



The AU-EU Innovation Agenda

Working document

Version of 14 February 2022

1. POLICY CONTEXT

Strengthening Research and Innovation (R&I) cooperation between the African Union (AU) and the European Union (EU) is a key priority, as R&I contributes to enhancing sustainable and inclusive economic growth and job generation, thereby reducing poverty and inequalities. This is set out in important policy decisions, such as the Sustainable Development Goals (SDGs) included in the United Nations (UN) Agenda 2030¹, the AU Agenda 2063², the Science, Technology and Innovation Strategy for Africa (STISA 2024)³, the AUC Digital Transformation Strategy for Africa 2020-2030⁴ and the EU communications on the ‘Comprehensive Strategy with Africa⁵’ and the ‘Global Approach to R&I⁶’.

The first R&I Ministerial Meeting of the AU-EU High-Level Policy Dialogue on Science, Technology and Innovation⁷ (HLPD on STI) agreed to focus on cooperation efforts in four priority areas, namely: **Public Health, Green transition, Innovation & Technology, and Capacities for Science**. Ministers also agreed to start developing a **joint AU-EU Innovation Agenda**.

AU and EU Ministers referred to the enormous **growth potential** of the innovation ecosystems in both the AU and EU, which currently expand at a rapid pace. But more could be done to improve innovation performance and capacities, capabilities and competences across both continents. Strategic efforts should be directed jointly towards creating or strengthening key components of more efficient and more targeted innovation ecosystems. The new paradigm of AU-EU R&I cooperation is that of creating tangible impact on the ground from the research jointly invested in.

This AU-EU Innovation Agenda therefore proposes **specific objectives with short-, medium- to long-term actions** for all four HLPD priority areas agreed by the Ministers in July 2020. A discussion took place and the current working version of the Agenda was agreed in the meeting of senior officials of the AU-EU HLPD held on 27 January 2022, before the work on the Agenda is expected to be acknowledged during the **6th AU-EU Summit 2022** of Heads of State and Governments. Implementation of the joint Agenda will be built on the experience and networks of previous and ongoing R&I activities, and proposed additional actions and related financing needs. Some of these could be covered by the biennial work programmes of Horizon Europe⁸, the regional and national multi-annual indicative programmes of the Neighbourhood, Development and International Cooperation Instrument - Global Europe, the European Fund for Sustainable Development Plus (EFSD+), and other relevant AU-EU programmes. Furthermore, several EU Member States⁹ have

¹ United Nations (UN) Transforming our world: the 2030 agenda for sustainable development. Sustainabledevelopment.un.org (A/RES/70/1). <https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf>

² African Union Commission (AUC). Agenda 2063: The Africa we want (Popular version). https://au.int/Agenda2063/popular_version

³ AUC. Science, Technology and Innovation Strategy for Africa (STISA-2024). https://au.int/web/sites/default/files/documents/29957-doc-stisa-published_book.pdf

⁴ <https://au.int/en/documents/20200518/digital-transformation-strategy-africa-2020-2030>

⁵ European Commission (EC). Joint Communication to the European Parliament and the Council. Towards a comprehensive Strategy with Africa. High Representative of the Union for Foreign Affairs and Security Policy. Brussels, 9.3.2020. JOIN(2020) 4 final. https://ec.europa.eu/international-partnerships/system/files/communication-eu-africa-strategy-join-2020-4-final_en.pdf

⁶ EC. Europe's strategy for international cooperation in a changing world. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Global Approach to Research and Innovation. Brussels, 18.5.2021. COM(2021) 252 final

⁷ EU-Africa cooperation in research and innovation | European Commission (europa.eu). https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/europe-world/international-cooperation/eu-africa-cooperation_en

⁸ Including through possible association of third countries to Horizon Europe

⁹ Strategic Forum for International Cooperation (SFIC) Secretariat. Africa task Force Strategic Report.. European Research Area and Innovation Committee. Brussels (OR. en), 28 May 2020. ERAC-SFIC 1355/1/20. REV1 https://data.consilium.europa.eu/doc/document/ST-1355-2020-REV-1/en/pdf?fbclid=IwAR0OkWOWscLsqfIOB_yk65KXSUybCheXTeo1X_WWu_vc682vpRm3RFS0Z

shown an interest to increase their support to AU-EU STI cooperation in African countries and contribute to the implementation of this AU-EU Innovation Agenda. The same applies to their AU counterparts.

The collaboration under the AU-EU Innovation Agenda needs to occur hand in hand with the AU and EU institutions as well as their Member States, and a wide range of stakeholders, such as the private sector, business enterprises (industries), public and private research and higher learning institutions. It is crucial to leverage on the demographic dividend to empower the youth, which, through entrepreneurship, is increasingly promoting and implementing radical innovations. A **stakeholder consultation** was kicked-off at the EU-Africa Business Forum on 14 February and will continue in the course of 2022 to strengthen the proposed actions. A **second AU-EU R&I Ministerial meeting in 2023** would allow adjusting the Agenda where needed, including on its implementation, and formally agree on the **final version of the Innovation Agenda**.

2. OBJECTIVES

A joint working group of the AU-EU HLPD on STI took stock of previous and ongoing joint R&I activities¹⁰, results and lessons learnt of the Africa-Europe Innovation Partnership¹¹ pilot project, opinions of the AU-EU Advisory Group on R&I¹², discussions that took place at the EU-AU R&I Ministerial 2020, and the pilot mapping exercise of projects of the EU-AU R&I Partnership on Food and Nutrition Security and Sustainable Agriculture¹³, as well as progress of the R&I Partnership on Climate Change and Sustainable Energy (CCSE), including on climate resilience and adaptation. The identification of gaps and needs in the field of digitalisation that resulted in the key recommendations of the AU-EU Digital Economy Task Force and initiatives like the D4DHub were also taken into account. A number of innovation cooperation needs and gaps were identified and used to elaborate a distinct set of objectives for the AU-EU Innovation Agenda, taking into account the different conditions between continents and countries.

The results of the analysis of needs and gaps identified five areas: **a) the innovation ecosystem b) innovation management, c) knowledge exchange, including technology transfer, d) access to finance, and e) human capacity development**. Details of the analysis are provided in Annex II of this AU-EU Innovation Agenda.

To address the analysis of outcomes, the working group discussed and formulated the following **objectives** of the Agenda based on the principles of co-creation and co-ownership, sustainability and openness:

1. **Make it real:** Translate innovative capacities and achievements of AU and EU researchers in government and business sectors, including technology and innovation hubs, public and private non-profit entities, such as civil society organisations and individuals, directly into tangible outputs, thereby supporting sustainable growth and jobs, in particular for the youth. Ensure close cooperation between the AU and EU to jointly deliver on the SDGs, with special emphasis on ‘Decent Work and Growth’ (SDGs **8**), ‘Industry, Innovation and Infrastructure’ (SDG **9**), and ‘Combat Climate Change Impacts’ (SDG **13**).
2. **Generate impact by design:** Foster and/or strengthen innovation ecosystems to enhance socio-economic impact on the ground through the exchange of knowledge, including

¹⁰ See annex I

¹¹ Africa - Europe Innovation Partnership (AEIP) Insights from the AEIP final conference | <https://africaeurope-innovationpartnership.net/>

¹² EC. EU-Africa cooperation in research and innovation | European Commission (europa.eu). https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/europe-world/international-cooperation/eu-africa-cooperation_en

¹³ See annex III

technology transfer, experience, and human resources between and within AU and EU countries.

3. **Strengthen people, communities, and institutions:** Develop sustainable, long lasting and mutually beneficial higher education, research and innovation partnerships between the AU and the EU countries as foundations for resilient knowledge economies and societies, preventing or mitigating, among others, the effects of major crises.
4. **Learn, monitor, and scale it up:** Scale-up instruments that can take forward existing successful programmes and projects between AU and EU partners (bilateral or multilateral), enable and/or strengthen the knowledge triangle of education, research, innovation, and place special focus on public participation, transparency, and inclusion mainly with the youth through capacity empowerment, advancing knowledge and fostering entrepreneurship and co-creation, without generating brain-drain.

3. ACTIONS

Actions are proposed that address the needs identified in Annex II for each of the four priorities of the EU-AU HLPD: **Public Health, Green Transition, Innovation & Technology and Capacities for Science**. In addition, a set of actions cutting across all priorities are included. Implementation of these actions will help reaching the objectives of the Agenda within specific timeframes. Each action is linked to one or more objectives of the Agenda, as indicated by the numbers in square brackets [], and to one or more areas of needs and gaps identified (cfr annex II) as per < A, B, C, D, and/or E > for each action.

The short-term actions represent the R&I activities to be implemented and generating impact within 3 years of implementation. Medium- to long-term actions are considered to achieve tangible outcomes within 3 to 6, and 6 to 10 years, respectively. In addition, some actions will be continuous throughout the time span of the Innovation Agenda and beyond, while others will have a fixed-time duration.

3.1 Short-term actions

3.1.1 Cross-cutting

- 1) Fostering the links and networks between the business and government sectors, including private-public partnerships (PPP), higher learning and research organisations, financial institutions and civil society organisations, through the establishment of a dedicated consultative platform under the AU-EU Innovation Agenda, enhancing the quality and the efficiency of measures improving the innovation ecosystems. [1,2,3] < A >
- 2) Designing mechanisms to pro-actively involve citizens in the innovation ecosystems, to boost active citizenship for ensuring a better and faster societal uptake of innovation outputs, and to exploit their creative and collective intelligence, while making effective efforts to close the gender gap and to avoid any type of discrimination. [2,3] < A >
- 3) Identifying and sharing climate resilience and adaptation practices during consultative meetings, aiming to avoid lock-in development paths and ‘Combat Climate Change Impacts’ (SDGs 13). [1,2,3,4] < B, C, E >
- 4) Fostering the participation of financing partners, e.g. business angels, into AU-EU partnerships to jointly improve access to the use of innovative financial engineering, including for early stage businesses and start-ups, thus enhancing the uptake of new products and innovation services. [1,4] < B, D >

3.1.2) Public Health

- 1) Supporting the transformation of health R&I outputs into relevant products, policy guidance and services. [1,2] < B >
- 2) Developing joint innovation and research agendas on health priorities, enhancing best practices and common standards in the selected areas of cooperation, and spreading availability and use of key enabling and emerging technologies (e.g., digitalisation, ICT, robotics, AI) to enhance the performance and resilience of public health systems, which have been shown to be extremely fragile under the ‘stress test’ of the COVID-19 pandemic, that will be also impacted by on-going climate change. [1,2] < B, C, E >

3.1.3) Green Transition

- 1) Developing or transferring innovative renewable energy production and use devices, suitable for easy and prompt adoption by ‘energy communities’, ‘energy villages’, and/or at household level, with affordable and sustainable access for less favoured territories and less favoured groups, to prevent deterioration of rural environments and improve the urban ones (smart & green cities). [1,2] < B, C, E >
- 2) Supporting the development of innovative climate services through a new “space science, technical and innovation cooperation” action for risk reduction at local and regional level, based on in-situ and remote networks of climate changes and impacts, as well as on resilience and adaptation practices, in line with the Lisbon Manifesto of the High-Level Europe-Africa Forum on Earth Observation from Space of July 2021. [1,2] < A, B, C, E >

3.1.4) Innovation and Technology

- 1) Supporting research and innovation cooperation between AU and EU research organisations and companies (in particular SMEs) from low tech to high tech (e.g., frugal innovation including organisational innovation) by making smart use of local intelligence and adapted business-driven models, mobilising multi-actor approaches (innovation platforms, living labs, etc.) in sectors like agro-food-nutrition, circular economy, sustainable manufacturing, One Health, raw materials, using digitalisation and artificial intelligence as transversal enablers. [3] < A, B, C, E >
- 2) Supporting technology/innovation hubs, networks, and operations of accelerators and incubators, including by assessing technology fields that could benefit from standardisation, to develop the human capital and skills pool for effective technology transfer and to stimulate entrepreneurship, inter alia through thematic exchange programmes between start-ups, researchers and policymakers, including social innovation beyond technologies. [1,3,4] < A, B, C, E >

3.1.5) Capacities for Science

- 1) Strengthening cooperation between AU and EU higher education institutions, research centres and organisations, and capacity building partnerships, with a focus on the potential of knowledge transfer, teaming, twinning and learning mobility activities (e.g., by involving the European University Alliances, consortia from the Erasmus+ programme and the Intra-Africa Academic Mobility Scheme, and ARISE grantees), by reinforcing scientific and academic mobility opportunities (through notably the Marie Skłodowska-Curie Actions), to support the co-construction and/or co-reinforcement of training programmes, and research and innovation projects in line with the socio-economic needs of the concerned countries/regions, both in the AU and in the EU. [3,4] < C, E >
- 2) Improve the transparency and recognition of higher education qualifications and the relevance of curricula, and to enhance mobility. Foster the development of high-performing digital education systems and upgrade digital skills and competences for the digital transformation. [3,4] < E >

3.2 Medium term actions

3.2.1) *Cross-cutting*

- 1) Re-skilling and/or upskilling citizens of all ages in countries in the AU and in the EU, to allow them all to profit from innovation and technologies, and to counteract the resurgence of new or the increase of existing inequalities and/or discriminations, targeting SDGs 8-9-13. [1,3,4] < C, E >

3.2.2) *Public Health*

- 1) Ensuring technology transfer and improving and developing quality vaccine, medicines and health technologies and production, to avoid shortage and ensure affordability, availability, and accessibility for the people in need, while also ensuring equal distribution among geographical areas. [1] < B, C >

3.2.3) *Green Transition*

- 1) Fostering digital applications and green technologies to give impetus to agro-ecological production, healthy and sustainable food processing and consumption, and by co-designing with food system actors to scale digital solutions for production, processing and marketing to support sustainable and agroecological transition. [2] < B, C, E >
- 2) Developing in Africa renewable fuels in a changing world for climate change mitigation. [1,2] < B >

3.2.4) *Capacities for Science*

- 1) Promoting joint master and doctoral degrees between AU and EU universities, and supporting the inclusive mobility of students, researchers and staff by building on existing programmes (such as the Marie Skłodowska-Curie Actions) to increase the number of future researchers and innovators freely moving among and between both areas, while limiting the risks of talent drain. [3,4] < C, E >
- 2) Supporting the creation of enabling STI environment for sustainable innovation ecosystems through Smart Specialisation roadmaps to reinforce the innovation culture across the quadruple helix actors, the evidence basis for prioritisation of innovation investments and the participatory governance processes for tackling place-specific developmental challenges. [3,4] < A, B, C, D, E >

3.3 Long-term actions

3.3.1) *Cross-cutting*

- 1) Tapping the full potential of sciences by promoting research with a special focus on youth, women and demography, mitigation and management of global challenges (including those posed by climate change and natural hazards), to build better societies and create well-being for all, in the AU and EU member-states and regions. [1, 2] < A, E >

3.3.2) *Public Health*

- 1) Designing and implementing new and innovative methods and tools to counteract future health threats due to long standing, (re)emerging, or antimicrobial resistant pathogens, and to promote one health and precision medicine, in a changing environment. [2] < B >

3.3.3) Green Transition

- 1) Improving the agricultural innovation ecosystem to strengthen capacities of actors to innovate, including research organisations, to co-design and scale technology and innovation through multi-stakeholder approaches, to build thematic networks in Africa and to strengthen relationships for exchanges of knowledge and experiences between Europe and Africa, to co-invest in start-ups and agro-SME and their ecosystem, and most importantly to enhance capacity for proactive innovation policy development. [2,3] < A, B, C, D, E >

3.3.4) Innovation and Technology

- 1) Reinforcing and facilitating inclusive and affordable access to world-class research and innovation infrastructures in the AU and EU countries, so that they can fully play their role of research and innovation hubs and ‘lighthouses’ for the whole continents. [3,4] < A, B, E >
- 1) Ensuring that digital transformation supports the dissemination of knowledge, e.g. through promoting connection with the European Open Science Cloud. [3,4] < A, B, C, E >

3.3.5) Capacities for Science

- 1) Providing specific support for better bridging research and innovation in AU and EU countries by fostering the emergence of new and/or by strengthening the existing centres of excellence, inter alia for young African and European researchers while supporting senior researchers by establishing ‘advanced study institutes’ (“collegium”) bringing together AU and EU researchers in residence, within the framework of calls for proposals targeting cross-cutting subjects. [1,4] < A, C >
- 2) Modernising and reinforcing the research and higher education systems (RHESs), both in AU and EU countries, since effective, enduring and impactful innovation ecosystems cannot thrive in the absence of RHESs based on excellence, high quality, inclusiveness, openness, transparency and merit. [3] < A, B, C, E >

4. MONITORING AND EVALUATION

The aforementioned actions will be integrated into an operational framework according to a stepwise and flexible approach, following the endorsement of the AU-EU Innovation Agenda. This will allow to timely review the implementation of the Agenda and will provide opportunities to correct or redirect the implementation on a solid evidence base, according to the lessons learnt.

Implementation of the actions will be closely aligned with the monitoring of the implementation of the policies on both sides, including the ‘Global Approach to Research and Innovation’ and the AU Agenda 2063, and the AU STISA policy. The approach will be based on the impact-oriented monitoring (IOM) methodology of R&D projects/programmes¹⁴. This will take into account relevant benchmarks like the impact achieved e.g. on food security, on climate change adaptation and mitigation, on improving the provision of health services, and on the generation of new business opportunities.

The overall follow-up of the M&E process will be handled by the AU-EU HLPD on STI to allow the EC and both AUC and AUDA-NEPAD to interact with key players to be involved in the tracking of the AU-EU Innovation Agenda’s achievements.

¹⁴ Developed by FP7 funded EVAL-Health of which AUDA-NEPAD was a consortium member

ACTIVITIES

	 Implementing Organ & Partners	 Networking	 Capacity-Building	 Technology Transfer	 Incubation	
Innovating Education in African Expo 2018	AUC-ESTI EU, GiZ, ADEA, Global e-Schools and Communities Initiative (GeSCI), Ashoka, UNICEF, and UNESCO					Established in 2018 as a flagship program of the Department of ESTI aimed at bringing together various stakeholders on the continent to identify, promote and scale promising Education Innovations in Africa.
African Union Research Grant 2018	AU, EC and co-funded by implementing institutions					Since the 2018 launch on Food Nutrition Security and Sustainable Agriculture, climate change and fisheries
African Union Kwame Nkrumah Scientific Excellence Awards 2009	AU, EC					To recognize top African researchers for their scientific achievements and discoveries, promoting efforts to transform scientific research into sustainable development in the continent
African Outer-Space Flagship 2016	AUC, African Space Agency, Germany, China, and France, UNECA, African Association for Remote Sensing for Environment (AARSE), AfricaGIS and African Leadership Conference (ALC)					Guided by the Space Policy and Strategy and promoting stakeholders' engagement and resulted into National Space Agencies committing their efforts to the implementation of the African Space Program

ACTIVITIES

	 Implementing Organ & Partners	 Networking	 Capacity-Building	 Technology Transfer	 Incubation	
GMES & Africa Support Programme 2016	AUC, EC					Strengthening Africa’s Earth observation system through the development of data and infrastructure, outreach and awareness raising
The African Scientific Research and Innovation Council (ASRIC) 2018	AU-STRC					Established as a specialized technical advisory body of the Commission to promote scientific research and innovation to address the challenges of Africa’s socio-economic development
Mapping national innovation systems (NIS) to strengthen the linkages between actors ?	AU-AOSTI, AU MS, REC’s					To measure and provide STI data, statistics, indicators and related policy analyses to the AU member states and STI stakeholders for evidence-based policymaking in Africa
Developing STI indicators to feed the implementation of Agenda 2063 ?	AU-AOSTI, AU MS, REC’s					To provide decision makers and STI stakeholders with the needed data and indicators on government budget allocations for R&D by socioeconomic objectives, % GDP expenditures to knowledge production and aspects of innovation and intellectual property in Africa
STI indicators to support M&E of the implementation of STISA 2024 ?	AU-AOSTI, AU MS, REC’s					An indicator framework comprising thirty-three indicators divided into five result areas: (1) investment in knowledge, (2) generation of knowledge; (3) innovation; (4) policy environment, and (5) effects and impact of STI was developed.

AUDA-NEPAD

Ongoing STI initiatives under AUDA-NEPAD Centres of Excellence included)

ACTIVITIES

	 Implementing Organ & Partners	 Networking	 Capacity-Building	 Technology Transfer	 Incubation	
Coalition for African Research and Innovation (CARI) 2017	AUDA-NEPAD, AAS/AESA, RECs, AU MS, BMGF, Wellcome Trust, NIH/USA					Build a highly coordinated, well-funded and African-led platform to improve systematic collaborations and scale up resources for African Science Technology & Innovation (STI) to achieve outcomes that would help more Citizens lead better lives sooner.
Agricultural Technical Vocational Education and Training (ATVET) for Women (Skills Initiative) 2018	AUDA-NEPAD, RECs, AU MS					Promote technical vocational education and training in the agriculture sector (ATVET) in support of the Comprehensive Africa Agriculture Development Programme (CAADP)
African Medicines Regulatory harmonization (AMRH) for AMA 2010-2011	AUDA-NEPAD, AUC, WB, BMGF, WHO, RECs & AU-MS					Ensure that African people have access to essential medical products and contribute to the improved regulation of medicines, medical products and technologies is equally timely and critical.
Tuberculosis and Health Systems Support Project (HIV/AIDS, TB and Malaria), Health Research and Innovations 2016	AUDA-NEPAD, WB, ECSA-HC, RECs & AU-MS					Strengthening Southern Africa Tuberculosis and Health Systems to support targeting interventions in the mining communities, transport corridors and cross-border areas.
African Union Smart Safety Surveillance (AU-3S) 2020	AUDA-NEPAD, WB, BMGF, RECs & AU-MS, MHRA/UK					Strengthen the safety surveillance of priority medical products across the African continent to address limited health system and safety surveillance capacity across Africa – through efficiencies like technological innovation, pooling of resources, and work sharing.

ACTIVITIES

	 Implementing Organ & Partners	 Networking	 Capacity-Building	 Technology Transfer	 Incubation	
Science, Technology, Engineering, and Mathematics (STEM) Education CPA, 2006						Accelerate Science, Technology, Engineering, and Mathematics (STEM) Education in Africa
African Science, Technology and Innovation Indicators (ASTII) Initiative 2007	AUDA-NEPAD, AUC, RECs, AU-MS and related STI institutions, Lund University, UNESCO, Sida, Globalics/Africalics, ACTS, ATPS, AfDB, UNECA & UNU-MERIT, FCDO & ABC Brazil		 43 AU-MS		 12 AU-MS	<ul style="list-style-type: none"> • Develop and adopt indicators of STI internationally compatible; • Strengthen human capacities and institutional for the indicators of STI and other related studies; • Enable African countries to participate in international programs STI indicators; and • inform African countries on the state of STI in Africa.
Africa Union High-Level Panel on Emerging Technologies (APET-Platform) 2016	AUDA-NEPAD, AUC, RECs, AU-MS, BMGF					Harness both existing and emerging innovations and technologies for the economic development of Africa
Calestous Juma Executive Dialogue (CJED-Platform) 2016	AUDA-NEPAD, AUC, RECs, AU-MS, BMGF					Provide capacity strengthening for senior policy and decision-makers through the exchange of knowledge and national experiences, networking, experiencing diversity and building mutually beneficial relationships with a focus on harnessing innovation and emerging technologies suitable for the sustainable socio-economic development of African countries in the 21st century.
African Biosafety Network of Expertise (ABNE) 2008	AUDA-NEPAD, AUC, RECs, AU-MS, MSU/USA, BMGF					Fulfill the recommendation of the High-Level African Panel on Modern Biotechnology – Freedom to Innovate (Juma and Serageldin, 2007) as a Continent-wide service network that has buy-in from African governments (Biosafety for Food Systems and Empowerment of Rural areas)
Integrated Vector Management (IVM) 2016	AUDA-NEPAD, AUC, RECs, AU-MS, MSU/USA, BMGF, GVF Open Philanthropy					Establish and operationalize a continental platform enabling the continent to build a strong collaboration between the health sector and others to effectively control vectors. To equip the region in the application of existing approaches & those that are on the horizon for controlling vectors.
AUDA-NEPAD Centre of Excellence in Science, Technology and Innovation (AUDA-NEPAD CoE-STI) 2021	AUDA-NEPAD, Council for Scientific and Industrial Research (CSIR) and Stellenbosch University (SU)					Upscale and commercialise home-grown innovations on the continent.

Following the re-clustering of the AUDA-NEPAD Programme Portfolio, new programmes and projects are only planned, incubated, and implemented following an assessment that would have been conducted on each of the portfolio areas to identify gaps.

REGIONAL ECONOMIC COMMUNITIES (RECs)

It is believed that each of the following REC shall have its own STI Desk to coordinate regional programmes/projects in collaboration with other organs:

- 1) **Arab Maghreb Union (UMA)**
- 2) **Common Market for Eastern and Southern Africa (COMESA)**
- 3) **Community of Sahel–Saharan States (CEN–SAD)**
- 4) **East African Community (EAC)**. There is the East African Science and Technology Commission (EASTECO) with the following:
 - a. Support for Evidence-Based policies (STI and IP Policies, and Innovation-led Bioeconomy Strategy)
 - b. Promotion of STI knowledge and Innovation (STI Journal, Cooperative grants Initiative, STI Forum, Regional Research Initiative)
 - c. Application of STI for Social Economic Development (eHealth & Telemedicine, eHealth readiness and regional health interoperability, Enhancement of Manufacturing and industrial technologies access and diffusion)
 - d. EASTECO Online Projects (RTO Portal, Bioeconomy Portal and STI Journal)
 - e. Conference
- 5) **Economic Community of Central African States (ECCAS)**
- 6) **Economic Community of West African States (ECOWAS)**: The West African region had the ECOWAS Policy on Science and Technology (ECOPOST) targeting the R&D spending as percentage of GDP to 1% by 2020.¹⁵
- 7) **Intergovernmental Authority on Development (IGAD)**
- 8) **Southern African Development Community (SADC)**: Southern Africa and DRC forming the SADC region has the Protocol on STI of 2008¹⁶. The implementation of the Protocol is assessed by the SADC Reference Group on STI Indicators: ADC Secretariat, ASTII Programme (AUDA-NEPAD), AOSTI (AUC), UNESCO and key member States. The STI Desk under the Directorate of Industrial Development and Trade (IDT) pursues the STI goals and objectives of the region found in the Regional Indicative Strategic Development (RISDP). The SADC STI Desk handles the following¹⁷:
 - a. The Development of Science, Technology and Innovation (Strengthening of regional cooperation; Development and harmonisation of policies; - Intra- and inter-regional cooperation; development of research capacity in key areas; Promotion of technology development, transfer and diffusion; and Support to public understanding of science and technology).
 - b. Regional Imperative of Cooperation on Science, Technology and Innovation
 - c. Domestication of the SADC Protocol on STI
 - d. Implementation Framework to Support Climate Change Response (Observation and monitoring; Impacts, vulnerability, and risks; Adaptation; and Mitigation).

¹⁵ Economic Community of West African States (ECOWAS) Forty First Ordinary session of the Authority of heads of State and Government. Yamoussoukro, 29 June 2012.
<http://www.esc.comm.ecowas.int/wp-content/uploads/2016/04/ECOWAS-Directive-on-STI-Eng.pdf>

¹⁶ Southern African Development Community (SADC). Protocol on Science, Technology and Innovation. Johannesburg, August 2008.
https://www.sadc.int/files/3013/5292/8367/Protocol_on_Science_Technology_and_Innovation2008.pdf

¹⁷ SADC Secretariat, Science, Technology and Innovation. <https://www.sadc.int/themes/social-human-development/science-technology-innovation/>

ACTIVITIES

	 Networking	 Capacity-Building	 Technology Transfer	 Incubation	 Knowledge Triangle	 Fin. Support for Business Creation	
Africa-Europe Innovation Partnership (AEIP) 2019-2021 € 2,000,000							A pilot initiative of DG RTD, implemented between 2018 and 2021, to explore, develop and test new collaboration mechanisms in the domain of innovation between Africa and Europe.
ENRICH in Africa 2021-2023 € 3,500,000							Follow-on of AEIP, aiming for a viable network of EU and AU incubators, accelerators, strengthening their capacities to boost local innovation landscapes as well as providing cutting edge value to entrepreneurs and innovators.
EU Advisory Group 2021 € 1,000,000 R&I INCO SF24							Expert groups to prepare policy reports, including recommendations for a longer-term vision of an EU-AU innovation policy
Africa Initiative 2021 € 350,000,000							36 topics under Calls for Proposals that are particularly relevant for cooperation with Africa reflecting the joint priorities as agreed at the EU-AU Research & Innovation Ministerial meeting in July 2020

ACTIVITIES

	 Networking	 Capacity-Building	 Technology Transfer	 Incubation	 Knowledge Triangle	 Fin. Support for Business Creation	
European and Developing Countries Clinical Trials Partnership (EDCTP) 2014-2027 € 1,400,000,000							EDCTP is a public–public partnership between 14 European and 16 African countries, supported by EU. EDCTP’s vision is to reduce the individual, social and economic burden of poverty-related infectious diseases affecting sub-Saharan Africa by accelerating the development of new or improved medicinal products for the identification, treatment and prevention of infectious diseases.
Food, Nutrition and Sustainable Agriculture Partnership (FNSSA) 2017-2027 € 710,000,000							The partnership address the challenges set out in UN Sustainable Development Goal 2 by stimulating joint AU-EU R&I activities for an initial period of 10 years.
Climate Change and Sustainable Energy Partnership (CCSE) 2017 - 2025 € 106,000,000							The focus of the CCSE Partnership is on climate action for adaptation & mitigation, renewable energy and energy efficiency. Aim to deliver on internal and global political commitments of both continents and address the SDGs in supporting a transition to low-carbon and climate resilient economies

ACTIVITIES

	 Networking	 Capacity-Building	 Technology Transfer	 Incubation	 Knowledge Triangle	 Fin. Support for Business Creation	
African Research Initiative for Scientific Excellence Pilot Programme (ARISE PP) 2020 € 25,000,000							The aim of the programme is to fund research teams of 40 African Scientists' from 40 African countries hosted within a University or research institution.
BIC AFRICA - African Business Incubator Communities 2021-2025 € 3,000,000							The Programme aims at creating a Regional Network where incubators will be established/consolidated in Angola, Ethiopia, Madagascar, and Somalia. Implemented by the 'European Business and Innovation Centre Network'.
Research and Innovation for Agricultural and Food Systems Transformation in Developing Countries (DESIRA) 2017 – 2020 € 340,000,000							Joint designing of innovation with local actors based on science and other source of knowledge to change behaviours, skills and agricultural/managerial practices; strengthening innovation support services including advisory services.
Value Chain Analysis for Development (VCA4D Project) 2016-2022 € 20,000,000							VCA4D performs value chain analyses (VCAs) across a range of agricultural commodities and countries in order to appraise their contribution to growth and job creation, taking into account the sustainability and inclusiveness of these value chains (VC).

ACTIVITIES

	 Networking	 Capacity-Building	 Technology Transfer	 Incubation	 Knowledge Triangle	 Fin. Support for Business Creation	
Capacity for Nutrition (C4N) 2019 - 2024 € 19,300,000							Under C4N “innovation fund” innovative (research) initiatives are funded
Knowledge and Research for Nutrition (NRF) 2019-2024 € 6,588,500						The Programme aims at creating a Regional Network where incubators will be established/consolidated in Angola, Ethiopia, Madagascar, and Somalia	Support the design, the monitoring, the evaluation and the learning in relation to policies and programmes for better nutrition outcomes in low- and middle-income countries.
#Smart Development Fund (#SDF) 2020 – 2022 € 20,000,000							The overall objective of the #SmartDevelopmentFund is to refine digital solutions to counter COVID-19 challenges in and with the EU partner countries. The expected result of the programme is the development, scale-up and promotion of innovative digital solutions, supporting EU partner countries’ response to COVID-19.
Digital financial solutions in ACP countries 2020-2024 € 14,500,000							Managed by the United Nations Capital Development Fund (UNCDF) to unlock the potential of digital finance to benefit more than 600,000 women, youth and entrepreneurs. Support key policy reforms for digital transformation as well as create inclusive financial services tailored to the needs of women and youth, including innovative savings products and credit. The joint action will be implemented in different countries in Africa (Gabon, Niger, Malawi and Ethiopia)

ACTIVITIES

	 Networking	 Capacity-Building	 Technology Transfer	 Incubation	 Knowledge Triangle	 Fin. Support for Business Creation
Marie Skłodowska-Curie Actions (MSCA) Innovative Training Networks (/Doctoral Networks) RISE (/Staff exchanges) Individual Fellowships (Postdoctoral Fellowships) 2021 - 2027 €						
HEInnovate Discussions are currently underway about the possibility of extending the 2021-2027 € EIT-HEI pilot Initiative (eit-hei.eu) to Africa (TBD)						
2021 – 2027 € EIT (TBD) Discussions are underway about the possibility of including Africa among the priorities of the EIT global strategic orientations						

MSCA support researchers in all scientific domains, promote collaboration between the academic, scientific and business communities, boost the careers of scientists at all stages and develop excellent doctoral training in Europe and beyond through inter-sectoral and international mobility

HEInnovate (HEI) is a self-reflection tool for Higher Education Institutions who wish to explore their innovative potential. It guides you through a process of identification, prioritisation and action planning. The HEI Initiative help higher education institutions to build the capacity to innovate and to teach innovation and entrepreneurship.

The EIT's Knowledge and Innovation Communities are partnerships that bring together businesses, research centres and universities. They allow:
 -innovative products and services to be developed in every area imaginable, including climate change, healthy living and active ageing;
 - new companies to be started;
 - a new generation of entrepreneurs to be trained;
 Several KICs (EIT-Climate KIC, EIT Raw Materials KIC and EIT Food KIC) are engaging with Africa already and we plan on encouraging the KICs to share practices with Africa in the coming period

ACTIVITIES

	 Networking	 Capacity-Building	 Technology Transfer	 Incubation	 Knowledge Triangle	 Fin. Support for Business Creation
Digital Education Action Plan (TBD) 2021 – 2027 €						

The Plan supports **the development of a high-performing digital education ecosystem**. This includes infrastructure, connectivity and equipment; planning and development; teachers and staff training; learning content, tools and secure platforms. It also focusses on **enhancing** basic and advanced **digital skills and competences** and literacy; computing; data-intensive technologies, and ensuring that women are equally represented in digital studies and careers.

ACTIVITIES

	 Networking	 Capacity-Building	 Technology Transfer	 Incubation	 Knowledge Triangle	 Fin. Support for Business Creation
Erasmus+						
2021 – 2027 570,000,000 for Sub-Sahara Africa and approx. 60% share of 335 M EUR for South Med region						
HAQAA 2						
2019-2022 € 5,000,000						
HAQAA 3						
2022-2025 TBD						

Erasmus+ aims at enhancing skills, competences and employability of students and staff in Africa, of African higher and vocational education institutions; reinforcing capacities, quality, innovation and relevance for the labour market and society; and increasing cooperation of institutions and exchange of good practices between Europe and Africa.

Aims to improve the quality and harmonisation of African higher education through notably the use of the African Standards and Guidelines for Quality Assurance in higher education (ASG-QA) in universities and by external QA agencies, support to the establishment of the Pan-African Continental Accreditation Agency and building up the capacity for informed and evidence-based policy making for higher education at continental level, linked to regional and national capacity and support to the HE cluster of the Continental Education Strategy for Africa 2016_2025

ACTIVITIES

	 Networking	 Capacity-Building	 Technology Transfer	 Incubation	 Knowledge Triangle	 Fin. Support for Business Creation
OACPS Research and Innovation Programme 2020-2025 € 60,000,000	Internet Governance / support to African countries	Support to implementation of the Digital Transformation Strategy				The Innovation fund supports innovation ecosystems, transfer of knowledge and technology, networking and sharing experiences.
PRIDA – Policy and Regulation Initiative for Digital Africa 2021-2023 € 8,000,000	Monitoring and Evaluation of Harmonization strategy in digital on African continent	Rationalization of Spectrum utilization (in connection with ITU)				

3 components: Policy support facility, Innovation Fund and R&I Hub. Activities comprise Coordination and Support Actions and Innovation Actions under H2020

Intra-Africa Mobility Programme 2016 - 2020 € 30,000,000						
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Organisation and implementation of student mobility in high quality master and doctoral programmes and academic/administrative staff mobility, as well as the provision of education/training and other services to foreign students and teaching/training and research assignments and other services to staff from the countries covered by the project.

CNECT

ACTIVITIES

	 Networking	 Capacity-Building	 Technology Transfer	 Incubation	 Knowledge Triangle	 Fin. Support for Business Creation
ICT58/Digital Innovation 2021-2024 € 11,000,000 (4 projects launched in early 2021, including the AEDIB/NET, already closely collaborating with the R&I AEIP project)	African-EU Networking academy between Africa and Europe DIGILOGIC Networking incubators / Logistic industry IDEAD4D-Hub & D4DHUB	AEDIHB project Reinforcement of African Innovation ecosystems	AEDIHB Project	AEDIHB project / matchmaking between innovation actors of Africa and EU to reinforce African innovation ecosystems	HUBiquitous project / Knowledge triangle & Training / Entrepreneurs-IT- synergetic training	AEDIHB project

← Activities comprise Coordination and Support Actions and Innovation Actions under H2020

JRC

Diagnostic and benchmarking study of the technology transfer ecosystems of the Southern neighbourhood 2019 - 2021 € 150,000						
FPCA Food Price Crowdsourcing Africa 2019 - 2021 € 200,000	With external support of Wageningen and IITA - Nigeria	Support to implementation of the Digital Transformation Strategy	Finalized to have a “turnkey project” able to be transferred/duplicated in different contexts	Finalized to improve makers transparency, fair competitions, better definition of food security policy	Involvement of a large range of stakeholders: from farmer to final consumer, from market operators to policy makers	The project cover a gap in the services market which could be covered by new private/public companies

← It identified strengths and weaknesses of the ecosystems and provided tailored policy recommendations for the countries

← Provides a complementary methodology to gather real-time and very spatial/temporal detailed food price data along the food chain and for better definition of food security

EUREKA

ACTIVITIES

	 Networking	 Capacity-Building	 Technology Transfer	 Incubation	 Knowledge Triangle	 Fin. Support for Business Creation	
Innowwide programme 2019 - 2021 € 9,000,000 from H2020 (120 VAP financed, around 10 of which in Africa)	(between the EU SME and a partner in the target location)						Main aim was to support internationalisation of EU SMEs (only), on the basis of small 'Viability Assessment Grants' worth 60.000 EUR each The second phase of Innowwide is expected to be integrated in the Eurostars programme of Eureka, with a budget of 25 MEUR

EIB

Boost Africa 180 MEUR divided into 120 MEUR senior tranches, 50 MEUR junior tranches, expected to mobilise an additional 300 MEUR from venture capitalists and IFIs							EIB cooperation with African Development Bank. The components of the programme comprise an investment programme, a technical assistance pool, and an entrepreneurship lab.
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NEAR

Strengthening Innovation and Start-up Ecosystems across North Africa (Southern Med) 2022 – 20 ? Call for proposals to be launched in 2022 € ?	TBD	TBD	TBD	TBD		TBD	Based in two pillars: 1) sustaining start-up ecosystems; 2) support clusters' ecosystems. Work at different levels: 1) by adopting macro- support on policy reforms, 2) supporting business organisations (with training, capacity building, etc.) 3) and through demonstration of results
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ANNEX 2: SUMMARY OF NEEDS AND GAPS

This section provides an overview of the main current needs and gaps identified by AU and EU policy makers and the innovation communities of both sides, as explained in chapter 2: objectives. The needs and gaps are identified around 5 areas: **A) The innovation ecosystem, B) Innovation management, C) Knowledge exchange, including technology transfer, D) Access to financial resources, and E) Human capacity development.**

A. The innovation ecosystem

- Need for a joint AU-EU innovation strategy, plan or program: Note was taken of the many past and current innovation programmes across the two continents, involving numerous AU and EU projects and programmes by various institutions (bilateral or multilateral). However, there is very limited to no coordination and communication between relevant AU-EU innovation projects at continental or regional level.
- Need for stronger involvement of players outside the traditional R&I communities, such as development cooperation partners was also noted, despite the relative size of the programmes of both areas.
- Need for systematic interaction between researchers, policymakers, business and civil society representatives, and other stakeholders in view of the uptake of research findings for commercialisation to be increased and for better use by the civil society and policy makers (*also from FNSSA mapping*).
- Need to strengthen human resources capacities, for instance with regard to specialists jobs and governmental structures, dedicated to translating technological know-how into market valorisation (from the lab to the market).
- Need for strengthening the scientific advisory capacities of Science Academies as independent think tanks and knowledge institutions, and reinforce the science-policy interface and thus the uptake of scientific advice provided to policy makers. This could include e.g. the harmonisation of regulations at continental level around technology and innovation on IPR, standards, data protection, and payment interoperability (in the context of the African Continental Free Trade Agreement/AfCFTA).
- Need to integrate the knowledge triangle concept across strategic alliances and partnerships between existing and future AU and EU R&I cooperation programmes, including the need to integrate women and youth in STEM actions could significantly contribute to sustainable growth and jobs.
- Need to reduce/reverse brain drain of young, talented African researchers, who carry out their studies abroad and, for instance due to a lack of performing research infrastructures, do not have the opportunity to continue their research in their home destinations. In this context, how major emerging countries transformed the brain-drain into a brain-gain has important lessons for the AU.
- Need to engage the African diaspora in Europe for knowledge exchange for development of technical expertise in Africa.
- The EU –AU partnership must deal with a larger geopolitical context. Other important G20 countries are also important actors on the African continent. A strategic analysis of their objectives and actions in Africa is needed.

B. Innovation Management

The gap between research experts and grass root innovators must be reduced for innovation to spur the achievement of the Sustainable Development Goals, but to achieve this, the following needs should be addressed:

- Need to foster entrepreneurship, career guidance and employability, innovation management, and social innovation (e.g. concepts of more active citizenship).

- Need for systematic interaction between researchers, policymakers, innovators and other stakeholders in view of the entrepreneurship support and uptake of research findings for policy and society to be more actively promoted, supported and implemented.
- Need for tailor-made advice and support from experienced professionals for entrepreneurs, SMEs e.g. in the agri-business/food systems and energy sectors, in order to create successful initiatives to foster collective innovation to develop strong value chains..
- Need to encourage policymakers to open public procurement to start-ups and entrepreneurs, and to encourage open innovation cooperation with the private sector.
- Need to strengthen human resources capacities, for instance regarding specialists' jobs and governmental structures, dedicated to translating technological know-how into market valorisation (from the lab to the market).
- Need for possibilities and methodologies for AU and EU policy makers to trial innovative technologies or approaches in practice, e.g. by creating regulatory sandboxes or support policy hackathons in areas such as health, finance, agriculture, energy, cities, climate adaptation should be encouraged.

C. Knowledge Exchange, including Technology Transfer

Recognise the differences between Technology Transfer Organisations (TTO) in the EU and AU regarding their modus operandi (some of which are hybrid organisations, which for instance combine traditional TT with incubators). Needs identified include:

- Need to enhance the relationships between TTOs, tech hubs, and project coordinators to increase the local/regional/international exchange between them, to facilitate translating research outcomes into private sector implementation (*also from FNSSA mapping, and upcoming from CCSE*).
- Need to promote technology transfer through joint actions in relevant fields, e.g. logistics, renewable energy, sustainable forestry, seafaring, circular economy, health technologies, digital, agriculture, agro-processing and agro-ecology, green hydrogen and climate services for risk reduction, green hydrogen.
- Need to strengthen the overall innovation and IP protection (governance framework), and supporting universities and research centres in developing appropriate policies and procedures for identifying, protecting and managing IP, interacting with the private sector, with spin-off companies and with early-stage investors.
- Need to support local and national authorities to develop technology transfer related support mechanisms like Proof of Concept and technology transfer funds.
- Need for the implementation of frugal innovation programmes.

D. Access to financial resources

In comparison to e.g. American and Asian markets, R&I performers and innovators in the EU and AU experience a more limited access to financial resources. Therefore, needs identified include:

- Need a repository of available funding opportunities for innovation to be translated into tangible results, presented in conjunction with capacity building sessions for relevant innovators.
- Need the development of a joint EU-AU scheme to support innovation in priority. This could support technology demonstration projects, early-stage entrepreneurs, applied research and knowledge exchange platforms.

- Need to strengthen existing R&I funding instruments, and promote the establishment of new, flexible funding programmes at bilateral, regional and international levels, while also diversifying funding partners.
- Need for financial support to scaling up R&I project outcomes, and transform them into successful entrepreneurial ventures, like start-ups, and related infrastructure, normally requiring important investments (*also from FNSSA mapping study, and upcoming from CCSE*)).
- Need private capital and corporations to play their important role in maintaining an innovation ecosystem (e.g. by attracting early stage and corporate investors to local innovation ecosystems to support the growth and expansion of spin-off companies or absorb generated IP through licensing).
- Need to stimulate investment in knowledge synthesis and translation and link R&I to standardisation, with a view to support commercialisation of research findings as well as strengthen the evidence-base in policymaking..
- Need targeted support to private companies in their attempts to invest in Africa and mainly in research and innovation cooperation between European and African companies (small and medium enterprises) on a lower tech and innovation level.
- Strengthen joint intra-Africa higher education, research and innovation programmes, in support of building knowledge economies and reinforce economic diversification.
- Strengthen link with Green Climate Fund and Adaptation Fund for climate-resilient pathways.

E. Human capacity development

Differences in the capacities between AU and EU innovation players (universities, research institutions, incubators, accelerators, investors, venture capitalists, private equity firms, governments), and approaches, combining capacity empowerment and enabling environment upgrading, need to be taken into account, together with respecting principles of a just transition approach. Specific needs include:

- Need for improving mobility and training of students, staff and researchers (for instance through Erasmus+ and the Marie Sokolowski-Curie Actions), cooperation, transformation and innovation capacities of higher education institutions, research and innovation management capacities, science communication capacities, STEM and social sciences capacities, e.g. on the basis of teaming and twinning activities (e.g., involving the European University Alliances and consortia from the Intra-Africa Academic Mobility Scheme).
- Need to develop and strengthen the research capacities of African Universities.

ANNEX 3: RESULTS OF THE PILOT MAPPING OF THE EU-AU R&I PARTNERSHIP ON FOOD AND NUTRITION SECURITY AND SUSTAINABLE AGRICULTURE

The EU-AU R&I Partnership on Food and Nutrition and Sustainable Agriculture Partnership (FNSSA), with its more than 300 joint projects, was chosen for the implementation of a **pilot**¹⁸, aiming to identify the most promising projects with the highest business potential, warranting further investments for their potential to be fully reaped. This analysis was done based on a deeper understanding of (i) **the scale of the business potential** and (ii) **the exact needs of identified projects** that, once addressed (e.g. through ad-hoc investments, technical assistance, etc.), would allow such projects to leap over the next step of innovation and reach the marketplace.

In future, the pilot will be extended to other priorities namely Public Health, including the European and Developing Countries Clinical Trials Partnership¹⁹ and the EU-AU R&I Partnership on Climate Change and Sustainable Energy. Secondly, this exercise will take the form of a rolling exercise, becoming a lasting part of the AU-EU Innovation Agenda throughout its implementation period.

The needs identified during this pilot have been integrated in the 5 areas presented in annex II. Below you will find the list of projects that have the **highest business potential** out of an initial selection of 34 projects for each of the four priority areas of the 2016 roadmap²⁰ of the EU-AU R&I Partnership on FNSS, as well as **investment strategies and measures** adequate to their needs.

- 1) In the priority area of **sustainable intensification**, seven projects were identified as being top. The assessment of their potential and needs is identified below.

DualCassava: Dual-resistant cassava for climate resilience, economic development and increased food security of smallholders in eastern and southern Africa (21) – **Score: 1.95**. (Funded through “African Union Research Grant II”)

Some of the information below comes from an interview held with the project coordinator, Maruthi Gowda, on December 7, 2021.

a. Potential:

- The project has proven its potential to enhance farmers’ resilience to drought and crop disease, and to increase business opportunities in the poultry feed manufacturing sector and others.
- The project has introduced drought mitigation mixed cropping techniques of maize and cassava, together with a newly developed cassava variety that is both drought- and disease-resistant. The implementation covered local maize farmers in a sample of districts in Malawi and Tanzania. A Randomized Controlled Trial (RCT) carried out by the researchers showed that the introduced technique increases farmers’ resilience to adverse shocks, their revenue, their investment, and their households’ dietary diversity.

¹⁸ Full pilot available on : XX

¹⁹ [Home - EDCTP](#)

²⁰ [EU-Africa FNSSA roadmap | European Commission \(europa.eu\)](#)

- The project has also introduced cassava as a partial substitute for the more expensive maize in the poultry feed manufacturing industry. This has led to 17% increases in profit for feed manufacturers and 27% increases in revenues for cassava farmers, as well as creating a new business opportunity for the latter [please mention the opportunity within brackets: “(i.e. development of a novel poultry feed; possibility of using cassava in the bakery, paper and starch transformative value chain industries)”]. Moreover, the project coordinator believes that cassava could also be introduced as a raw material in the bakery, paper, and starch industries.
- The project has therefore the potential to produce a durable impact in terms of socioeconomic opportunities for African farmers, feed manufacturers, and other entrepreneurs and workers across agricultural and food systems’ value chains. As an evident side-effect, it is also promising in terms of food security and poverty alleviation. Moreover, the project has potential to produce a positive environmental impact, since the substitution of imported maize shortens distribution chains, and the introduction of disease and drought-resistant cassava varieties mitigates the impact of climate change and reduces the need for pesticides.

b. Needs and next steps:

- Additional funding is needed to carry out an array of activities necessary for the scale up. These activities include supplying the new cassava varieties to local entrepreneurs, as well as technical training to local farmers to equip them with mixed cropping methodologies and capacity to multiply the seeds. Some infrastructure is also needed for this to happen, including chipping machines, vehicles and laboratories. This would also allow to enhance seed transformation/processing value chains.
- Awareness among farmers in drought-prone areas, as well as among feed manufacturers, should be generated. Additionally, training for farmers on mixed-cropping techniques, as well as training for feed manufacturers, needs to be provided. Moreover, the improved cassava varieties need to be introduced in the national seed systems. To scale up in the bakery, paper and starch industries, there is a need to mentor and encourage? private sector partners to invest in appropriate processing and drying technologies.
- As I commented in the previous version of the report, there still no specific need concerning one of the externality generated by the project, that of cassava residues being commercialised to poultry breeders. Could you please clarify what has emerged from the interview(s) to be needed in order to render this venture more widespread and systemic, and by doing so increase revenues for traders and access to poultry feed for producers?

Crop and Soil Health Improvement for Sustainable Agricultural Intensification towards Economic Transformation in West Africa (19) – **Score: 1.58.** (Funded through “DG INTPA”)

Some of the information below comes from an interview held with the project coordinator, Eric Danquah, on November 29, 2021.

a. Potential:

- The project is promising in terms of sustainably intensifying agricultural output and creating new business and employment opportunities.

- The project has introduced improved varieties of crops (rice, maize and tomato) to local farmers. Moreover, it provides extensive training to value chain actors and farmers through field schools and workshops. This leads to a sustainable increase in local agricultural productivity (between 20% and 80% depending on the crop) and output, as well as an increase of farmers' revenue (30%-40%). Additionally, good agronomic practices and pest management strategies have been taught and implemented.
- New product developments have already started, such as SHITOR, a cowpea-based product that is expected to increase this commodity's demand. This creates new agribusiness opportunities and increases the value-added of this industry. Moreover, the developed maize, tomato and cowpea varieties may be patentable and, therefore, possible to commercialise or license. As part of this project, the West Africa Centre for Crop Improvement (WACCI) has already released 3 maize hybrids and is in the process of getting approval for 3 new tomato varieties. Several companies are already interested in the maize hybrid.
- The project has therefore the potential to create business and employment opportunities for local farmers by increasing productivity and income in an environmentally sustainable manner. Therefore, it is also promising in terms of food security and poverty alleviation. Additionally, the project achieves this economic impact in an environmentally friendly way, since the productivity increases and the associated income rises are a consequence of the introduction of improved varieties and the use of soil health management techniques.

b. Needs and next steps:

- The complete scale up would take 3 to 5 years.
- The Farmers Field School initiated through the project could be expanded to include a much higher number of farmers and further spread good agronomic practices and the introduction of improved varieties. The same is true for the Value Chain Workshops organised during the project, which could be enlarged to include all actors in the value chain and combined with entrepreneurship training. This should include both public and private sector involvement.
- New crop varieties could be released to the market, this will create opportunities for the licensing of intellectual property and their commercialization, translating into business and employment opportunities. The project is already working with an agribusiness start up (Legacy Crop Improvement Centre, Koforidua, Ghana) to start raising private funds for the large-scale production of certified seeds of the developed maize hybrids. The coordinator expects an uptake of the improved maize varieties by 40% of Ghana's farmers in 5 years-time and the national government has shown interest in exploring the possibility of subsidizing certified seed production. Moreover, WACCI has reached an agreement with a tomato processing company to produce the developed tomato varieties at a large scale and the developed variety is expected to be the dominant one in the market in 2 to 3 years-time.
- For this scale up to happen, some specialized assistance and funding is needed. Technical assistance in developing a business plan and support in creating links with partners and investors to facilitate the generation of start-ups would be greatly beneficial. Moreover, funding of between €3million to €5million is deemed necessary during for the next 5 years to expand the impact, create cooperatives and establish support systems for farmers. These new funds would also support the creation of start-ups and businesses (e.g. seed companies, commercial seed producers, farmers' cooperatives, food processing companies, etc.) and the marketing of cowpea-based products. Additionally, the plant varieties created need to be scaled-up to be commercialized

UPSCALERS: Upscaling Site-Specific Climate-smart Agriculture and Land use practices to Enhance Regional Production Systems in West-Africa (20) – **Score: 1.43.** (Funded through “African Union Research Grant II”)

Some of the information below comes from an interview held with the project coordinator, Seyni Salack, on December 2, 2021.

a. Potential:

- The project is promising in terms of sustainably intensifying small-scale farming and increasing resilience to climate change.
- The project increases small-scale farmers yields and revenues. It is estimated that labour productivity is increased by a 100% and land productivity by a 200%. This is thanks to the development of a user-friendly app with customized climatic forecasts for farmers’ fields, the construction of several facilities for farmers to use, the identification of sustainable intensification pathways (soil quality improvements, compost production, biogas reuse, etc.), and training to farmers on agroclimatic techniques. The estimated increase of farmers’ household income is of 50-52%.
- The project is also promising in its capacity to improve government’s agricultural policy. The development of decision-making tools for climate-smart policies and the training of national extension officers on the delivery of agroclimatic information to farmers are expected to further improve agricultural output and resilience to climate change.
- Moreover, the project also increases agricultural production resilience to climate change. By delivering customized climatic information and training farmers on agroclimatic techniques, it has been possible to significantly enhance productivity despite the very adverse conditions of the 2018-2020 crop seasons.
- Therefore, the project is promising in terms of creating economic opportunities for small-scale farmers, and in terms of improving food security. The project can sustainably increase agricultural output and improve climate change resilience at the same time, therefore ensuring a stable future food production.

b. Needs and next steps:

- Firstly, customized climate information services are scalable by the weather services of all countries. Technical assistance for the distribution of these customized climatic information services would be needed. This will take an additional 3 years in order to develop a concept of operations for the agroclimatic services. The team aims to reach at least 500 farmers by (end of?) next year (2022).
- Moreover, the intensification pathways can be implemented at larger scale. For example, the production of compost for farmers is a scalable practice. The team aims to distribute at least 20 more biodigesters next year (2022).
- They will need funding to maintain the centralised interconnected app system once the project officially ends. Moreover, the scale up of the project would require additional financing (~450,000€).

Promote sustainable management of *Tuta absoluta*, an invasive pest of Solanaceous vegetables for food and nutritional security in East Africa (13) – **Score: 1.21.** (Funded through “African Union Research Grant II”)

a. Potential:

- The project has potential in the sustainable intensification of agricultural output through the environmentally sensible management of pests.
- The project has developed new Integrated Pest Management (IPM) technologies and has disseminated it to tomato farmers for the sustainable management of *Tuta absoluta* in Kenya, Tanzania and Uganda. This has increased agricultural productivity (and quality) by mitigating the infestations. The increase in productivity has positively impacted farmers’ income, both in amount and stability. Moreover, as the output increases and the cost decreases, new business and employment opportunities have been created in value chain processes.
- The project is therefore promising in terms of creating economic opportunities for farmers and in improving food security by increasing agricultural yields. Moreover, IPM technologies have also allowed for a more sustainable agriculture by significantly reducing the use of pesticides and fostering a good equilibrium of the ecosystem, for example by allowing the activities of pollinators.

b. Needs and next steps:

- The project needs starter kits for farmers to further disseminate the developed IPM technologies. Moreover, in the medium term, financial assistance would be needed to upscale the IPM dissemination to other regions and countries.

PASUSI: Participatory Pathways to Sustainable Intensification. Innovation platforms to integrate leguminous crops and inoculants into small-scale agriculture and local value chains (49) – **Score: 1.15.** (Funded through “ERA-NET Cofund, LEAP-Agri”)

Some of the information below comes from an interview held with the project coordinator, John Sumelius, on December 20, 2021.

a. Potential:

- The project is promising with regards to the sustainable intensification of agricultural output, the increase of resilience to climate change and the improvement of women’s position in society.
- The project is expected to reduce production costs and increase productivity of legume farms. The identification of the most economically viable crops and practices has led to the introduction of inoculated soybean production and land rotation techniques. This has led to cost reductions and increase yields. Moreover, indirect economic opportunities could be generated if the volume of inoculants is scaled-up and a market is formed. Some strains of rhizobia and soybeans have already been patented in Ghana and Uganda.
- The project has therefore the potential to reduce legume farmer poverty, improve soil quality and increase resilience to climate change. Moreover, given the fact that women make up most of the workforce in this area, the improved economic opportunities could

lead to an increase in the economic independence of local women. Additionally, two women innovation platforms have been created.

b. Needs and next steps:

- The project and/or its outputs can be scaled-up by solving information problems within the governance systems that currently block farmers from transforming their systems. For this to happen, additional funds would be needed.

EcoAfrica: ECOlogical intensification pathways for the future of crop-livestock integration in AFRICAn agriculture (17) – **Score: 1.06.** (Funded through DG INTPA)

a. Potential:

- The project has the potential of increasing crop production in a sustainable manner, as well as improving food security as a result.
- The project uses innovative techniques (e.g. pest-mitigating cropping system, high-quality organic fertilizers, etc.) to sustainably intensify production while protecting soil properties at the same time. This has led to increases in agricultural yields and in farmers' revenue. Cost reductions have also been observed by using plants with insecticide characteristics that allow for a reduction in the purchase of fertilizers and pesticides. Additionally, several upland rice varieties tested during the project are in the process of being registered.

b. Needs and next steps:

- The project and/or its outputs could be scaled-up through nationwide programmes. For this to happen, technical and logistical assistance would be needed in order to diffuse the techniques developed and to target the most suitable areas for exploitation. To do so, the team would need to work with lots of farmers to collect a large amount of biomass for recycling (biogas, organic fertilizer, etc.). Furthermore, it will also need equipment to generate these products.

MAB Chicken: Marker-assisted breeding of selected native chickens in Mozambique and Uganda (8) – **Score: 1.01.** (Funded through “African Union Research Grant II”)

Some of the information below comes from an interview held with the project coordinator, Filomena dos Anjos, on December 9, 2021.

a. Potential:

- The project is promising in terms of a sustainable intensification of chicken meat and egg production.
- The project has improved native chicken ecotypes and developed feed based on scavengeable resources. This was introduced to farmers in Mozambique and Uganda. These new chicken breeds are more productive and of better quality (meat and eggs), this will improve the economic opportunities of farmers and ameliorate the living conditions of rural communities. The project will create business and employment opportunities in the hatchery sector, day-old brooded chicks' industry and in mother units and communal incubators. Moreover, it may lead to the development of a scavengeable feed industry. The chicken breeds may be patentable.

- The project is therefore promising in terms of economic development. Additionally, the production increase is sustainable because semi-intensive production is promoted. Besides, the project can have a positive impact in women's standing in society. Since this activity is mostly carried out by women, an increase in their productivity could increase their economic independence.

b. Needs and next steps:

- Nationwide programmes in Uganda and Mozambique that helped to introduce improved chicken varieties are needed. Some progress has already taken place in Uganda, as the chicken breeds have started to be transferred to farmers. Nonetheless, Mozambique has not begun yet.
- In order to implement these programmes, government commitment and NGO support is needed, as well as additional funding.
- The project would need support to conduct future steps in several fronts: (a) it will need technical assistance to develop a business plan and to be mentored on intellectual property management, (b) it will need support in accessing markets, (c) women groups will need some type of assistance (funds for egg incubators, feed, vaccines and other components).

In the priority area of **agriculture and food systems for nutrition**, two projects were identified as being top. The assessment of their potential and needs is identified below.

EatSANE: Education and Training for Sustainable Agriculture and Nutrition in East Africa (41) – **Score: 1.33.** (Funded through “ERA-NET Cofund, LEAP-Agri”)

a) Potential:

- The project has provided training for farmers on new cropping systems and practices. Moreover, they have established and developed value chains for green leafy vegetables.
- The project is therefore promising in creating new economic and business opportunities. The novel cropping systems has led to important productivity increases and to significant rises in farmers' income. Moreover, the new market avenues are now reachable to farmers, as these have started marketing dried vegetables and accessing more profitable markets thanks to the improved storage practices (i.e. solar drying).
- Furthermore, the project has a strong potential with respect to food security, as the practices developed lead to more nutritious food, reduces food losses and increases dietary diversity. In terms of sustainability, the project is also promising since the new cropping systems prevent soil erosion and biodiversity losses.

b) Needs and next steps:

- The project's outputs could be scaled up by diffusing the techniques and novel cropping systems at a large scale. This will need permanent institutional support (e.g. extension officers). Disseminating best practices in an easy and understandable language is therefore key, and should target nutritional experts, rural advisors and extension officers.
- A stakeholders' board would be important to exchange information and diffuse the materials among all interested actors. If the project is to be scaled-up to other countries,

value chain and stakeholders' workshops are also key. Youth targeting must also be a priority.

- The scale up of the project would need financing in order to continue developing materials and scaling-up trainings.

Enhancing nutritional quality of plantain food products through improved access to endophyte primed and high pro vitamin A plantain cultivars under integrated soil fertility management practices in Nigeria, Cameroon and Gabon (12) – **Score: 1.06.** (Funded through “African Union Research Grant II”)

Some of the information below comes from an interview held with the project coordinator, Masso Cargele, on November 30, 2021.

a) Potential:

- The project has developed fertilisers and designed rates of fertilisation for plantain cultivation, what increases the crop's productivity and output. More importantly, several plantain-based products and processes have been developed. Among them, plantain flour with high provitamin A content, a new solar drying technology, and a new process for deep-fat frying starchy banana that leads to significant reductions in oil use.
- The project is therefore promising in creating new economic and business opportunities, as well as new markets. The project leads to important productivity increases in both plantain production (e.g. fertilisers) and processing (e.g. solar drying, deep-fat frying). Moreover, the new products developed create new market avenues for producers and other value chain actors (e.g. plantain flour).
- Furthermore, the project has a strong potential with respect to food and nutrition security, as the products developed with high provitamin A content easily cover the vitamin A requirements of pre-school children and pregnant women.

b) Needs and next steps:

- The project's outputs could be scaled up by diffusing the techniques at a large scale. The team has already developed a business plan to implement production and processing techniques by the youth. Nonetheless, seed systems are not well organised and this represents an obstacle for large-scale transfer. All value chain actors should be included in the expansion.
- The scale up of the project would need financing to bring the business plan into practice.
- The team believes that some outputs of the project can be patentable. Private involvement is needed for the production of endophytes.

In the priority area of **cross-cutting issues**, four projects were identified as being top. The assessment of their potential and needs is identified below.

SafeFish: Development of bacteriophage cocktails as disease biocontrol agents for improved aquaculture productivity, food and nutrition safety in Ghana and Uganda – **Score: 1.41.** (Funded through “African Union Research Grant II”)

Some of the information below comes from an interview held with the project coordinator, Jesca Nakavuma, on November 29, 2021.

a) Potential:

- The project is promising in terms of increasing food output and improving the environmental footprint of aquaculture.
- The project has developed phage cocktails that act as biocontrol for the management of bacterial pathogens in tilapias. This leads to fish mortality reductions of around 60% and output increases of 20%. Besides, phage cocktails are cheaper than the currently used antibiotics. The project is therefore promising in terms of creating business and economic opportunities for tilapia farmers by increasing productivity.
- The project has also potential with regards to food security and sustainability. The phage cocktail stabilises and increases food supply. Moreover, they do so by introducing ecologically harmless biocontrol technology, therefore reducing the environmental impact of aquaculture.

b) Needs and next steps:

- The project and/or its outputs could be scaled up by transferring the research output to fish feed manufacturers. Moreover, biocontrol technologies for other species could be researched.
- A new regulatory framework is needed to introduce the phage cocktail to the aquaculture sector. Public involvement is therefore needed.
- The team would need assistance in developing a business plan and managing intellectual property, as they have planned to patent the phage cocktail.
- The scale up would need funds in order to make the appropriate investments to develop the productive infrastructure needed.

AFRICA-MILK: Promote ecological intensification and inclusive value chains for sustainable African milk sourcing (46) – **Score: 1.32.** (Funded through “ERA-NET Cofund, LEAP-Agri”)

a. Potential:

- The project has developed agroecological dairy cows feeding practices and efficient dairy collection systems. Moreover, the team has created Dairy Innovation Platforms (DIPs) in each of the dairy processor networks involved. These platforms have directly involved women farmers into the discussion.
- The project is therefore promising in terms of food and nutrition security, as it is expected to increase access to safe dairy products in Kenya and Madagascar thanks to a better management of milk quality all along the dairy value chain.
- The project has also potential with respect to environmental sustainability, as products are produced with local milk and not imported powder milk, therefore shortening the distribution chain.
- Furthermore, the project may create local business and economic opportunities in the dairy industry based on fresh milk produced locally. The project leads to increased productivity and output, and reduced collection costs.

b. Needs and next steps:

- Some of the output of the project (i.e. *Jabnde*, a rationing software for African dairy cows) might be patentable and could be commercialised. Discussions are being held with the legal department of CARD in this respect.
- The project can be scaled-up by expanding the use of *Jabnde* to livestock technicians in charge of monitoring milk production on farms.
- The team would need assistance in implementing the organisational innovations (i.e. dairy collection systems).
- The scale up would need funds to make the appropriate investments to expand the practices and systems developed (~60,000€).

SPEAR (Empowering small-scale farmers): towards the SDGs through participative, innovative and sustainable livestock and poultry value chains (33) – **Score: 1.08**. (Funded through “ERA-NET Cofund, LEAP-Agri”)

a. Potential:

- The project has developed new ways of preserving milk and meat, protocols for participatory value chain modelling, and training modules.
- The project is promising in terms of economic development. The local cereal-based feed developed in Senegal is more affordable than the current solutions, what gives the possibility to more poultry farmers. Poultry farmers increase productivity and output as a result.
- The project also improves the environmental footprint by utilising locally grown cereals for feed manufacturing. With respect to food and nutrition security potential, the project improves access to nutritious food in Senegal and Kenya by the preservation of food and the increased nutritional values provided by including insect meals in Kenya.

b. Needs and next steps:

- For the project’s output to scale up at the national level, a Private-Public Partnership (PPP) will need to be created.

Enhancing the nutrition and health of smallholder farmers in East Africa through increased productivity of biofortified common bean and improved postharvest handling (11) – **Score: 1.08**. (Funded through “African Union Research Grant II”)

Some of the information below comes from an interview held with the project coordinator, Pamela Paparu, on December 1, 2021.

a. Potential:

- The project has the potential of reducing hunger, improving food and nutrition security and fostering responsible food production. The promotion of biofortified beans and pre- and post-harvest handling practices increases output and safety of the beans. This results in safer and more nutritious food.

- The project is also promising in terms of economic development. The bean variety is more productive and increases yields, therefore generating business opportunities for small-scale farmers. Moreover, row spacing and the use of selective herbicides allows for labour cost reductions.
- The project also improves the environmental footprint of bean production by promoting the safe use of pesticides thanks to row spacing, which reduces seed amount per acre.

b. Needs and next steps:

- For the project's output to scale up, the bean variety seeds should be diffused to allow for a large-scale multiplication of seed production. One farmer group has already taken over this task; however, they will need enhanced capacity to carry it out successfully. Moreover, they will need training in quality production and marketing. Additionally, farmers should be trained in the safe use of pesticides and on reducing post-harvest losses.
- Accordingly, the project will need technical assistance in planning future steps and developing a plan of action. Additional funding will also be needed.
- Farmers will need training and technical support to set up cooperatives and to establish the bean seeds production facilities.

In the priority area of **expansion and improvement of agricultural markets and trade**, one project was identified as being top. The assessment of its potential and needs is identified below.

Implementation of Agroforestry Systems in S. Tomé and Príncipe and development of non-wood forest products (NWFP) in Angola and S. Tomé and Príncipe to improve income-generation and food security (15) – **Score: 1.38**. (Funded through “African Union Research Grant II”)

Some of the information below comes from an interview held with the project coordinator, Maria do Céu Madureria, on November 30, 2021.

a. Potential:

- The project has the potential of expanding agricultural markets by opening new market avenues for the products created. The project developed three Non-Wood Forest-Products (NWFP) Chains (Foods & Aromatic Plants; Medicinal Plants; Mushrooms). Moreover, the team also developed new lines of healthier food and medicinal natural products.
- Furthermore, the project is promising in terms of environmental outcomes/ improvements. The team has implemented agroforestry techniques (AFS), rehabilitated degraded natural areas, and developed a Biological and Fair-Trade certification for all NWFP. These techniques have also been taught to small scale farmers and Ministry of Agriculture technicians. AFS techniques have allowed for an increase in output and productivity while maintaining quality and ensuring sustainability.
- The project therefore creates economic and business opportunities because it increases agricultural productivity through AFS and creates new market avenues by developing NWFPs and introducing mushrooms into national food markets. All of this while ensuring environmental protection and giving value to sustainable production by creating a Biological and Fair-Trade certification.

b. Needs and next steps:

- The project could be scaled up by expanding AFS to the whole national territory of Angola and S. Tomé and Príncipe, and by developing more lines of NWFP. The original plan was to locally market NWFP to international tourists. Nonetheless, given the situation derived from COVID-19, the team is focusing on commercialising the developed products on international markets. The Biological and Fair-Trade certification should be key part of this strategy.
- The project has already created seven micro-business groups that will implement AFS techniques and market the developed NWFPs. These groups need technical assistance in order to evolve into long-term sustainable companies. The team has already established contact with two incubators to benefit from their help in this respect.
- The scale up will need financing for these micro-business groups to succeed. Moreover, the team will need to create a network of partnerships to ensure the expansion of AFS to other territories (at national or regional level in Africa or even internationally?).