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Action Document for "AfricaConnect 3"

INFORMATION FOR POTENTIAL GRANT APPLICANTS
WORK PROGRAMME FOR GRANTS
This document constitutes the work programme for grants in the sense of Article 110(2) of the Financial Regulation in the following sections concerning grants awarded directly without a call for proposals: 5.4.1 and 5.4.2.

1. Title/basic act/ CRIS number	AfricaConnect 3 CRIS number: DCI/PANAF/041-014 financed under the Development Cooperation Instrument (DCI)	
2. Zone benefiting from the action/ location	Pan-African The action shall be carried out at the following location: Africa	
3. Programming document	Multi-annual indicative programme (MIP) for the Pan-African programme 2018-2020	
4. Sector of concentration/ thematic area	Investing in People – education, science, technology, skills	DEV. Aid: YES
5. Amounts concerned	Total estimated cost: EUR 37 500 000 Total amount of EU budget contribution EUR 30 000 000 This action is co-financed by potential grant beneficiaries for an indicative amount of EUR 7 500 000	
6. Aid modality and implementation modality	Project Modality Direct management through grant contracts, direct award to Regional Research and Educations Networks a) UbuntuNet Alliance b) GEANT	

7 a) DAC codes	220 – Communications 50%
	      22040 - Information and communication technology (ICT) 50%
	430 – Other multisector 50%
	     43081 - Multisector education/training 25%
	     43082 - Research/scientific institutions 25%	

b) Main Delivery Channel	32000 - Network	

8. Markers (from CRIS DAC form)	General policy objective	Not targeted	Significant objective	Main objective
	Participation development/good governance	☐	☒	☐
	Aid to environment	☒	☐	☐
	Gender equality (including Women In Development)	☐	☒	☐
	Trade Development	☒	☐	☐
	Reproductive, Maternal, New born and child health	☒	☐	☐
	RIO Convention markers	Not targeted	Significant objective	Main objective
	Biological diversity	☒	☐	☐
	Combat desertification	☒	☐	☐
	Climate change mitigation	☒	☐	☐
	Climate change adaptation	☒	☐	☐
9. Global Public Goods and Challenges (GPGC) thematic flagships	N/A			
10. Sustainable Development Goals (SDGs)	*Main SDGs*: • SDG 4 ("Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all") • SDG 9 ("Industry, Innovation and Infrastructure") *Secondary SDGs*: • SDG 5 ("Gender equality") • SDG 8 ("Decent work and economic growth")			

SUMMARY

The necessity of "investing in people" is among the key priorities of the Africa-EU Partnership and its importance is reflected in the political declaration of 5th AU-EU Summit (§23) which states: "*We agree on the importance of youth entrepreneurship, to better link education and skills to employment, and to unlock the potential offered by research and innovation, and by technological development and the digital economy*". [It is also given due attention in the Abidjan Action Plan under the strategic area 1 "Investing in People–education, science, technology and skills development"].

Enhanced human capital development is indeed key to overall economic growth as well as the reduction of inequalities both within and between countries.

Yet, despite the essential role that education and research should play in knowledge and skill development, they face critical challenges which prevent them to fulfil their potential. The massification of needs due to the demographic pressure in Africa, as well as a general lack of quality and relevance to meet the economic and societal needs of their societies, require those sectors to modernise.

Under the Multiannual Indicative Programme for the Pan-African Programme for the period 2014-2017[1], the EU supported "AfricaConnect 2", a programme facilitating the creation, development and use of regional education and research communication networks and high capacity internet connectivity with a gateway to global research collaboration. The project was divided in three "clusters", each covering a region (Cluster 1 for East and Southern Africa, Cluster 2 for West and Central Africa and Cluster 3 for Northern Africa).

The present action seeks to consolidate the results of the previous programme and to further work to expand the scope of the activities under the three clusters in order to unlock the potential of education and research in enhancing human capital development in Africa by improving access to digital infrastructures and technologies.

By facilitating access to much needed educational and research resources and enabling research collaboration, the action will support the digital transformation of those sectors and digital skills development.

The Action Document is adopted under the sector of cooperation "Investing in People – education, science, technology, skills" of the Multiannual Indicative Programme for the Pan-African Programme for the period 2018-2020.

1 CONTEXT

1.1 Sector/Country/Regional context/Thematic

According to demographic projections, Africa's population reached 1.3 billion in 2017 and is projected to grow rapidly, reaching 1.7 billion in 2030 and 3 billion in 2063. By 2015, Africa's youth population is expected to double to over 830 million.

If properly harnessed, this increase in the working age population could support increased productivity and a stronger, more inclusive economic growth across the continent. But Africa's growth, which is expected to reach 3.1% in 2018, has not kept pace with the growing numbers of new job seekers: while 10 to 12 million youth enter the workforce, 3 million jobs are created per year, leaving vast numbers of youth unemployed.

In this context, the provision of quality education and training as well as measures to ensure that research and innovation environments are conducive should be prioritised to support the development of human capacities and skills and to foster the employability of young people.

Given their strong potential as enablers of "knowledge-based" societies, it is argued that digital technologies should be part of the integrated response to accelerate progress in the education and research sectors.

1.1.1 Public Policy Assessment and EU Policy Framework

Highlighting the priorities for the coming years under the Africa-EU Partnership, the political declaration of 5th AU-EU Summit (2017) underlines the importance of creating quality jobs to support sustainable development and enable youth to enjoy decent livelihoods. The declaration thus states (§6) "*Quality jobs require skilled people. We will deepen our collaboration and exchange in education, technology development, knowledge, skills, research and in development to respond effectively to the specific needs of our economies* […]" and stresses the potential of digital tools in this respect (§23): " *We agree on the importance of youth entrepreneurship, to better link education and skills to employment, and to unlock the potential offered by research and innovation, and by technological development and the digital economy*".

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[1] C(2014)5375 final of 30.7.2014.

In the African Union Agenda 2063, the role of educated citizens and skills revolution in driving growth and development is highlighted under Aspirations 1 "*A prosperous Africa, based on inclusive growth and sustainable development*" and 6 "*An Africa whose development is people driven, relying on the potential offered by African people, especially its women and youth, and caring for children*".

Two key policy documents also outline the importance of human capital development in the African continental integration and the need for a transformation of the education and training systems in order to meet the needs of the continent in terms of knowledge, competencies, skills, research, innovation and creativity, respectively the "*Continental education strategy for Africa*" (CESA 2016-2025) and the "*Science, Technology and Innovation strategy for Africa*" (STISA 2014–2024).

In addition, the "*Continental ICT Strategy for Africa*" (CISA 2014-2024) guides the development of the ICT sector on the continent around 7 strategic themes: post and telecom infrastructure, capacity development, e-applications and services, enabling environment and governance, mobilisation of resources and partnerships, industrialisation, as well as research and development.

Illustrating the importance of mobilising digital technologies to deliver benefits in education, one of the flagships proposed in the Agenda 2063 first 10-year implementation plan - the "African Virtual and E-University" – aims to increase access to tertiary and continuing education in Africa by reaching large numbers of students and professionals in multiple sites simultaneously and by developing relevant and high quality Open, Distance and eLearning (ODeL) resources.

The EU priorities in the areas of knowledge and skills, as detailed in the new European Consensus on Development[2], are fully in line with those of the African Union. Recalling that "*ensuring access to quality education for all is a prerequisite for youth employability and long-lasting development*", the EU reaffirms its commitment to support inclusive life-long learning and equitable quality education, with a special attention to opportunities for girls and women.

In addition, the "Digital4Development" (D4D) strategy, which encourages to mainstream the use of digital tools across many development sectors, stresses that "*digitalisation can be a powerful tool to improve access and equity in education, delivery of quality learning and teaching, teacher's professional development as well as education management, governance and administration*". The present action meets several of the D4D priority areas identified in the D4D staff working document[3], notably the need to support enabling environments for the digital economy by enhancing open, affordable and secure broadband connectivity (priority area 1 to which approximately 75% of the budget of the action will contribute), of supporting digital literacy and skills to empower people and promote social inclusion (priority area 2). More specifically it illustrates the enabling role of digital tools for education and human development (priority area 4).

1.1.2 Stakeholder analysis

The **key stakeholders** of the action are the African National Research and Education Networks (NRENs) and Regional Research and Education Networks (RRENs).

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[2] OJ C 210 of 30.6.2017

[3] Commission Staff Working Document "Digital4Development: mainstreaming digital technologies and services into EU Development policy" https://ec.europa.eu/europeaid/sites/devco/files/swd-digital4development_part1_v3.pdf

NRENs, which are typically public bodies or independent organisations financed by universities or government funding, provide internet connectivity to their member institutions (universities, academic institutions, research centres, vocational education and training institutions, etc) and interconnect them through high bandwidth networks. They also offer dedicated IT services, such as e-learning and e-science applications as well as technical support. The African NRENs are the **direct beneficiaries of the action**.

At regional level, RRENs interconnect NRENs, thereby facilitating cross-border exchanges of data and collaboration. The three African RRENs: UbuntuNet Alliance (Eastern and Southern Africa), WACREN (Western and Central Africa) and ASREN (Northern Africa and Middle East Arab countries) will be the **implementing partners of the action**, with the support of the pan-European Research and Education Network (GÉANT).

The **final beneficiaries** of this action are the education and research communities in African countries, and in particular the **end users** (students and staff of tertiary education institutions, researchers) who will benefit from the connectivity and services provided to their institutions by the NRENs and the RRENs as well as from increased access to collaboration opportunities with their peers around the world. The action has the potential to reach a broader range of beneficiaries as it will benefit users from any institution (public libraries, basic education institutions, teaching hospitals, etc) which is connected to the NRENs, depending on the structure and mandate of the NRENs in their respective countries, which is subject to national decision.

The other **key target groups** of the action are:
- The African Union Commission (AUC), through its Departments of Infrastructure and Energy (DIE) and Human Resources, Sciences and Technology (HRST). AUC, which has the mandate to implement the pan-African ICT policy and the Higher Education and Research policy and shall be kept informed of the progress made in deploying a dedicated network for African education and research communities. AUC can also provide an important platform for dialogue with national decision makers and facilitate the continental integration of the three regional clusters of the action;
- African Ministries for Higher Education and Research which will be sensitised about the role of NRENs and the importance to support them and make them sustainable;
- Internet service providers (ISP) are private sector companies from which connectivity is leased and who need to be sensitised about the importance of providing adequate and affordable connectivity to education and research institutions;
- African regulatory agencies which shall contribute to promote and enforce an adequate regulatory framework;
- Cooperating partners, in particular those who support complementary programmes in the field of higher education or research and with whom increased synergies should be sought.

1.1.3 Priority areas for support/problem analysis

Youth unemployment is a major concern for many African countries as an estimated 95 million young men and women in sub-Saharan Africa are uneducated and are either unemployed or engaged in poorly-paid precarious jobs.

Apart from depriving many young people from opportunities to have a decent life, such a situation is critical to address as it impedes economic growth and can engender social unrest.

The education and research sectors, which are essential drivers of human capital development, should play a key role in enhancing youth skills and tackling unemployment. However, those sectors face challenges which prevent them from fulfilling their role.

Whilst the quality of higher education in Africa has improved in the recent years, it has fallen short of the standards needed to catalyse knowledge-driven economies and global competitiveness. In a context characterised by a strong demographic pressure and an unprecedented massification phenomenon due to the "youth bulge", African higher education and vocational training institutions face a depreciating quality of teachers, research capacity deficit, infrastructural/facilities inadequacies, as well as inefficiencies relating to delivery, governance and management processes. Those factors – which negatively impact the quality and relevance of education and training - contribute in turn to a mismatch between the skills that young people receive and those needed to get a job or create their own opportunities.

Research and innovation equally have a strong potential to support inclusive and sustainable socio-economic development. Innovation can provide solutions to societal and economic challenges by supporting the adaptation of existing technologies and encouraging the design of local solutions. But the lack of conducive environments and difficulties to access resources and knowledge constrain collaboration activities and limit the impact of research and innovation activities. It also limits the capacity of African researchers to contribute to collaborative research programmes (e.g. under Horizon 2020) with their peers in the rest of the world) and it contributes to "brain drain" of researchers looking for better opportunities to carry out their work.

It is therefore argued that the potential of education and research in fostering skills development and in generating significant economic and social returns is currently hampered. To address this situation and support the transformation of the education and research sectors and enhance their quality and relevance, digital tools can provide cost-effective solutions by facilitating access to resources and supporting the mutualisation of tools and knowledge.

National Research and Education Networks (NRENs) have a central role to play in this respect. As dedicated bodies operating solely for the benefits of education and research communities, they can contribute to creating enabling environments.

NRENs' prime mission is to make high-band internet connectivity affordable for their users by advocating that education and research sectors are "public goods" and negotiating competitive prices with commercial internet service providers. Such connectivity thus enables education, training and research institutions to develop and use applications which can significantly change the teaching and learning environments such as online teaching materials, virtual classes, massive open online courses (MOOCs), videoconferencing facilities, and can allow participation in world-class research projects and the dissemination of the African scientific knowledge. Where needed, NRENs also fill a gap by mutualising services which benefit smaller, more remote or disadvantaged institutions.

In addition, they play a central role in providing trainings in advanced communications technologies to universities network engineers and students, thereby developing technical skills that are beneficial both for the public and the private sectors.

On this basis, in order to support the education and research sectors in Africa through the use of digital technologies, it is proposed to focus the action on the following areas:

- **Facilitate access to adequate and affordable connectivity**: connectivity is the basic infrastructure required for the use of services/applications and for collaboration but African tertiary education and research institutions are currently among the least connected in the academic world. While infrastructure availability has significantly progressed over the recent years - including through the deployment of international undersea cables circling Africa – the current broadband offering within Africa is limited. Landlocked countries in particular suffer from very low penetration levels as well as from very high connectivity prices, a situation which can also be observed in countries where telecom monopolies or weak regulatory systems exist. It is therefore a priority to facilitate

access to adequate connectivity at affordable prices for the education and research institutions and significant economies of scale can be achieved at national level through NRENs, and at regional level through RRENs.

- **Make dedicated services and applications available**: as they become more digitally-driven, academic and research institutions need specific services to support their collaboration activities, to access resources worldwide or facilitate the mobility of staff and students. NRENs and RRENs can help in raising end-users' awareness, gather their requirements and identify technical recommendations. They can also provide services ranging from authentication infrastructures, to data management and storage, security and incident management. In most cases, services delivery at regional level also provides an opportunity to mutualise tools and facilitate exchanges across different organisations or IT systems. Examples of relevant services include eduGAIN and eduroam, both developed by the Pan European RREN GÉANT. While eduGAIN enables the secure exchange of information related to identity, authentication and authorisation between participating federations to support access to services globally, eduroam provides an international roaming service for users in research and tertiary education, thereby facilitating students, staff and researchers' mobility by providing them with secure network access when visiting an institution other than their own. Other services can include hosting institutional repositories, provision of cloud spaces, etc.

- **Strengthen digital skills through capacity building**: adequate digital skills are critical to be able to reap the benefits of access to better digital infrastructures. But if universities, training centres and research institutions play a key role in enhancing and disseminating skills by training students, they themselves rely on expertise in the areas of security, federated trust and identity as well as educational application service development, which is a need that NRENs can answer. NRENs indeed provide cutting-edge training to universities and research staff, thereby contributing to ensure that teaching remains of highest quality.

- **Advocate the importance of digital tools in transforming education and research**: as many countries adopt National Digital strategies, it is important to stress the specific needs of the education and research sectors and to highlight the enabling potential of digital tools and their multiplier effect for skills development, employability and economic growth. By arguing that e-infrastructures and e-services are indissociably linked to the transformation agenda in education and research, it should help to secure political and financial support.

2   RISKS AND ASSUMPTIONS

Risks	Risk level (H/M/L)	Mitigating measures
High prices of broadband connectivity	High	Encourage competition between internet service providers Raise awareness of regulators and policy makers at national and regional levels on the impact of monopolies
Lack of adequate institutional and governance frameworks as well as human resources hampering RRENs' role as coordinating organisations	Medium	RREN to establish and implement strong governance rules and human resources policy (including project management)

Weak financial sustainability of RRENs	Medium	RREN to develop sustainable business models and work with member NRENs to establish plans for mobilisation of resources
Lack of governance and institutional capacities at NREN levels	High	Promote NREN capacity building as part of the activities of the project Encourage external support for NREN development, development and implementation of business plans
Inability of NRENs to pay their cofunding share to the project	Medium	Sensitisation of national decision makers (ministries of higher education) to secure financial means to cover NRENs' contributions to the project Engage cooperating partners to increase synergies with other existing programmes in the field of education or research
Lack of understanding from potential users (university, research centres) about the opportunities provided by NRENs in terms of connectivity and services	Medium	Awareness raising (vice chancellors, etc), use of champions, such as well-known researchers, to advocate for NRENs Training of NREN CEOs on business development and marketing Deployment of applications and services that demonstrate the benefits of NRENs
Lack of adequate capacities (staff) in higher education/research institutions hampering the connection and use of the connection to the NREN	Medium	Appropriate capacity building initiatives (technical trainings, engineers) and train-the-trainer programmes.
Assumptions		
• Political stability in African countries allow for NRENs' activities • African Union remains committed to supporting digital skills development		

3 LESSONS LEARNT, COMPLEMENTARITY AND CROSS-CUTTING ISSUES

3.1 Lessons learnt

AfricaConnect 3 is the third phase of a programme which started by focusing solely on Eastern and Southern Africa in the first phase, before expanding its scope to the whole of Africa under the second phase.

As a result, 11 of the 38 African NRENs are currently interconnected and connected with their European counterparts through the African and European RRENs. For more than 800 higher education and research institutions which are connected to those 11 NRENs, it represents increased opportunities to collaborate with peers across the world and helps them in retaining local talent. In terms of capacity growth and cost drop for connectivity, the benefits of the action can be illustrated by the case of the Zambian NREN (ZAMREN) whose capacity was multiplied by 60 and cost dropped by 94% over the period 2011-2015, while the Ugandan NREN (RENU) saw its capacity multiplied by 19, while the cost dropped by 89% over the period 2013-2017.

In addition, capacity building and advocacy activities are ongoing in other countries.

A brainstorming meeting organised in November 2017, with the three geographical clusters of AfricaConnect 2 as well as external experts, helped identify the following key elements:

- **Need for a stronger strategic approach for connectivity deployment**: while efforts should be pursued to connect as many African countries as possible, priority should be given to countries where impact could be maximised. Procurement of connectivity should thus take into account several factors (NREN readiness status, number and nature of institutions which are connected, end users' needs, existence of a national digital strategy, programmes supported by other donors, etc) as RREN/NRENs will be judged by the quality of the services delivered to the end users within the beneficiary institutions, even if this does not fall strictly under their responsibility.

- **Need to highlight the added value of NRENs**: the mission of African NRENs is significantly hampered by the general lack of understanding of their role and of their difference compared to commercial internet providers. In this respect, the provision of dedicated services to the education and research communities is critical to underline NRENs' added value. In order to build and consolidate their reputation, NRENs should first focus on a few services visible for the end users (eduroam) or where regional level makes more sense than national level (identity federations). Whenever possible, RRENs should also encourage the horizontal collaboration between NRENs, capitalise on their respective strengths and mutualise resources.

- **Capacity building activities should cover both technical and governance aspects**: capacity building activities delivered by RRENs/NRENs fill a critical gap for highly specialised training that is not delivered by any other stakeholder on the continent. At technical level, training is critical to ensure a smooth implementation and delivery of the services to the users. At institutional level, capacity building is needed to strengthen NRENs' capacities in leading complex procurement processes or in developing business plans and advocacy strategies in view of achieving sustainability, including financial sustainability. In this regard, while self-sustainability of NRENs can be an option to be considered, the "public good" nature of NRENs' mission argue in favour of other sustainability paths which can take different forms (government-funded, users' fees, etc) depending on the types of NREN which prevail in each country.

- **Importance of a multi-stakeholder dialogue platform**: raising awareness on the importance of digital tools for education and research is key to secure political and financial support but it requires NRENs to be able to transcend technical arguments to promote a clear "D4D" vision. Experience has shown the importance to provide a high level platform for dialogue between the different stakeholders (governmental stakeholders, regulatory authorities, representatives of research and education communities, telecom operators, international donors) where their respective priorities can be confronted and strategic recommendations to support an enabling environment can be made. In this regard, the "Policy and Donors West and Central Africa Group" (PODWAG) supported under the H2020 project TransAfrican Network Development (TANDEM) in which WACREN was involved, should be looked at as a successful example of multi-stakeholder advocacy mechanism.

- **Need to include stronger impact indicators:** while earlier phases of the programme mainly focused on indicators relating to infrastructure deployment, impact indicators should be included in order to measure the impact of provision of connectivity, services and capacity building on skills retention, job employment rates, productivity levels, reduction in job inequality, innovation, etc.

- **Need to have a flexible approach to reflect local realities:** while this action pursues a continental approach, the previous phases of the programme highlighted the different situations prevailing in African regions depending on the level of maturity of the NRENs, the political environment, the regulatory frameworks or the costs of internet access. The

conclusion that can be drawn from such observations is the need to allow for some flexibility to adopt solutions adapted to local realities.

- **Need to have strong governance frameworks and formalised procedures**: since RRENs/NRENs pursue a public service mission but have close interactions with private operators with whom they conclude commercials deals for the lease of connectivity, it is critical to strengthen the transparency and accountability of such processes. The roles and responsibilities of the stakeholders as well as the governance processes therefore need to be clearly formalised. As far as the UbuntuNet Alliance is concerned, following a systems audit which was carried out in order to identify areas of improvement in the organisation as result of the direct management of EU funds, recommendations highlighted the need to formalise procedures in relation to procurement, internal audit, monitoring and evaluation. Such recommendations should also inspire the other African RRENs which are at earlier stages of development.

3.2 Complementarity, synergy and donor coordination

Complementarity and synergy

The action, which is based on the use of digital infrastructures, does not involve the construction of **infrastructure** which is supported under other instruments. The EU thus supports backbone projects in Africa such as the Trans-Saharan Backbone Optical Fibre Project or the Central Africa Backbone project. Through the Infrastructure Trust Fund (ITF), the EU has also provided support to several initiatives led by other donors or agencies such as the African Internet Exchange System (AXIS) project, the satellite-enhanced telemedicine and e-health for sub-Saharan Africa and the East African Submarine Cable System (EASSy).

Such backbone infrastructures programmes do serve AfricaConnect 3 objectives by providing new connectivity routes which could constitute alternative solutions to those currently proposed by commercial connectivity providers.

Progress towards more harmonised and enabling **policy, legal and regulatory frameworks** for the use of ICT in Africa would have positive implications for the action. These issues are addressed under the Pan-African Programme as part of the "Policy and Regulation Initiative for Digital Africa" (PRIDA) project implemented with the African Union Commission (AUC) and the International Telecommunications Union (ITU). The project will offer a platform to bring connectivity prices and other issues faced by the project to the attention of **African regulators and policy makers**.

Other platforms for dialogue as part of the Africa-EU Partnership will allow reaching out to policy makers and **private sector**. These include the *EU-Africa Task Force on Digital Economy* to be established by the Commission and the AUC, and the working group on digitalisation for sustainable development to be established by the Commission and the African Development Bank as part of their cooperation on investment climate reforms.

The action is complementary to activities which are supported in the **higher education** sector at regional or continental level in Africa. As far as higher education is concerned, EU-funded programmes mainly focus on improving the quality and relevance of curricula or on supporting mobility (Intra-Africa Academic Mobility scheme and Erasmus +). Africa Connect 3 can improve the digital infrastructures (internet connectivity) and services available to universities and research institutes in partner countries (*e.g*. tools to connect home and host institutions as part of mobility programmes, thereby enabling users to access resources and teaching/learning materials).

Finally, the action will allow for further cooperation opportunities for researchers. In the area of earth observation in particular, African RRENs have started engaging with the AfriGEOSS

community to discuss existing communication infrastructure and requirements with a view to improve data dissemination. Collaboration among **African and European researchers** will also be enhanced as part of *i.a.* Horizon 2020 and its successor (Horizon Europe). It will complement research projects which fosters ICT research cooperation between the EU and Africa (Horizon 2020 projects included TANDEM (TransAfrican Network Development), SciaGaIA (Energizing Scientific Endeavour through Science Gateways and e-Infrastructures in Africa) and MAGIC (Middleware for collaborative Applications and Global Virtual Communities)).

It also complements other research programmes, such as the intra-ACP "Research and Innovation capacity building programme" which aims to unlock the innovation potential of ACP countries by facilitating transfers of knowledge and enhancing the quality of research and innovation policies and systems in target countries.

Donor coordination

Donor coordination under the current phase of the action (AfricaConnect 2) has mainly taken place on an *ad hoc* basis, a situation which can partly be explained by the fact that the programme was conceived as a "digital" project, whereas programmes from other donors focus more on tertiary education or research sector policies or specific institutions.

During the implementation of AfricaConnect 2, RRENs had regular interactions with the main cooperating partners supporting higher education or research, such as the World Bank, the Agence Française de Développement (AFD), the Swedish cooperation agency (SIDA) which contributed to cofund the programme. Discussions also took place with the African Development Bank (AfDB) which has a strong interest in those sectors.

Under AfricaConnect 3, strengthening donor coordination and making it more systematic is an imperative. This will be done through regular meetings to exchange information on the different programmes which are supported in order to link more efficiently the interventions in the countries, thereby leveraging more means for the benefits of the higher education and research communities.

3.3 Cross-cutting issues

The action, which supports the provision and use of digital tools and services, can play an important role in supporting women's empowerment.

Gender gaps in technology use are significant in Africa, where women are 50% less likely to use the internet than men. But this is also reflected in tertiary education, where women are underrepresented in science, technology, engineering, and mathematics (STEM) fields.

By facilitating the access to knowledge and the delivery of services, digital technologies can play a crucial role in attenuating gender segregation patterns in universities and research institutions but this requires measures to ensure that women have the necessary skills to benefit from it.

Under AfricaConnect 2, WACREN committed to strengthen women's digital skills, by organising training workshops dedicated to female participants and providing incentives (coverage of their participation costs). The "Women in WACREN" initiative was thus launched as a platform for training and networking activities to open opportunities for women.

Apart from building capacities, such measures are important in so far as they help overcome the psychological and social barriers to women's involvement in scientific and technological activities. Such activities will be scaled up in the next phase of the action.

The action is also expected to have positive environmental and climate change effects by:

- providing adequate network infrastructures for the use of applications in the environmental and climate change areas, e.g. climate adaptation and mitigation, resilience, disaster early-warning systems, disaster handling and recovery, etc.
- reducing the need for education and research professionals to travel to meet and rather encourage them to cooperate through digital tools, such as video-conferencing facilities or online collaboration tools.

4 DESCRIPTION OF THE ACTION

4.1 Objectives/results

The overall objective of the action is to enhance human capital development in Africa.

The specific objective is to increase the use of digital technologies by African education and research institutions.

The expected results (outputs) for each of the three geographical clusters of the action are the following:
- **Output 1**: Access of tertiary education and research institutions to adequate and affordable e-infrastructures is improved;
- **Output 2**: Dedicated services and applications are developed for the benefit of education and research communities;
- **Output 3**: Adequate human resource capacity and expertise is built within education and research communities;
- **Output 4**: Awareness of the role of digital transformation for education and research is raised.

This programme is relevant for the United Nations 2030 Agenda for Sustainable Development. It contributes primarily to the progressive achievement of Goals 4 ("Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all") and 9 ("Industry, Innovation and Infrastructure") but also promotes progress towards Goals 5 ("Gender equality") and 8 ("Decent work and economic growth"). This does not imply a commitment by the countries benefiting from this programme.

4.2 Main activities

The following main activities are envisaged for each output (indicative list):

Output 1: *Access of tertiary education and research institutions to adequate and affordable e-infrastructures is improved*
- Review and update – if required – of the network topology by region
- Procurement of connectivity to expand the regional networks with new links, resilience links and upgrades of the network
- Procurement of equipment
- Network management: testing, delivery and operations of the network
- Customer satisfaction survey and follow up

Output 2: *Dedicated services and applications are developed for the benefit of African education and research communities*
- Development of dedicated services and applications for the benefit of the research and education community
  - Eduroam
  - Identity and Trust, notably eduGAIN
  - Collaboration Platforms
- Provision of technical support in the deployment and use of the services

Output 3: *Adequate human resources capacity and expertise is built within education and research communities*

- Development and organisation of technical training and capacity building activities on network operations, security, etc
- Development and organisation of managerial training and capacity building activities for NRENs CEO on advocacy, leadership, business model development and financial sustainability
- Reinforcement of RRENs' governance and structures through
    - Recruitment of dedicated staff
    - Strengthening of internal control standards through development of manuals (procurement, human resources, finance and accounting, etc)
- (Clusters 2 and 3): Progressive handover of responsibilities from GEANT to ASREN and WACREN

Output 4: *Awareness of the role of digital transformation for education and research is raised*

- Awareness raising activities to promote NRENs' role to decision makers
- End users' engagement activities through meetings, media, etc
- Establishment and management of a multi-stakeholders dialogue platform to discuss policy, financial and regulatory issues relating to NRENs' missions and activities.

4.3 Intervention logic

Youth unemployment is a critical issue affecting many African countries and tertiary education and research are sectors which should play a key role in addressing it, by fostering the development of human capital and skills (the Overall Objective of this action) and by contributing to economic growth and to the creation of societal opportunities.

Those sectors however do not fully maximise their potential and fail to deliver the expected social and economic returns. Apart from facing a significant massification phenomenon, they suffer from lack of quality and relevance which requires access to new teaching and learning methods and resources and calls for increased collaboration.

In this regard, digital tools can help and the action aims at increasing their use by African education and research institutions (the Specific Objective of the action).

For digital technologies to support the needs of education and research in African countries, it requires adequate and affordable infrastructures, such as high speed broadband connectivity (output 1), dedicated services and applications tailored to the needs of the education and research communities (output 2), as well as adequate human capacities to fully use those resources (output 3). Finally, advocacy activities will help raise the awareness on the importance of digital technologies in transforming education and research. By highlighting the enabling potential of digital tools and their multiplier effect for skills development, employability and economic growth, the action will highlight the relevance of such tools for academic and research communities and advocate for their sustainability (output 4).

5   IMPLEMENTATION

5.1 Financing agreement

In order to implement this action, it is not foreseen to conclude a financing agreement with the partner country.

5.2 Indicative implementation period

The indicative contracting date is June 2019.

The indicative operational implementation period of this action, during which the activities described in section 4.2 will be carried out and the corresponding contracts and agreements implemented, is 60 months from the date of adoption by the Commission of this Action Document.

Extensions of the implementation period may be agreed by the Commission's authorising officer responsible by amending this decision and the relevant contracts and agreements; such amendments to this decision constitute technical amendments in the sense of point (i) of Article 2(3)(c) of Regulation (EU) No 236/2014.

5.3 Implementation of the budget support component

N/A

5.4 Implementation modalities

Both in indirect and direct management, the Commission will ensure that the EU appropriate rules and procedures for providing financing to third parties are respected, including review procedures, where appropriate, and compliance of the action with EU restrictive measures affecting the respective countries of operation[4].

5.4.1   Grant: direct award "AfricaConnect 3- Cluster 1" (Eastern and Southern Africa) (direct management)

(a) Objectives of the grant, fields of intervention, priorities of the year and expected results

In line with the objectives indicated in section 4.1, the grant aims at supporting the activities of the Regional Research and Education Network for Eastern and Southern Africa (Ubuntunet Alliance) in providing dedicated digital services – including connectivity – to the research and education communities of the region.

Eligible activities include the following:
- Procurement of connectivity and equipment contracts
- Management of the network and provision of technical support
- Development and deployment of dedicated services and e-applications
- Organisation of capacity building activities for NRENs at managerial and technical levels
- Reinforcement of the UbuntuNet Alliance's capacities to carry out its mandate
- Awareness raising activities and dialogue between education and research communities, decision makers and cooperating partners

(b) Justification of a direct grant

Under the responsibility of the Commission's authorising officer responsible, the grant may be awarded without a call for proposals to the UbuntuNet Alliance.

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[4] https://eeas.europa.eu/sites/eeas/files/restrictive_measures-2017-04-26-clean.pdf

Under the responsibility of the Commission's authorising officer responsible, the recourse to an award of a grant without a call for proposals is justified on the grounds of UbuntuNet Alliance's *de facto* monopoly (Art.190.c) and the fact that it is the only organisation with the adequate degree of specialisation and technical competence (Art.190.f) in the geographical area of intervention.

The UbuntuNet Alliance is the regional Research and Education Networking organisation for Eastern and Southern Africa. It is composed of 16 National Research and Education Networks (NRENs) of the region and manages and operates UbuntuNet, the regional backbone network that interconnects the NRENs of the region and to connect them to other regional networks. Its role is to secure affordable broadband and efficient ICT access and usage for African NRENs and their associated communities of practice.

(c) Eligibility conditions

N/A

(d) Essential selection and award criteria

The essential selection criteria are the financial and operational capacity of the applicant.

The essential award criteria are relevance of the proposed action to the objectives of the call; design, effectiveness, feasibility, sustainability and cost-effectiveness of the action.

(e) Maximum rate of co-financing

The maximum possible rate of co-financing for this grant is 80%.

If full funding is essential for the action to be carried out, the maximum possible rate of co-financing may be increased up to 100%. The essentiality of full funding will be justified by the Commission's authorising officer responsible in the award decision, in respect of the principles of equal treatment and sound financial management.

(f) Indicative trimester to conclude the grant agreement

2nd trimester 2019.

(g) Exception to the non-retroactivity of costs

N/A.

5.4.2 Grant: direct award "AfricaConnect 3 - Clusters 2 and 3" (Cluster 2 West and Central Africa and Cluster 3 Northern Africa) (direct management)

(a) Objectives of the grant, fields of intervention, priorities of the year and expected results

In line with the objectives indicated in section 4.1, the grant aims at supporting the activities of the Regional Research and Education Networks for Western and Central Africa (West and Central African Research and Education Network in Cluster 2) and for Northern Africa (Arab States Research and Education Network in Cluster 3) in providing dedicated digital services – including connectivity – to the research and education communities of their regions.

Eligible activities include the following:
- Procurement of connectivity and equipment contracts
- Management of the network and provision of technical support
- Development and deployment of dedicated services and e-applications
- Organisation of capacity building activities for NRENs at managerial and technical levels
- Reinforcement of RRENs' (WACREN and ASREN) capacities to carry out their mandate
- Awareness raising activities and dialogue between education and research communities, decision makers and cooperating partners

(b) Justification of a direct grant

Under the responsibility of the Commission's authorising officer responsible, the grant may be awarded without a call for proposals to GEANT.

Under the responsibility of the Commission's authorising officer responsible, the recourse to an award of a grant without a call for proposals is justified on the grounds that GEANT is the only organisation with the adequate degree of specialisation and technical competence (Art.190.f) to implement the activities in the geographical areas of intervention (West and Central Africa under Cluster 2 and North Africa under Cluster 3).

As European RREN, GEANT manages the pan-European research and education network (GEANT network) and has a unique know-how and capacity to develop regional research and education networks. GEANT also provides support to the creation of similar networks around the world and one of its missions is to hand-over the full responsibility (administrative, financial and technical aspects) to the local partners. Under AfricaConnect 2, GEANT collaborated with WACREN and ASREN to implement the activities in their respective areas of intervention. However, since those regional networks are not yet in capacity to manage the operations autonomously, it is proposed to continue to work with GEANT as lead implementing partner with WACREN and ASREN as co-beneficiaries.

(c) Eligibility conditions

N/A

(d) Essential selection and award criteria

The essential selection criteria are the financial and operational capacity of the applicant.

The essential award criteria are relevance of the proposed action to the objectives of the call; design, effectiveness, feasibility, sustainability and cost-effectiveness of the action.

(e) Maximum rate of co-financing

The maximum possible rate of co-financing for this grant is 80%.

If full funding is essential for the action to be carried out, the maximum possible rate of co-financing may be increased up to 100%. The essentiality of full funding will be justified by the Commission's authorising officer responsible in the award decision, in respect of the principles of equal treatment and sound financial management.

(f) Indicative trimester to conclude the grant agreement

2nd trimester 2019.

(g) Exception to the non-retroactivity of costs

N/A.

5.5 Scope of geographical eligibility for procurement and grants

The geographical eligibility in terms of place of establishment for participating in procurement and grant award procedures and in terms of origin of supplies purchased as established in the basic act and set out in the relevant contractual documents shall apply.

The Commission's authorising officer responsible may extend the geographical eligibility in accordance with Article 9(2)(b) of Regulation (EU) No 236/2014 on the basis of urgency or of unavailability of products and services in the markets of the countries concerned, or in other duly substantiated cases where the eligibility rules would make the realisation of this action impossible or exceedingly difficult.

5.6 Indicative budget

	EU contribution (in EUR)	Indicative third party contribution (in EUR)
5.4.1 – Direct grant to UbuntuNet Alliance "*AfricaConnect 3- Cluster 1*" (direct management)	14 000 000	3 500 000
5.4.2 – Direct grant to GEANT "*AfricaConnect 3- Clusters 2 and 3*" (direct management)	16 000 000	4 000 000
5.9 – Evaluation, 5.10 - Audit	will be covered by another decision	N.A.
5.11 – Communication and visibility	N.A.	N.A.
Contingencies	N.A	N.A
Totals	**30 000 000**	**7 500 000**

5.7 Organisational set-up and responsibilities

Project coordination mechanisms will be put in place by the partners of the project, i.e. the three African Regional Research and Education Networks (ASREN, UbuntuNet Alliance, WACREN) and their European counterpart (GEANT).

A Strategic Steering Committee common to the three clusters will be set up to provide strategic guidance and orientations for the action. It will be composed of representatives of the European Commission, the African Union Commission and of the implementing partners of the action and shall supervise the consistency of the activities against the objectives of the Agenda 2063 and of the Africa-EU Partnership in terms of skills development and job creation.

The Steering Committee shall meet twice a year and shall facilitate political buy-in from the African Union Member States and help improve the synergy with the overall ICT and education/research ecosystems and with other ongoing initiatives. The League of Arab States is also a member of the Steering Committee.

Other stakeholders (e.g. African Development Bank, World Bank) may be invited to attend the Steering Committee meeting where relevant.

In addition, Implementation Technical Committees will be set up for each cluster to oversee the implementation of the activities in the respective regions, including the deployment and operations of the network as well as the services.

The Implementation Technical Committees shall ensure that the needs of the education and research community are duly reflected in the project and shall help identify increased coordination opportunities with other programmes supported by cooperating partners in the different target countries.

They will be chaired by the implementing partners of the respective clusters and will report to the Strategic Steering Committee. The European Union will participate and may be assisted by external technical assistance. NRENs may be invited to attend the Implementation Technical Committees meetings when necessary.

Terms of Reference for the Steering Committee and the Implementation Technical Committees will be developed at the inception of the action.

- Accompanying measures:

For Clusters 2 and 3, a discussion on the key findings of the audit of the UbuntuNet Alliance should take place with WACREN (West and Central African Research and Education Network), ASREN (Arab States Research and Education Network) and GEANT to see how the lessons learned of that exercise can be best integrated in the development strategy of those organisations.

5.8 Performance monitoring and reporting

The baseline data for this action are being collected by the implementing partners and will be consolidated before the signature of the grant contracts. The targets to be achieved at the end of the implementation period will be defined and discussed with the European Union prior to the beginning of the activities.

The day-to-day technical and financial monitoring of the implementation of this action will be a continuous process and part of the implementing partners' responsibilities. To this aim, the implementing partners shall establish a permanent internal, technical and financial monitoring system for the action and elaborate regular progress reports (not less than annual) and final reports. Every report shall provide an accurate account of implementation of the action, difficulties encountered, changes introduced, as well as the degree of achievement of its results (outputs and direct outcomes) as measured by corresponding indicators, using as reference the logframe matrix. The report shall be laid out in such a way as to allow monitoring of the means envisaged and employed and of the budget details for the action. The final report, narrative and financial, will cover the entire period of the action implementation.

The Commission may undertake additional project monitoring visits both through its own staff and through independent consultants recruited directly by the Commission for independent monitoring reviews (or recruited by the responsible agent contracted by the Commission for implementing such reviews).

5.9 Evaluation

Having regard to the nature of the action, a mid-term evaluation will be carried out for this action or its components via independent consultants contracted by the Commission.

It will be carried out for learning purposes, in particular with respect to the fact that the action was preceded by two prior phases and is characterised by complex procurement processes.

The Commission shall inform the implementing partners at least 3 months in advance of the dates foreseen for the evaluation missions. The implementing partners shall collaborate efficiently and effectively with the evaluation experts, and inter alia provide them with all necessary information and documentation, as well as access to the project premises and activities.

The evaluation reports shall be shared with the partner countries and other key stakeholders. The implementing partners and the Commission shall analyse the conclusions and recommendations of the evaluations and, where appropriate, in agreement with the partner country, jointly decide on the follow-up actions to be taken and any adjustments necessary, including, if indicated, the reorientation of the project.

The financing of the evaluation shall be covered by another measure constituting a financing decision.

5.10 Audit

Without prejudice to the obligations applicable to contracts concluded for the implementation of this action, the Commission may, on the basis of a risk assessment, contract independent audits or expenditure verification assignments for one or several contracts or agreements.

The financing of the audit shall be covered by another measure constituting a financing decision.

5.11 Communication and visibility

Communication and visibility of the EU is a legal obligation for all external actions funded by the EU.

This action shall contain communication and visibility measures which shall be based on a specific Communication and Visibility Plan of the Action, to be elaborated at the start of implementation and supported with the budget indicated in section 5.6 above.

In terms of legal obligations on communication and visibility, the measures shall be implemented by the Commission, the partner country, contractors, grant beneficiaries and/or entrusted entities. Appropriate contractual obligations shall be included in, respectively, the financing agreement, procurement and grant contracts, and delegation agreements.

The implementing partners will include a specific plan for Communication and Visibility as part of their project activities which will be covered by the budget awarded in their respective grant contracts.

The Communication and Visibility Manual for European Union External Action shall be used to establish the Communication and Visibility Plan of the Action and the appropriate contractual obligations.

6 PRE-CONDITIONS

In order for the action to be implemented under the best conditions and deliver its expected results, the following conditions need to be met:

- Cluster 1: following a systems audit of the UbuntuNet Alliance completed in 2018, the organisation needs to put in place a credible roadmap to address the key issues identified in the audit report. The signature of the grant contract will be made conditional upon the prior discussion of this roadmap between the UbuntuNet Alliance and the EU as well as its formal endorsement by the Board of the UbuntuNet Alliance. Failure to meet those conditions would result in the direct award of the grant contract to the UbuntuNet Alliance being rescinded.

APPENDIX - INDICATIVE LOGFRAME MATRIX (FOR PROJECT MODALITY) [5]

The activities, the expected outputs and all the indicators, targets and baselines included in the logframe matrix are indicative and may be updated during the implementation of the action, no amendment being required to the financing decision. When it is not possible to determine the outputs of an action at formulation stage, intermediary outcomes should be presented and the outputs defined during inception of the overall programme and its components. The indicative logframe matrix will evolve during the lifetime of the action: new lines will be added for including the activities as well as new columns for intermediary targets (milestones) for the output and outcome indicators whenever it is relevant for monitoring and reporting purposes. Note also that indicators should be disaggregated by sex whenever relevant.

	Results chain	Indicators	Baselines	Targets (2023)	Sources and means of verification	Assumptions
Overall objective: Impact	To enhance human capital development in Africa	1. Youth unemployment rate in Africa	1. Average 2016: 29.3% (Northern Africa) 10.9% (sub-Saharan Africa)	Decrease in the unemployment rate observed at the end of the implementation period	1. ILO World Employment and Social Outlook Report	
		2. Proportion of youth (15-24 years) not in education, employment or training (NEET) (SDG 8.6.1).	2. Average 2017: 26.1% in Northern Africa N/A sub-Saharan Africa	idem	2. OECD, Economic Outlook for Africa	
Specific objective: Outcome	To increase the use of digital technologies by African education and research institutions.	1.1: Volume of intra-African and international communication traffic between National Research Institutions (NRENs) (average Mbit/s)*	1.1: tbd at inception phase	1.1: tbd at inception phase	1.1: Figures to be provided by the network operations center (NOC) and reported in the project narrative reports	Increased use of digital tools by education and research institutions enhance the quality and relevance of teaching/learning/research

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[5] Mark indicators aligned with the relevant programming document mark with '*' and indicators aligned to the EU Results Framework with '**'.

		1..2: Number and % of institutions connected to NRENs, disaggregated by type (higher education / VET / research) and country	1..2: tbd at inception phase	1..2: tbd at inception phase	1..2: Project narrative reports	
		1.3: Number of new e-services and applications operational and used African NRENs*	1.3: 0 with the support of this Action	1.3: tbd at inception phase	1.3: Project narrative reports	
		1.4: Number of institutions enrolled under Eduroam	1.4: tbd at inception phase	1.4: tbd at inception phase	1.4:Project narrative reports	
		1.5: Number of established NREN / of which registered NRENs	1.5: tbd at inception phase	1.5: tbd at inception phase	1.5: Project narrative reports	
Outputs	Output 1 Access of tertiary education and research institutions to adequate and affordable e-infrastructures is improved	1.1.1: Capacity taken by NRENs from the RREN (average Mbps/Gbps)	1.1.1: tbd at inception phase	1.1.1: tbd at inception phase	1.1.1: Figures to be provided by the network operations center (NOC) and reported in the project narrative reports	At national level, the NRENs networks connect education and research institutions (existence of capillarity)
		1.1.2: Average link usage / traffic usage (monthly %)	1.1.2: tbd at inception phase	1.1.2: tbd at inception phase	1.1.2: % to be provided by the network operations center (NOC) and reported in the project narrative reports	Education and research institutions with access to increased connectivity engage in collaboration activities with their counterparts in Africa and other regions
	Output 2 Dedicated services and applications are developed for the benefit of education and research communities	2.1.1: Number of new e-services and applications developed by this action for African NRENs*	2.1.1: 0 with the support of this action	2.1.1: tbd at inception phase	2.1.1: Project narrative reports	e-services and applications developed with the support of this action are relevant to the needs of the end users
		2.1.2: Number of NRENs having received support to deploy eduroam	2.1.2: 0 with the support of this Action	2.1.2: tbd at inception phase	2.1.2: Project narrative reports	

		2.1.3: Number of NRENs registered as Eduroam operators	2.1.3: 0 with the support of this Action	2.1.3: tbd at inception phase	2.1.3: Eduroam report	
		2.1.4: Number of cloud services provided, of which number of migrations	2.1.4: 0 with the support of this Action	2.1.4: tbd at inception phase	2.1.4: Project narrative reports	
	Output 3 Adequate human resource capacity and expertise is built within education and research communities	3.1.1: Number of participants attending technical trainings organised by RRENs, disaggregated by sex	3.1.1: 0 with the support of this Action	3.1.1: tbd at inception phase	3.1.1: Project narrative reports	
		3.1.2: Number of NRENs CEO attending leadership trainings organised by RRENs (disaggregated by sex)	3.1.2: 0 with the support of this Action	3.1.2: tbd at inception phase	3.1.2: Project narrative reports	
		3.1.3: Number of exchanges of experience amongst NRENs CEOs	3.1.3: 0 with the support of this Action	3.1.3: tbd at inception phase	3.1.3: Project narrative reports	
	Output 4 Awareness of the role of digital transformation for education and research is raised	4.1.1: Number of education officials and researchers participating in events promoting end users' engagement organized by the Action (disaggregated by sex and country)	4.1.1: 0 with the support of this Action	4.1.1: tbd at inception phase	4.1.1: Project narrative reports	End users and decision makers who have been sensitised on the role of NRENs in supporting an adequate ICT environment for education and research support the creation or strengthening of the NREN in their country
		4.1.2: Number of countries whose policy makers, politicians have been sensitised by this Action on the role of NRENs	4.1.2: 0 with the support of this Action	4.1.2: tbd at inception phase	4.1.2: Project narrative reports	
		4.1.3: Amount of co-funding to the project from other cooperating partners	4.1.3: 0 with the support of this Action	4.1.3: tbd at inception phase	4.1.3: Project narrative reports	

* Indicators from the Multi-annual indicative programme for the Pan-African programme 2018-2020