)
- **Leadership in Enabling and Industrial Technologies (LEIT)** – Components & Systems, Advanced Computing, Future Internet, Content Technologies and Information Management, Robotics, Micro and Nano-electronics and photonics
- **Societal Challenges** – Health, Food Security & Agriculture, Energy, Transport, Climate action and Environment, Innovation and reflective Societies and Secure Societies

Agence Nationale des Technologies de l'Information et de la Communication, as the IST-Africa Initiative partner in Cameroon organised the IST-Africa Horizon 2020 Workshop in National Advanced School of Engineering Polytechnic Yaounde on 09 December 2016. All relevant stakeholders were invited to participate to raise awareness of the opportunity for research cooperation at international level.

This workshop was specifically focused on **ICT-39 International partnership building in low and middle-income countries** with a deadline of 25 April 2017. The aim is to launch a set of targeted collaborative Innovation Actions addressing the requirements of end-user communities in developing countries. Specific technological targets could include for example co-design, adaptation, demonstration and validation (e.g. pilots) of ICT related research and innovation in relevant thematic areas addressed by Horizon 2020 including Content Technologies and Societal Challenges.

Activities under this objective should be led by a clearly defined **user need/market opportunity** for the technology being adapted; they should in particular include requirements of developing countries, and where possible, have the potential for wider impact by involving a number of countries from the same region. Proposals should be submitted by a complementary partnership with a particular focus on the participation of relevant developing country innovation stakeholders and end-user community representatives (e.g. relevant public, private, education and research, and societal sector organisations, Innovation Spaces and Living Labs).

The workshop was well attended with over 50 participants from ANTIC, University of Buea, University of Douala, University of Dschang, University of Maroua, University of Ngaoundere,

Université protestante d'Afrique Centrale, University of Yaounde I, ENSP, MINEPIA/ Cellule informatique, IUTFV / UDS, Ministry of Health, Ministry of Agriculture, Ministry of Transport, MINADER, MINPOSTEL, MINESEC and MINRESI.

Each organisation presented their current research capacity and areas of most interest for International Cooperation. This knowledge exchange at national level was very interesting for the participants as they were able to identify potential synergies in relation to future research. Research areas being undertaken within the participating institutions include: Internet of Things and remote sensing, Health, Agriculture, Cyber Security, Image Processing, Fault tolerance in wireless networks, Geographic information systems, Quantum Computing, automatic language processing, Energy management, Big data and cloud computing and ICT in transportation.

Areas of thematic research interest where ICT can be applied as a horizontal enabler in Cameroon included e(m)Health, e(m)Agriculture and Food Security, Technology-enhanced Learning, Environment , Natural Language Processing and eGovernment.

2. Workshop Report

2.1 Introduction & Welcome Speeches



The Welcome Speech was presented by Peter Mokube, Director of Research, ANTIC on behalf of Dr Ebot Ebot Enaw, the General Manager. Peter highlighted that it gave him great pleasure on behalf of the General Manager of ANTIC to address this distinguished gathering of researchers and delegates from public and private administrative Institutions who came from institutions of repute in research, science and technology based in different parts of Cameroon to discuss issues pertaining to Information

Societies and Technologies at the National Advanced School of Engineering, Yaounde.

Peter welcomed the participants to this important Horizon 2020 Training workshop jointly organised by the National Agency for Information and Communication Technologies (ANTIC), within the framework of its mission of promoting ICTs in Cameroon and IIMC International Information Management Corporation, Ireland (IST-Africa project coordinator) as part of IST-Africa Initiative supported by the European Commission under Horizon 2020.

On behalf of ANTIC, Peter thanked Miriam Cunningham (IST-Africa coordinator) for travelling to Cameroon to assist in providing the training for this workshop.

The presence of so many representatives from organisations undertaking research clearly shows the importance of this workshop and demonstrates engagement with government's effort to support Science and Technologies for social and economic development.

Peter highlighted that this workshop has been organized for the purpose of grooming researchers in the areas of Information and Communication Technology (ICT), with a view to exploring opportunities for international research collaboration under Horizon 2020 work programme. IST-Africa is a strategic cooperation between the International Information Management Corporation IIMC (Ireland), Ministries and National Councils responsible for Innovation, Science and Technology related to adoption, implementation, policy and research in 18 African Member States.

IST-Africa facilitates and supports:

- Strategic engagement with Africa on International Research, Innovation and Policy Cooperation
- Knowledge sharing, capacity building, skills transfer between IST-Africa Partner Countries,
- Collaborative Innovation, Entrepreneurship,
- Adoption of Living Labs Methodologies, ICT and Innovation aspects of the Africa - EU Strategic Partnership as well as Awareness of African Research Capacity, cross-border cooperation and
- Establishment of National Contact Points (NCP) in IST-Africa Partner Countries.

ANTIC became the IST-Africa National Partner for Cameroon in 2010, and since then Cameroon has benefited greatly from this collaboration through leveraging the IST-Africa initiative to actively promote the Cameroon National Research Community by carrying out Presentations at International events which includes information on Cameroon as part of the overall IST-Africa Study on ICT Initiatives and Research capacity. Articles on ongoing and emerging ICT and Innovation activities in Cameroon are published on the IST-Africa portal.

Cameroon's participation in IST-Africa has had a significant impact through the active dissemination of information by ANTIC on upcoming Calls under the European Framework Programme (FP7 and Horizon 2020) to ensure that research organisations leverage this funding mechanism for cross border collaborative research through which Cameroon benefited over 3.7 million euro.

Presently, under Horizon 2020, Cameroon organisations are participating in 4 success grants focused on ICT and Transport.

Today's workshop which is focused on the ICT-39-2017 Call, provides a unique opportunity for African institutions undertaking Research and Innovation to co-design an Innovation Action

based on addressing end-user requirements in sub-Saharan African countries in cooperation with European partners.

In conclusion, Peter encouraged participants to actively engage in this workshop, ask questions and determine relevant areas to create strong Innovation Action proposals in cooperation with African and European partners to submit under this Call which closes in April 2017. He indicated that he does not harbour any doubt that this workshop will enable social and economic development in Cameroon. Long live Cameroon and its illustrious Head of State, His Excellency Paul BIYA,

Overview of IST-Africa Initiative

Miriam Cunningham, IIMC / IST-Africa thanked ANTIC for hosting this knowledge exchange workshop and encouraged the participants to ask questions, share knowledge and showcase research capacity in Cameroon during this interactive workshop. Miriam highlighted the importance to leverage the opportunity of ICT-39 as a dedicated Call focused on Africa to address relevant issues on the ground in Cameroon and other Sub-Saharan African countries. Cameroon-based organisations have been building links with European institutions over the past number of years that can be leveraged.

Miriam provided a brief overview of the **IST-Africa Initiative**, which was founded in 2002 by IIMC, Ireland and has now grown into a strategic partnership with Ministries and National Councils responsible for Information Society, ICT and/or Innovation in 18 African Member States¹. IST-Africa is supported by the European Commission and African Union Commission, with co-funding under Horizon 2020.

The IST-Africa Initiative facilitates and supports:

- Strategic engagement with Africa focused on International Research, Innovation and Policy Cooperation;
- Knowledge sharing, capacity building and skills transfer between IST-Africa Partner Countries;
- Collaborative Innovation, Entrepreneurship and Adoption of Living Labs Methodologies;

¹ IST-Africa partners: IIMC International Information Management Corporation Limited ("IIMC", Ireland); Ministry of Transport and Communications ("MTC", Botswana); Ministère de l'Enseignement Supérieur et de la Recherche Scientifique ("MESRS", Burundi); Agence Nationale des Technologies de l'Information et de la Communication ("ANTIC", Cameroon); Ministry of Communications and Information Technology ("MCIT", Egypt); Ministry of Communication and Information Technology ("MCIT", Ethiopia); Ministry of Education, Science and Technology ("MOEST", Kenya); Ministry of Communications, Science and Technology ("MCST-L", Lesotho); National Commission for Science and Technology ("NCST", Malawi); National Computer Board ("NCB", Mauritius); Instituto Nacional de Tecnologias de Informacao e Comunicacao ("INTIC", Mozambique); National Commission on Research, Science and Technology ("NCRST", Namibia); Ministère de l'Enseignement Supérieur et de la Recherche ("MESR", Senegal); Department of Science and Technology ("DST", South Africa); Ministry of Information Communication Technology ("MICT-S", Swaziland); Tanzania Commission for Science and Technology ("COSTECH", Tanzania); Ministère de l'Enseignement Supérieur et de la Recherche Scientifique ("MHESR", Tunisia) and Uganda National Council for Science and Technology ("UNCST", Uganda).

- ICT and Innovation aspects of the Africa - EU Strategic Partnership;
- Awareness of African Research Capacity, cross-border cooperation and participation in Horizon 2020
- Establishment of National Contact Points in IST-Africa partner countries

ANTIC is gathering intelligence in cooperation with national stakeholders in relation to the state of research and innovation in Cameroon. ANTIC leverages the IST-Africa Initiative to actively promote the national research community through:

- Presentations at International events of research capacity and national priorities
- Compiling a chapter on Cameroon as part of the overall IST-Africa Study on ICT Initiatives and Research capacity; Innovation Spaces and Living Labs; and Bilateral and Multilateral Cooperation
- Publishing articles on ongoing and emerging ICT and Innovation activities in Cameroon on the IST-Africa portal and in the Newsletter
- Raising awareness of upcoming Calls for Proposals and international funding opportunities
- Assists institutions in preparing for new opportunities such as Horizon 2020
- Raises awareness of activities being undertaken in other African countries
- Supporting the publishing of Organisational profiles on IST-Africa portal to raise awareness of activities in wider community
- Having access to IST-Africa Network including Ministries and National Councils in 17 African Countries to share knowledge, experiences and success stories
- Having a first-hand experience of what is involved in being part of International funded activities under the European Framework Programme.

Miriam highlighted the importance to clearly identify research capacity and track record within departments in national institutions and to ensure that this is highlighted in chapters on Cameroon being compiled by ANTIC as input to public reports published by IST-Africa and disseminated widely. It is important to identify previous research that can be leveraged in future projects and why it would be beneficial as evidence of relevance and knowledge of the state-of-the-art in a national and regional context.

Miriam provided an overview of knowledge resources on the IST-Africa portal including access to up to date information on Horizon 2020² (Work Programmes, Guides to Calls for Proposals); Project Repository³ to identify previously funded projects as contributions to the state of the art in specific domains; Organisational repository⁴ to identify potential partners and previous projects that they have been involved; Country profile section to highlight ongoing activities at

² <http://www.ist-africa.org/home/default.asp?page=horizon2020>

³ <http://www.ist-africa.org/home/default.asp?page=project-search>

⁴ <http://www.ist-africa.org/home/default.asp?page=org-search>

national level and Paper Repository⁵ with open access to papers published through the IST-Africa conference from 2006 which is one of the largest African focused paper repositories. IST-Africa reference documents⁶ that should be leveraged in the context of ICT-39 proposal generation include:

- IST-Africa Guide to National ICT Initiatives and Research Capacity, January 2016, Published by IIMC, ISBN No: 978-1-905824-47-2, which provides Insight into environment, ICT initiatives, research and innovation priorities and capacity;
- IST-Africa Report on Innovation Spaces and Living Labs, January 2016, Published by IIMC, ISBN No: 978-1-905824-49-6, which provides a mapping of operational Innovation Spaces and Living Labs supporting ICT and Innovation related activities in IST-Africa partner countries;
- IST-Africa Report on ICT and Innovation-related Bilateral & Multilateral Cooperation Initiatives, January 2016, Published by IIMC, ISBN No: 978-1-905824-48-9, which provides an Overview of ICT and Innovation related activities supported through bilateral and multilateral cooperation in IST-Africa partner countries
- Horizon 2002 Guides⁷

Participants were encouraged to visit the IST-Africa portal⁸, download relevant papers and reports and contribute to national chapters in future reports. Miriam also encouraged the participants to complete and return their updated organisational profile to ANTIC for publication on the IST-Africa portal that reflects up to date research capacity and track record. It is important to frame this in the context of Collaborative Research. Miriam encouraged the participants to use co-design methodologies when designing solutions for national priorities and challenges. It is important to break down silos of knowledge within and between institutions in Cameroon to strengthen capacity.

Miriam took the opportunity to raise awareness of the Call for Papers for IST-Africa 2017⁹ to showcase research and innovation being undertaken at national level. There are three opportunities to make presentations during IST-Africa 2017 - a) publish research results from ongoing and completed projects; b) write a case study on ongoing activities within a specific domain and c) make an oral presentation if the project results are not sufficiently developed for paper publication at this stage. Participants were requested to raise awareness among their networks and institutions to take advantage of this opportunity.

Miriam summarised the impact that has been achieved through IST-Africa as including an increase in African participation under FP7 and Horizon 2020 across IST-Africa partner countries; increase in the level of international research publications from Africa and about

⁵ <http://www.ist-africa.org/home/default.asp?page=paper-repository>

⁶ <http://www.ist-africa.org/home/default.asp?page=reports>

⁷ <http://www.ist-africa.org/home/default.asp?page=horizon2020>

⁸ <http://www.ist-africa.org/home/default.asp?page=reports>

⁹ <http://www.ist-africa.org/Conference2017>

Africa through IST-Africa conference proceedings; knowledge sharing between Europe and Africa as well as within Africa; actively supporting policy dialogue between European Commission, African Union Commission and other key stakeholders; providing evidence to support African-focused Calls for Proposals under Horizon 2020 including ICT-39 Call; access to knowledge repositories and reports and showcasing African research and innovation context and research and innovation potential and provides an effective research collaboration support framework.

During FP7, over €171.5 million in research funding was received across 45 African Member States.

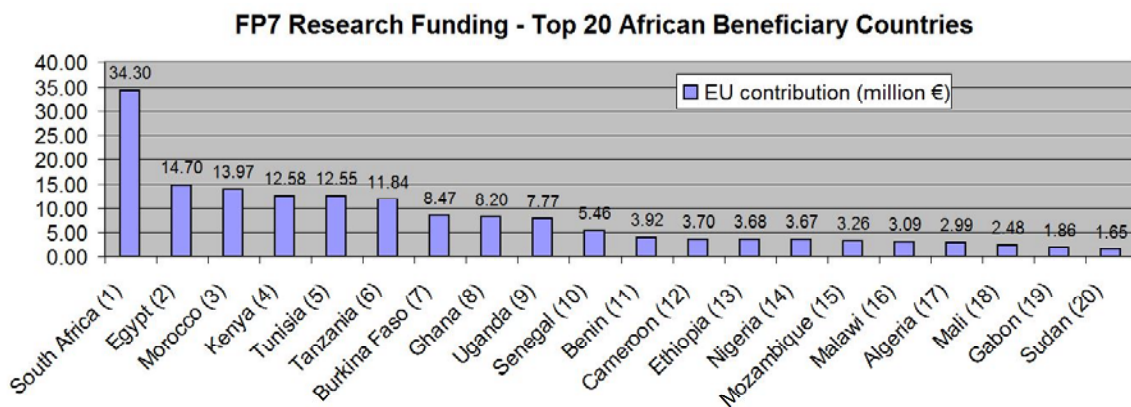


Diagram 1: Leading African Countries in terms of FP7 research funding

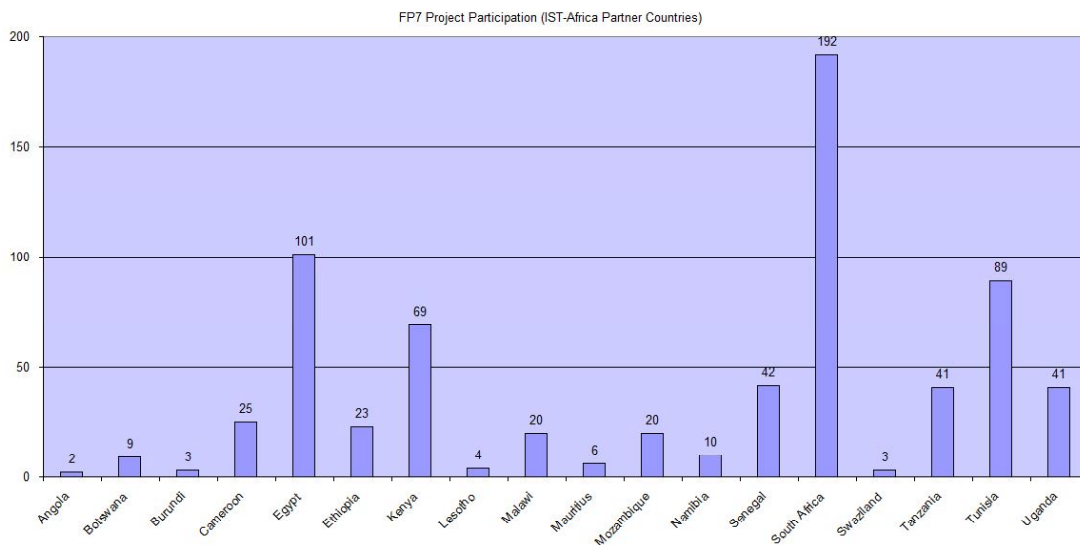


Diagram 2: FP7 Project Participation from IST-Africa Partner Countries

During FP7 Cameroon organisations participating in more than 25 successful grants, focused on ICT, Health, Agriculture, eInfrastructure, Environment, Nanosciences, Space, Socio-economic Sciences and Science in Society, bringing over 3.7 million euro research funding into Cameroon.

ICT (4): IST-Africa 2010-11 (2009-2012) (Agence Nationale des Technologies de l'Information et de la Communication) Coordination and support action; IST-Africa 2012-13 (2011-2014)

(Agence Nationale des Technologies de l'Information et de la Communication) Coordination and support action; IST-Africa 2014-2015 (2013-2016) (Agence Nationale des Technologies de l'Information et de la Communication) Coordination and support action; IRMA (2008-2009) (Universite de Yaounde I) Collaborative project;

Infrastructure (1): INFRAVEC (2009-2014) (Organisation de Coordination pour la Lutte Contre les Endémies En Afrique Centrale) Combination of CP & CSA;

INCO (1): CAAST-NET (2008-2012) (Ministry of Scientific Research and Innovation) Coordination and support action;

Food, Agriculture and Biotechnology KBBE (2):

- AFTER (2010-2014) (Universite de Ngoundere) Collaborative project;
- SARNISSA (2008-2011) (Institut De Recherche Agricole Pour Le Developpement) Coordination (or networking) actions

Environment (4):

- CLUVA (2010-2013) (Universite de Yaounde I) Collaborative project;
- GEOCARBON (2011-2014) (Cameroon Biodiversity Conservation Society) Collaborative project;
- MIAVITA (2008-2012) (Ministere de L'industrie, des Mines et du Developpement Technologique) Collaborative project;
- REDD-ALERT (2009-2012) (Institut de Recherche Agricole pour le Developpement) Collaborative project;

Health (7):

- AFRICA BUILD (2011-2014) (Universite de Yaounde I) Coordination and support action;
- CHAIN (2009-2014) (Ministry of Public Health) Collaborative project;
- CRIMALDDI (2009-2011) (University of Buea) Coordination and support action;
- E PIAF (2010-2014) (Research Foundation In Tropical Diseases and Environment) Collaborative project;
- EVIMalaR (2009-2015) (Universite de Yaounde I) Network of Excellence;
- PRD COLLEGE (2009-2013) (Universite de Yaounde I) Coordination and support action;
- SURE (2009-2014) (Ministry of Public Health) Collaborative project;

People (1): PLANTMEDS (2016-2017) (Agence Nationale des Technologies de l'Information et de la Communication) International incoming fellowships;

Nanosciences (1): NO BUG (2009-2013) (Research Foundation in Tropical Diseases and Environment) Collaborative project;

Science in society (1): CEECEC (2008-2010) (Centre pour L'environnement et le Developpement) Coordination and support action;

Space (1): REDDAF (2011-2013) (Geospatial Technology Group Sarl) Collaborative project

Socio-economic Sciences and the Humanities (2):

- EUROROADMAP (2009-2012) (Coalition pour la Promotion de L'agriculture Urbaine et Periurbaine Enafrique Association) Collaborative project;
- RURBANAFRICA (2012-2016) (Universite de Dschang) Collaborative project

Horizon 2020

IST-Africa actively encouraged participation of African institutions in relevant calls under Horizon 2020, including (but not exclusively) those focused on Africa. IST-Africa provided evidence to justify €25 million for African-focused research and innovation cooperation under LEIT (ICT-39-2015 & ICT-39-2017). The ICT-39-2015 Call for proposals was very successful with 45 proposals submitted (194 participations from Africa – 78% from IST-Africa partner countries) of which 23 proposals were scored over threshold. Within the funding envelope for ICT-39-2015, four projects were selected for funding (2 Health-related, land tenure, IoT) with 11 African countries of which 6 IST-Africa partner countries participating in all 4 projects: Ethiopia (3), Kenya (2), Cameroon (1), Malawi (1), South Africa (1), Senegal (1).

Horizon 2020 Participation from IST-Africa Partner Countries (Sept '16)

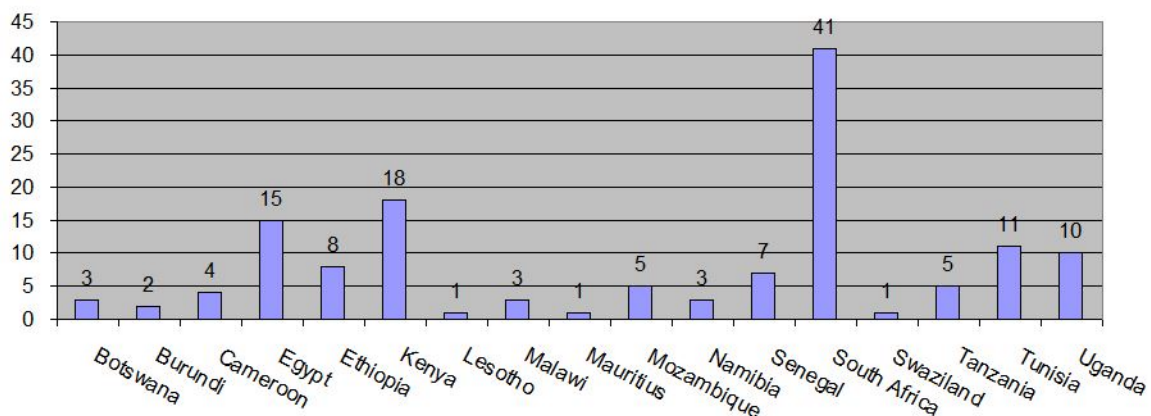


Diagram 3: Horizon 2020 participation by IST-Africa partner country (September 2016)

As at November 2015, there were 107 participants from 25 African MS in 48 H2020 Projects bringing research funding of €17 million into African research institutions in the first year of Horizon 2020. To date there has been 185 participations from 31 African Member States. The diagram below provides an overview of participation in Horizon 2020 projects from IST-Africa partner countries.

To date Cameroon organisations are involved in 4 Horizon 2020 projects across the following thematic areas:

ICT (2):

- IST-Africa 2016-2018 (2016-2018) (Agence Nationale des Technologies de l'Information et de la Communication) Coordination and support action;

- DMC-MALVEC (2016-2020) (Organisation de Coordination pour la lutte contre les Endémies en Afrique Centrale) Research and Innovation action;

Transport (1): SaferAfrica (2016-2019) (Ecole Nationale Supérieure des Travaux Publics) Coordination and support action;

ERC-CoG (1): OurMythicalChildhood (2016-2021) (Université De Yaounde I) Consolidator Grant;

Miriam highlighted the importance for African researchers to drive the co-creation of proposals based on African end user requirements in the context of the ICT-39-2017. She invited the participants who do not currently have profiles on the IST-Africa portal to prepare an organisational profile and provide it to ANTIC for publication on IST-Africa and to access the depth of knowledge available online.

2.2 Introduction to Horizon 2020



Njei Check, ANTIC, presented Horizon 2020¹⁰, which is the new European Framework Programme for Research and Innovation for 2014 – 2020, with funding of €80 billion. It is one of the largest research programmes and is open to participation from legal entities involved in research around the world.

Horizon 2020 addresses all research and innovation funding previously provided by FP7 Framework Programme, Competitiveness and

Innovation Programme (CIP) and European Institute of Innovation and Technology. There is a stronger focus on societal challenges and Innovation.

Njei highlighted that Horizon 2020 is focused on global challenges open to International cooperation. African research institutions can participate as part of International Consortia with partners from Europe to apply for funding as part of an international project (with partners from 3 European Countries) addressing the challenges published in the Work Programme. ICT-39 is a specific call focused on collaboration between Africa and Europe. There are a lot of resources available to support institutions to prepare proposals on the IST-Africa portal¹¹ - access to Work Programmes, Guides to proposals under 2016 and 2017 as well as the European Commission Participants Portal¹² and Horizon 2020¹³

¹⁰ Visit <http://www.ist-africa.org/home/default.asp?page=horizon2020> and <http://ec.europa.eu/research/horizon2020/>

¹¹ <http://www.ist-africa.org/>

¹² <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/index.html>

¹³ Horizon 2020 website <http://ec.europa.eu/research/horizon2020>

Horizon 2020 Structure

➤ **Excellent science (Total Budget of €24.4 billion, ICT Budget c €4 billion)**

Focus on World class Science as the foundation of tomorrow's technologies, jobs and wellbeing, need to develop, attract and retain research talent

1. The European Research Council (€13.1 billion)
2. Future and Emerging Technologies (€2.7 billion)
3. Marie Skłodowska-Curie actions on training and career development (€6.2 billion)
4. European research infrastructures (including eInfrastructures) (€2.5 billion)

➤ **II Industrial leadership (Total Budget of €17 billion, ICT Budget c €8 billion)**

Focus on strategic investments in key technologies underpin innovation across existing and emerging sectors and support innovative SMEs to create growth and jobs

1. Leadership in enabling and industrial technologies (€13.6 billion)
2. Access to risk finance (€2.8 billion)
3. Innovation in SMEs (€6.2 billion)

➤ **III Societal challenges (Total Budget of 29.7 billion, ICT Budget c €4 billion)**

Focused on Innovation addressing societal challenges, breakthrough solutions coming from multi-disciplinary collaborations including social sciences and humanities, promising solutions that can be tested, demonstrated and scaled up

1. Health, demographic change and wellbeing (€7.47 billion)
2. Food security, sustainable agriculture, marine research & the bio-economy (€3.85 billion)
3. Secure, clean and efficient energy (€5.93 billion)
4. Smart, green and integrated transport (€6.33 billion)
5. Climate action, resource efficiency and raw materials (€3.08 billion)
6. Inclusive and reflective societies (€1.3 billion)
7. Secure Societies (€1.69 billion)

Njei summarised differences between FP7 (which finished in 2013) and H2020 (which runs from 2014 - 2020):

- H2020 is more holistic in focus addressing all research and innovation funding with a stronger focus on Societal Challenges and Innovation
- Work Programme Structure - Under H2020 Work Programmes (WP) are published for a two year duration to allow stakeholders to plan proposal design sufficiently in advance. Each thematic areas has its own Work Programme but ICT is a horizontal component within Societal Challenges, LEIT and Excellent Science The Work Programmes for 2016 – 2017

Calls for each thematic area were published on 14 October 2015 and updated on 25 July 2016.

- Funding Levels - under H2020 organisations receive up to 100% reimbursement of costs for research activities (Research and Innovation Grants) and up to 100% reimbursement of costs for Grants for Innovation (large scale pilots to prepare for commercialisation) for not-for-profit entities and 70% reimbursement of costs for for-profit entities.
- H2020 Funding Instruments: **Grants for Research and Innovation** (new knowledge, applied research, technology development and integration, testing and validation on a small scale prototype); **Grants for Innovation** (closer to market, prototyping, testing, demonstrating, piloting, large-scale product validation and market replication); **Grants for coordination and support action** (do not undertake research, support coordination of research and activities to the Programme)
- Indirect Costs (Overheads) - Under FP7 there were different levels of reimbursement of overheads depending on the instrument and organisational type. Under H2020, there is now a flat rate of 25% reimbursement of direct costs as a contribution towards overheads.
- **No Negotiation phase** in H2020: proposals are now judged as submitted (no timeframe for improvements, changes in partners or budget). As a result if there are inconsistencies, budgetary problems or insufficient justification of the approach, the proposal will receive a lower score and unlikely to be funded. It is critical that all partners are sure that they can undertake the project work and have the necessary internal support when submitting the proposal as part of a consortia.
- Proposal Structure & Page Length: Each funding instrument has a specific proposal template that needs to be followed. Part B is now divided into 2 sections for upload via the Participants portal - Section 1 - 3 (Excellence, Impact, Implementation) and Section 4 & 5 (Members of the Consortium, Ethics and Security). There is a **fixed number of pages** for each instrument - Research and Innovation (Part B Section 1 - 3) max of 70 pages, CSA - max of 50 pages. If the proposal is longer than the allowed pages, the extra pages are marked in red and are not considered in the evaluation process.

2.3 Snap Shot of Societal Challenges and LEIT in Horizon 2020

Njei Check provided a brief snap shot of research areas for cooperation under Societal Challenges Work Programmes and Leadership in Enabling Technologies and Industrial Technologies (LEIT) Work Programme. Each area has a separate Work Programme that provides the details for each specific call, deadline, instruments open for submission.

Due to the high number of Work Programmes and the short timeframe for Calls in some thematic areas, IST-Africa has prepared a Guide to 2016 Calls for Proposals and Guide for

2017 Calls for Proposals in Horizon 2020. This guide lists each thematic area, deadlines and links to the Participants portal¹⁴ for more detailed information. It can be downloaded from

http://www.ist-africa.org/home/files/IST-Africa_Guide_2016Calls_Horizon2020.pdf

http://www.ist-africa.org/home/files/IST-Africa_Guide_2017Calls_Horizon2020.pdf

IST-Africa has a specific section focused on Horizon 2020¹⁵, which provides links to all the Work Programme - Marie Curie, Infrastructures, Societal Challenges (Health, Food Security and Agriculture, Energy, Transport, Climate action and Environment, Inclusive and Reflective Societies; Secure Societies) and LEIT.

Leadership in Enabling Technologies and Industrial Technologies (LEIT) incorporates six main areas:

1. Components and systems (Smart embedded components and systems, micro-nano-bio systems, organic electronics, large area integration, technologies for IoT, smart integrated systems, systems of systems and complex system engineering)
2. Advanced Computing (Processor and system architecture, interconnect and data localization technologies, parallel computing and simulation software)
3. Future Internet (Networks, software and services, cloud computing, cyber security, privacy and trust, wireless communication and all optical networks, immersive interactive multimedia and connected enterprise)
4. Content technologies and information management (Technologies for language, learning, interaction, digital preservation, content access and analytics; advanced data mining, machine learning, statistical analysis and visual computing, big data technologies)
5. Robotics (Service robotics, cognitive systems, advanced interfaces, smart spaces and sentient machines)
6. Key Enabling Technologies: Micro-nano-electronics and photonics (Design, advanced processes, pilot lines for fabrication, production technologies and demonstration actions to validate technology developments and innovative business models)

Societal Challenges fits under eight areas:

1. Health, demographic change and wellbeing (e-health, self management of health, improved diagnostics, improved surveillance, health data collection, active ageing, assisted living;)
2. Food security, sustainable agriculture, marine research & the bio-economy
3. Secure, clean and efficient energy (Smart cities; Energy efficient buildings; smart electricity grids; smart metering)
4. Smart, green and integrated transport (Smart transport equipment, infrastructures and services; innovative transport management systems; safety aspects)

¹⁴ <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/index.html>

¹⁵ <http://www.ist-africa.org/home/default.asp?page=horizon2020>

5. Climate action, Environment, resource efficiency and raw materials (ICT for increased resource efficiency; earth observation and monitoring)
7. Inclusive, innovative and reflective societies (Digital inclusion; social innovation platforms; e-government services; e-skills and e-learning; e-culture) and
8. Secure societies (Cyber security; ensuring privacy and protection of human rights on-line)

ICT will be incorporated across the three main pillars

- Excellent Science
- Industrial Leadership
- Societal Challenges

2.4 ICT-39

Miriam Cunningham, IIMC/IST-Africa presented the **ICT-39-2017** Call, which closes on **25 April 2017**. This call provides a unique opportunity for African institutions undertaking Research and Innovation to co-design an Innovation Action based on addressing end-user requirements in low and middle-income countries in sub-Saharan Africa in cooperation with European partners.

The aim of ICT-39-2017 is to launch a set of targeted Innovation Actions addressing the requirements of end-user communities in developing countries. Specific technological targets could include for example co-design, adaptation, demonstration and validation (e.g. pilots) of ICT related research and innovation in relevant thematic areas addressed by Horizon 2020 including Content Technologies and Societal Challenges.

Activities under this objective should be led by a clearly defined user need/market opportunity for the technology being adapted; they should in particular include requirements of developing countries, and where possible, have the potential for wider impact by involving a number of countries from the same region. Proposals should be submitted by a complementary partnership with a particular focus on the participation of relevant developing country innovation stakeholders and end-user community representatives (e.g. relevant public, private, education and research, and societal sector organisations, Innovation Spaces and Living Labs)

The expected impacts include:

- Development of relevant technology responding to specific needs and conditions of the target country.
- Reinforced international dimension of the ICT and Innovation aspects of Horizon 2020 and a higher level of international cooperation with low and middle income countries in ICT R&D and Innovation, focusing on areas that are beneficial to the target countries/region

Miriam highlighted that Innovation Actions are focused on technological improvements/adaptations as well as innovative service creation based on existing technologies. Activities should be led by a clearly defined user need/market opportunity for the

technology being adapted based on requirements of sub-Saharan African countries identified through co-design.

- Innovation Actions have limited research and development, focused on adaptation of existing technology.
- It is expected that any research related to the challenge to be addressed and understanding of the state of the art in the thematic area is already undertaken and demonstrated in the proposal submitted.
- Since demonstration and market validation is the primary focus of an Innovation Action, the consortium must demonstrate relevant links with end-user communities who will be involved in the validation process and this needs to be clearly demonstrated in the proposal submitted.
- Important to identify a project focus that is relevant in a number of African countries from the same region with a sustainability plan for wider roll out following successful validation and project funding.

Proposals should feature an explicit element exploring technology adoption, through understanding and evaluating behavioural responses to the introduction of new technologies in different regional settings. Societal and gender issues will be taken into account.

Paul outlined that based on the focus of this call it will be necessary to ensure that there are multidisciplinary teams – thematic experts in the target domain as well as ICT experts.

Based on a number of African countries being involved, it is also necessary to co-design a proposal that addresses a common challenge at national level that can be validated in a number of scenarios in the different countries.

Horizon 2020 proposals are submitted by consortia, which brings together necessary complementary expertise to address the project focus from Africa and Europe. It is a requirement of the funding instrument that there is a minimum of 3 European partners from 3 different Member States in addition to the relevant African partners.

Horizon 2020 projects are based on a grant to the legal entity who is the partner providing reimbursement of actual costs (personnel rates from payroll, necessary equipment and travel).

Based on group work undertaken key priority areas identified by the researchers included e(m)Health, e(m)Agriculture and Food Security, Technology-enhanced Learning, Environment , Natural Language Processing and eGovernment.

The participants worked in smaller groups to identify:

- Who are the end-user needs for each of the specific thematic areas short-listed – bearing in mind that this is a innovation action?
- Who are the key stakeholders that should be consulted (e.g. public, private, education and research and societal sector organisations) for each of the short listed thematic areas?

- Who are the key stakeholders that could undertake the project work and what work exactly could they do?
- What other African countries should be involved in addition to the necessary European countries and why?
- What European organisations has your organisation already engaging with in relation to the thematic areas selected?



The participants found this brainstorming and moderated group work to be very interesting in visualising how to start to prepare a proposal.

In the context of identifying relevant African countries and institutions Miriam presented research undertaken by IST-Africa (IST-Africa Guide to National ICT Initiatives and Research Capacity, January 2016, Published by IIMC, ISBN No: 978-1-905824-47-2¹⁶).

¹⁶ <http://www.ist-africa.org/home/default.asp?page=reports>



Diagram 4: Overview of National Research Priorities

Table 1: National Research Priorities in IST-Africa Partner Countries

IST-Africa Partner Country	National Research Priorities include:
Angola	eInfrastructures, Technology-enhanced Learning, Solar Energy, Informatics & Electronics, Digital Inclusion
Botswana	eInfrastructures, Technology-enhanced Learning, Sustainable Agriculture & Food Security, Entrepreneurship, Cyber Security, Energy and Water Ecosystem, Sustainable Development and Climate Change, eHealth
Burundi	eInfrastructures, ICT in Education, eGovernment Services, Agro-Food Technology, Medical Science, Energy, Water, Environment, Biotechnology and Indigenous Knowledge
Cameroon	eInfrastructures, Cyber Security, Connected Enterprises, Cloud Computing, Technology-enhanced Learning, Sustainable Agriculture, Energy, Biotechnology, Environment, Culture, eHealth, Forestry, Tourism, Mining, Natural Language Processing
Egypt	Technology Innovation and Entrepreneurship; Biomedical Informatics Research; Digital Identity; Basic Infrastructure (Broadband, Cloud Computing, Submarine Cables); Cyber Security & eSignature; Information Infrastructure & Digital Content; Electronics Design and Manufacturing

Ethiopia	eInfrastructures; eHealth; Natural Language Processing; Big Data; Indigenous Knowledge; eAgriculture
Kenya	Telecommunications, Electronics and Computers (TEC); Science, Technology, Engineering and Mathematics Education; Coordination of Technology, Innovation and Commercialisation; Space Science and Energy
Lesotho	eInfrastructures, eGovernment, eHealth, Technology-enhanced Learning, eAgriculture
Malawi	eHealth, eAgriculture, eInfrastructure and Entrepreneurship, eGovernment, Technology-enhanced Learning, Digital Libraries & Repositories
Mauritius	ICT Energy Efficiency, eWaste Management, eAgriculture, Bio-informatics, Biometric Security, Context Awareness, eHealth, Technology-enhanced Learning, Digital Enterprise
Mozambique	eHealth, Food Security and Agriculture, Future Internet, Technology-enhanced Learning, eGovernment, ICT for Rural Development and Entrepreneurship.
Namibia	Digital Content, Technology-enhanced Learning, eGovernment, eHealth, eAgriculture & Fisheries including Water; Entrepreneurship, Mining & Geosciences, Biotechnology, Logistics and Space Science
Senegal	eGovernment, eInfrastructures, Entrepreneurship, Digital Divide, eHealth, Technology-enhanced Learning,
South Africa	mHealth, eServices, Environment, Food Security and Agriculture, Trust and Security, Space, Future Internet (Internet of Things), Cloud Computing, Advanced Sensor Networks, Technology-enhanced Learning, Energy and Energy Efficiency, Robotics and Machine Learning, Data Science, Future Wireless Broadband Technologies and Applications.
Swaziland	eHealth, eAgriculture & Food Security, eInfrastructures, Environment, Entrepreneurship
Tanzania	eInfrastructures, Cloud Computing/ High Performance Computing, Cyber Security, Mobile Computing, ICT for Creativity and Learning, eHealth, eAgriculture
Tunisia	eHealth, eInfrastructures, Cyber Security, Services and Trusted Networks, eServices and Knowledge Economy, Cloud Computing and ICT for Energy Efficiency
Uganda	eHealth, Food Security and Sustainable Agriculture, Energy, Environment, Future Internet, eGovernment, Digital Content, Technology-enhanced Learning, Robotics, Bioinformatics, Climate change and Energy Efficiency

Table 2 below provides an overview of the Thematic areas of highest priority in the context of the ICT-39 Horizon 2020 Calls. While there are some thematic areas that are common across

most of the IST-Africa partner countries such as eHealth, eAgriculture or Technology-enhanced Learning, there are also additional thematic areas in some countries based on national research capacity.

Table 2: Thematic areas of highest priority to ICT-39-2017

IST-Africa Partner Country	Thematic areas of highest priority to ICT-39
Angola	eHealth; eAgriculture; Environment
Botswana	eHealth, eAgriculture, Technology-enhanced Learning, Energy and Water Ecosystem, Sustainable Development and Climate Change
Burundi	eHealth; eAgriculture; Energy; Environment
Cameroon	eHealth; eAgriculture; Environment; Technology-enhanced Learning; eGovernment; Natural Language Processing
Egypt	eAgriculture; eHealth; eGovernment; Technology-enhanced Learning; Energy;
Ethiopia	eAgriculture; eHealth; Natural Language Processing and Information Retrieval;
Kenya	eAgriculture; eHealth; eGovernment; Technology-enhanced Learning
Lesotho	eAgriculture; eHealth; Technology-enhanced Learning; Environment; eGovernment;
Malawi	eHealth; eAgriculture; Technology-enhanced Learning; Environment; eGovernment
Mauritius	Energy; Climate action/Environment; Sustainable Agriculture and Maritime Research; Smart, Green & Integrated Transport; eHealth
Mozambique	eHealth; eAgriculture; Technology-enhanced Learning; Environment; eGovernment
Namibia	eAgriculture & Food Security; Water & Sanitation; eHealth; Technology-enhanced Learning; eGovernment, Renewable Energy
Senegal	eHealth; Environment
South Africa	eAgriculture; eHealth; Technology-enhanced Learning; Environment; eGovernment; Digital Inclusion, Environment/Climate Change, Internet of Things, Cloud Computing
Swaziland	eAgriculture; eHealth; eGovernment; Environment
Tanzania	eAgriculture; eHealth; Environment/Climate Change
Tunisia	eAgriculture; eHealth; Environment; eGovernment; Technology-enhanced Learning
Uganda	eAgriculture; eHealth; Technology-enhanced Learning; Environment

Diagrams 5, 6 and 7 below provide visual representation of priority themes in the context of the ICT-39 H2020 Calls and an overview of some of the national institutions who have research expertise in the prioritised themes for ICT-39.

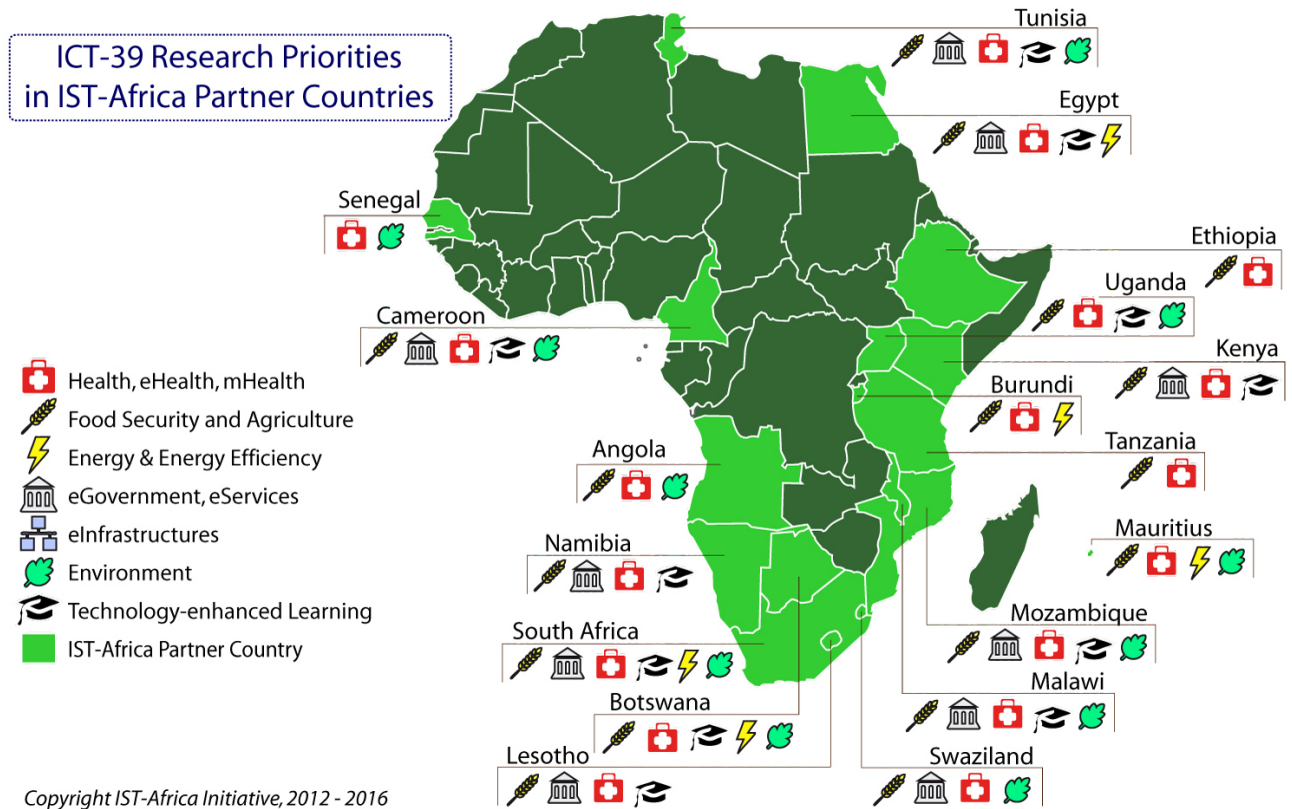


Diagram 5: Horizon 2020 ICT-39 Priority themes in IST-Africa partner countries

Diagram 6 below provides a mapping of North, Central, East and West African institutions in IST-Africa partner countries to ICT-39 priority areas.

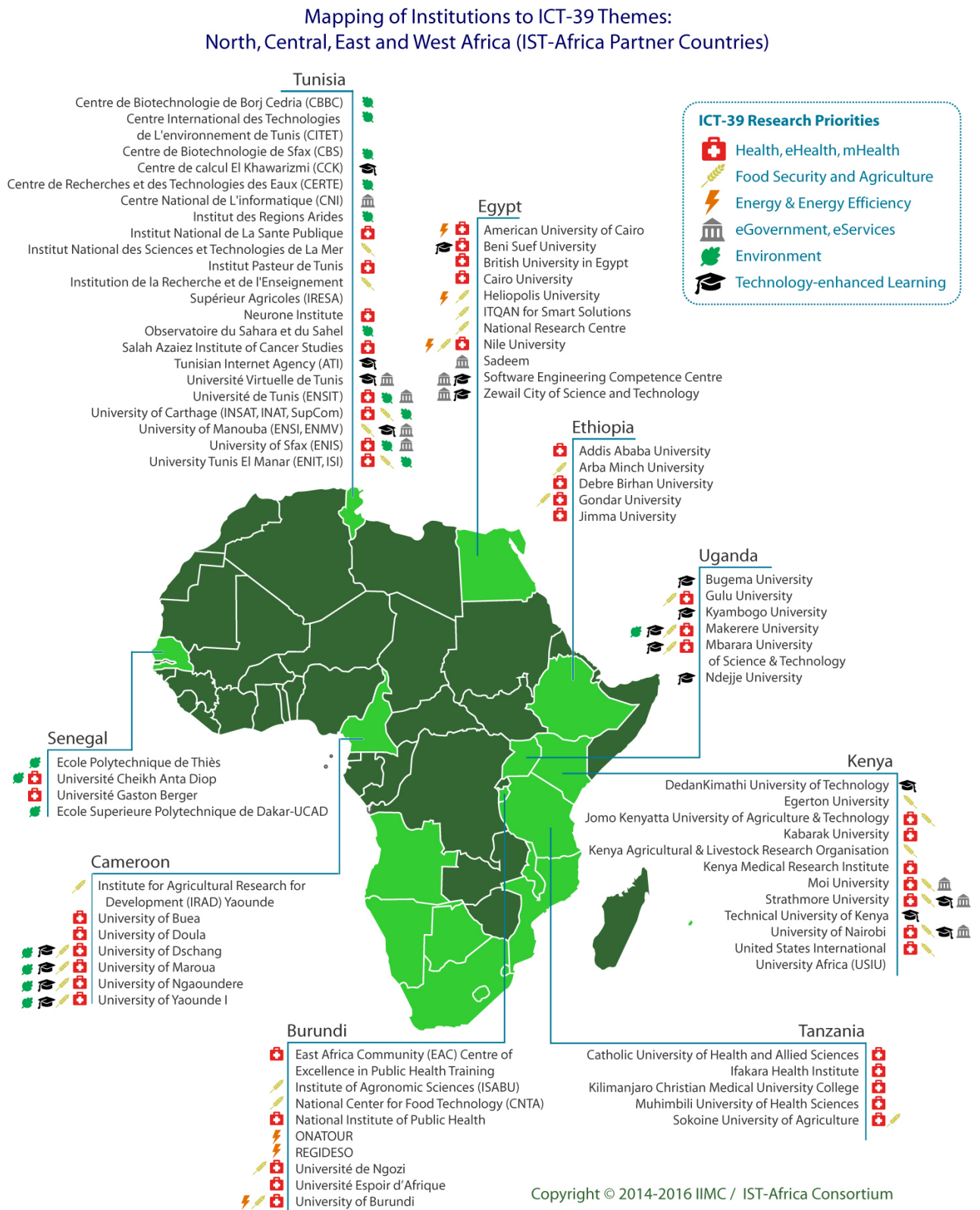


Diagram 6: Mapping of North, Central, East and West Africa Institutions to ICT-39 Themes (IST-Africa Partners Countries)

Diagram 7 below provides a mapping of Southern African institutions in IST-Africa partner countries to ICT-39 priority areas.

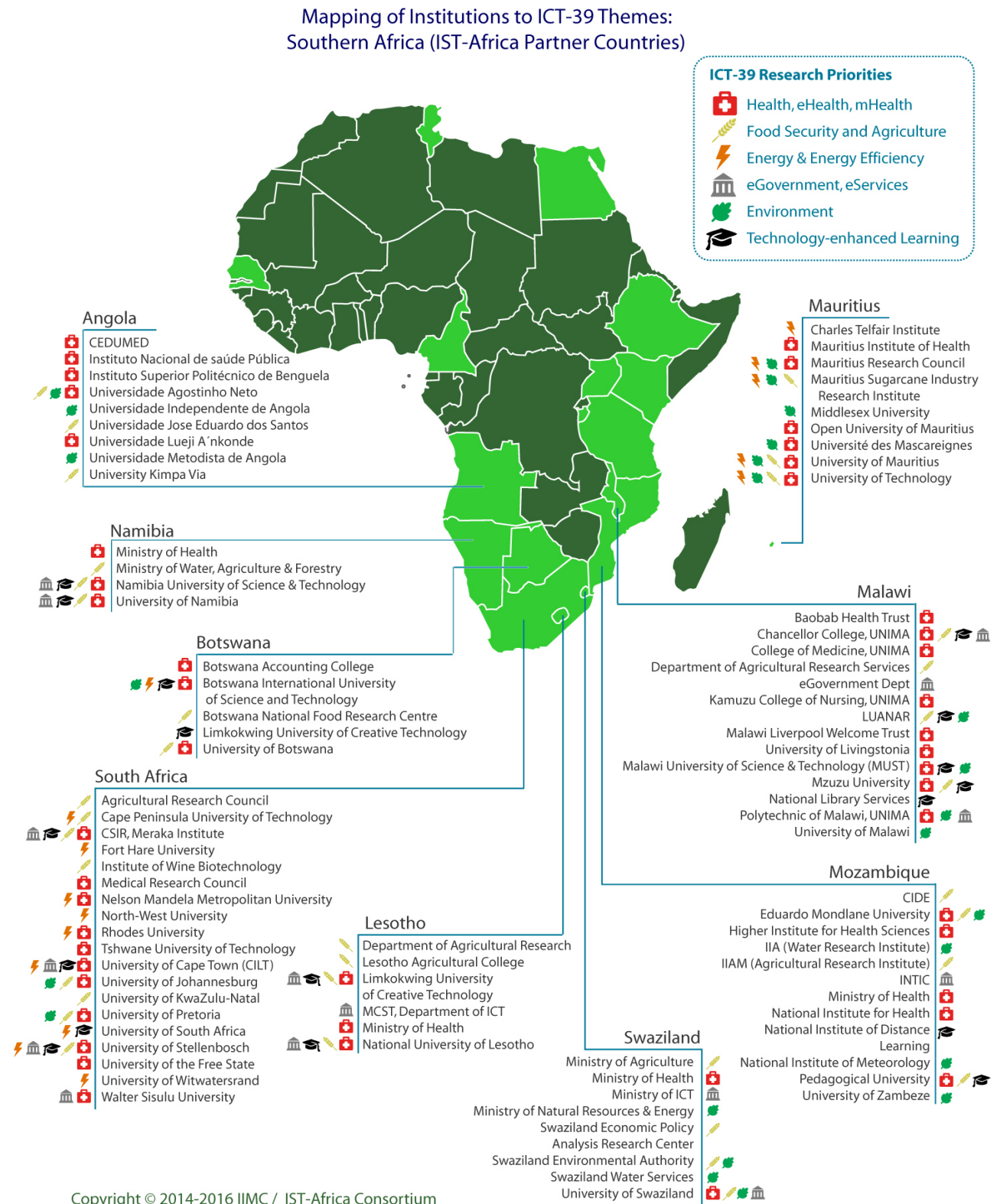


Diagram 7: Mapping of Southern African Institutions to ICT-39 Themes (IST-Africa Partner Countries)

2.5 Participation Rules and Instruments under Horizon 2020

Miriam Cunningham presented the participation rules and instruments under Horizon 2020. Horizon 2020 has a single set of rules covering all funding programmes to simplify the procedure for applicants. Grant Agreements and Reimbursement of actual costs will remain the main funding mechanism.

Participants in Horizon 2020 can be legal entities from EU-28 Member States, Associated Candidate Countries, Associated States and International Cooperation Partner Countries. Legal entities from all African States are funded on the same basis as their European colleagues – reimbursement of costs.

The types of organisations that are normally involved in research include Research Organisations, Universities, SMEs, Industry and public administration.

H2020 is designed to be cross-border in focus it is necessary for grant applications to be made by consortia that have a minimum of three independent legal entities from three different EU Member States or Associated countries. African participants can then be added to this consortium. It is necessary to justify the participation of each legal entity regardless of what country they are established in as part of proving operational capacity.

Main funding instruments in Horizon 2020 include:

- Grants for Research and Innovation – 100% funding of all activities and participants
- Grants for Innovation – 100% reimbursement of eligible costs for not-for-profit entities, 70% reimbursement of eligible costs for for-profit entities
- Support and Coordination Actions - 100% funding of all activities and participants

Research and Innovation Actions are primarily consisting of activities aiming to establish new knowledge and/or to explore the feasibility of a new or improved technology, product, process, service or solution. May include basic and applied research, technology development and integration, testing and validation on a small-scale prototype in a laboratory or simulated environment. Projects may contain closely connected but limited demonstration or pilot activities aiming to show technical feasibility in a near to operational environment.

Innovation Actions (funding instrument for ICT-39-2017) primarily consist of activities directly aiming at producing plans and arrangements or designs for new, altered or improved products, processes or services. For this purpose they may include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication. A 'demonstration or pilot' aims to validate the technical and economic viability of a new or improved technology, product, process, service or solution in an operational (or near to operational) environment, whether industrial or otherwise, involving where appropriate a larger scale prototype or demonstrator. A 'market replication' aims to support the first application/deployment in the market of an innovation that has already been demonstrated but not yet applied/deployed in the

market due to market failures/barriers to uptake. 'Market replication' does not cover multiple applications in the market of an innovation that has already been applied successfully once in the market.

Support and Coordination Actions undertake studies, analysis, development of research and Innovation strategies, raising awareness of European Commission Programmes, setting up thematic working groups to address Challenges in specific thematic areas.

All instruments have an **application template** that must be used which can be downloaded from the Participants Portal.

2.6 Preparing a Proposal

Miriam Cunningham, IIMC / IST-Africa presented an overview of steps to consider when preparing a proposal.

Firstly it is necessary to download and read the **Work Programme**¹⁷ carefully. As Gift has highlighted earlier, IST-Africa has also prepared a guide to 2016 and 2017 Calls listing each thematic area, deadlines and links to the Participants portal¹⁸ for more detailed information. It can be downloaded from

http://www.ist-africa.org/home/files/IST-Africa_Guide_2016Calls_Horizon2020.pdf

http://www.ist-africa.org/home/files/IST-Africa_Guide_2017Calls_Horizon2020.pdf

Having identified the relevant Call and deadline, it is then necessary to carefully identify the **funding instrument** that is open (Grant for Research and Innovation; Grant for Innovation or Support and Coordination Actions) and download the correct **proposal template** from the Participants portal. Miriam has outlined the specific activities that can be funded under each instrument.

As outlined in the Guide for Participants each instrument has two parts:

- Part **A** - Administrative Details related to partners (beneficiaries and proposed budget)
- Part **B** - Technical Annex

In the case of **ICT-39** the funding instrument is **Innovation Actions**. Miriam outlined the five main sections for this instrument and the content required:

- Section 1: **Excellence** - Objectives, Relation to the Work Programme, Concept & Approach; Ambition
- Section 2: **Impact** - Expected Impacts, Measures to maximise impact - a. Dissemination & Exploitation of Results; b. Communication activities

¹⁷ Visit <http://www.ist-africa.org/home/default.asp?page=horizon2020> and

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/index.html>

¹⁸ <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/index.html>

- Section 3: **Implementation** - Work Plan (Work Packages, deliverables & milestones), Management structure and procedures, Consortium as a whole, Resources to be committed
- Section 4: **Members of the Consortium** - each partner to provide profile using template provided to facilitate judgement of operational capacity
- Section 5: **Ethics & Security**

As Njei has already highlighted Part B Section 1 - 3 must be a maximum of 70 pages in length and the Part B is now uploaded as two separate files by the Coordinator in the Participants portal - File 1 - Part B Sections 1 - 3 and File 2 - Part B Section 4 & 5.

Having identified the relevant Call and instrument, the Consortium partners will then split the grant proposal writing among the partners. It is advisable to agree the Work plan structure (Section 3) first. This will then facilitate each Work Package Leader to outline the proposed tasks, agree them with the partners and co-design a detailed description outlining the work to be undertaken with each task. With the work plan structure in place, it is then possible to starting writing the objectives, relevance to the work Programme, concept and approach (Section 1). Based on agreeing the work plan structure and objectives, partners can then start writing the Impact section (Section 2). Each individual partner should prepare an organisational profile using the template provided for inclusion in Section 4.

Miriam then presented an overview of steps to consider when preparing the budget.

All funding under Horizon 2020 for research proposals are **grants**, which is based on reimbursement of actual costs based on the budget submitted and actual eligible costs incurred with no profit element.

Eligible Cost Categories

- **Personnel Costs** - reimbursement of costs based on salary from payroll - actual cost to the institution based on normal salary cost plus social security charges prior to the grant. Calculation of personnel costs are based on calculating person time required for each task in the Work Programme. It is necessary to keep timesheets for actual work undertaken that are signed by the Head of Department each month and put on file.
- **Subcontracting** (work undertaken by third parties outside project partners) - under a Grant agreement it is not allowed to subcontract project management or core project work. Eligible activities include printing of dissemination materials, room hire and catering for meetings and workshops, design of website if partners cannot do this themselves.
- **Other direct costs** include Travel costs and subsistence allowance (based on normal practises for the institution) - need to calculate the number of meetings / dissemination at conferences and work out the budget based on costs of flights and normal per diem rate for accommodation and subsistence. The European Commission has a maximum amount that can be reimbursed as per diem in each city - it is necessary to check this.

- Essential equipment is reimbursed based on depreciation of time when used for project requirements. Any equipment requests need to be carefully considered and well justified. It is also necessary to consider that the partner organisation will be paying for the equipment up front from the supplier and receiving back reimbursement on a yearly basis through the cost claim using the depreciation model based on actual time the equipment was used for project activities.

The partners in the consortia will agree the administrative coordinator (who interacts with the European Commission on behalf of the partners in relation to submitting the proposal, finalising the grant agreement, distributing the funding and general project management) and the technical coordinator (responsible for technical quality of the project deliverables) based on the skills, track record and expertise of the partners. It is advisable that the administrative coordinator has an existing track record managing Framework Programme projects.

Each partner must provide the administrative coordinator with their organisational Participants Identification Code (PIC), which is a unique number for each legal entity who has a profile on the Participants portal. If your organisation does not have a PIC¹⁹, it is necessary to set this up in order to be a beneficiary of a grant. The PIC application process must be undertaken by the authorised representative in your organisation so this needs to be planned in advance in sufficient time.

It is good practise to provide the co-ordinator with a signed letter from a senior representative from your organisation confirming that your department has approval to participate in this submission and has the necessary resources to undertake the project work if selected for funding.

Miriam provided a brief overview of basic Intellectual Property Rights as this needs to be considered when preparing a proposal. It is necessary to outline an initial strategy for IPR, access right to pre-existing knowledge necessary for the project work and exploitation of results with the proposal.

2.7 Evaluation of Proposals

Miriam provided an overview of the evaluation process.

When preparing for the evaluation of a Call, the European Commission puts together a panel of independent thematic experts to evaluate the proposals submitted.

Each proposal is provided to a number of experts who individually evaluate the proposals based on the agreed criteria and submit their individual report via an online Evaluation system.

The evaluation criteria for proposals are closely aligned with the proposal structure:

¹⁹ <http://ec.europa.eu/research/participants/portal/desktop/en/organisations/register.html>

1. Excellence (Threshold 3/5)

- Clarify and pertinence of the objectives
- Credibility of the proposed approach
- Soundness of the concept
- Extent that the proposed work is ambitious, has innovation potential and is beyond the state-of-the-art (e.g. ground breaking objectives, novel concepts and approaches)

2. Impact (Threshold 3/5)

- Aligned with expected impact listed in the Work Programme
- Enhancing Innovation Capacity and Integration of new knowledge
- Strengthening competitiveness and growth of companies by developing innovations meeting needs of global markets
- Effectiveness of the proposed measures to exploit and disseminate the project results (Including management of IPR), to communicate the project and manage research data where relevant

3. Quality and Efficiency of the Implementation (Threshold 3/5)

- Coherence and effectiveness of the work plan including appropriateness of the allocation of tasks and resources
- Complementarity of the consortium partners
- Appropriateness of the management structure and procedures (communication flows, assignment of responsibilities, quality controls, conflict resolution strategy etc) including risk and innovation management

After submission of the individual Evaluation Reports, there is then a discussion among the experts who evaluated the proposal and a combined Evaluation Summary report is prepared. This Evaluation Summary Report is sent to the administrative coordinator following the evaluation process outlining the feedback provided on each criterion and the associated score.

2.8 Next Steps

Njei and Miriam thanked the participants for actively engaging during the workshop and engaging with the group work in such a positive and productive manner.

Peter thanked Njei and Miriam for providing the training and on behalf of the General Manager thanked the participants for coming of the workshop and using the time in such a productive manner. It was very impressive that the workshop was still running at 18:30 on Friday evening with full participation.

The participants found the workshop to be very useful in terms of learning more about what research each department and institution is undertaking at national level, learning about H2020

and specifically ICT-39-2017 and going through the brainstorming and group work associated with preparing concepts for proposals.

Each participant was requested to share the materials provided during the workshops with their colleagues and hold a departmental meeting to agree next steps in relation to preparing concepts for proposals.

Having identified thematic areas of most relevance, each department should then engage with European partners that they have links with (either as a result of external PhD supervisors, meetings during conferences or personal contacts) and discuss how they can cooperate to co-design a proposal for submission under ICT-39-2017.

The participants were requested to keep ANTIC up to date in relation to their progress and any additional support that they require from IST-Africa.

Peter Mokube and Njei Check thanked the participants for coming to the workshop. ANTIC looks forward to continuing to support the community in the coming weeks and months in relation to proposal preparation.

Participants



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M.	MAMVOULA Nguiamba Albert	Université de Douala / ENSET

M.	NKENMOE Simo Bertrand	Université protestante d'Afrique Centrale
Dr	BOMGNI ALAIN Bertrand	Université de Dschang
M.	PEGOFFA DJEUGA Fabrice	Université protestante d'Afrique Centrale
M.	AYISSI GUY Christian	Université de Douala / IUT
M.	DIPOKO Njoh Jonathan	Université de Douala / IUT
M.	NDJOMENI Nacaire	MINEPIA/ Cellule informatique
M.	BEDA Maloum	Ministère des transports
M.	NYA NOUATCHA Gerard	MINESUP
Dr	Dr DENIS L Nkweteyin	Université de Buea
Pr	Pr LUKONG Corvelias Fai	Université de Dschang
Ing	Ing MOUBITANG Adang	ENSP
Dr	Dr GOD Will Vegah	Université de Bandjoun
Dr	DJORWE Temoa	Université de Maroua
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Pr	Pr NKENLIFACK Marcellin	IUTFV / UDS
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M	NZEKI NZEKI Samuel	ANTIC
M	BOUBAWA Aliyou	ANTIC
Mrs	AFOPEZI Glory	ANTIC
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