REPORT

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BRIDGING EXISTING AND NEW APPROACHES FOR SCIENCE, TECHNOLOGY AND INNOVATION COOPERATION BETWEEN FINLAND AND AFRICA

This report is an output of the "*Developing Finnish Science, Technology and Innovation Cooperation between Europe, Africa, Asia and the Latin American and Caribbean (LAC) region*" (FinCEAL) Initiative. It is a product of the authors, and the responsibility of the accuracy of data, findings, interpretations and conclusions included rests with the authors.

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EXECUTIVE SUMMARY

This report on science, technology and innovation (STI) collaboration between Finland and Africa was compiled with three aims:

- To explore the different strategies that exist in the Finnish-African STI landscape
- To review the current context and landscape of Finnish-Africa STI cooperation
- To explore if the drive for private sector engagement has affected Finnish-African STI collaboration

The study was implemented under the "Developing Finnish Science, Technology and Innovation Cooperation between Europe, Africa, Asia and the Latin American and Caribbean (LAC) Region" (FinCEAL) initiative.

While several policies and programmes to facilitate STI collaboration between Finland and Africa exist, there are no clear national or institutional strategies to guide or steer the activities. Rather, STI work is planned, facilitated and implemented in silos, in an ad hoc and transitory manner.

In addition, the noticeable drive for private sector engagement with Africa has affected Finnish-African STI collaboration, however, it is unclear to what extent this has occurred. Finnish-African trade has increased, but most of the activities are unrelated to STI activities. Furthermore, while private sector engagement has increased and is encouraged, benefits have not accrued to the scientific community. It has been observed that there is definitely an increase in interest in the region and in creating diverse partnerships, but there still remain challenges attributed to policy coherence, resource availability, cross-sector cooperation and on strengthening cooperation based on mutual interests.

One main recommendation is to develop a coherent Finnish-Africa STI roadmap, in order to strengthen collaborations, test new approaches like the Transformative Innovation Policy and position STI collaboration in better alignment to the Agenda 2030. Furthermore, the study recommends creation of a platform for collaboration between Finnish actors active in Africa, to facilitate improved information exchange, networking and the formation of new strategic partnerships. Funding mechanisms should, in this regard, also be realigned to allow for more flexibility to enable the participation of a wider array of partners in more diverse and dynamic roles in different projects. Added emphasis and financial support for commercialisation within Finnish-African STI projects is also recommended

Recognition of the global responsibility role of higher education is also important as is the recognition of NGOs and CSOs as part of the innovation system. Collaboration with NGOs and CSOs can lead to new and better partnerships for STI, simply by harnessing the expertise creatively.

Finally, better involvement of African partners in the development of STI policy, programmes and projects is essential for the improved consolidation of interests, roles and expectations. In short, development of an STI roadmap for Africa, with Africa, is seen as the way forward.

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LIST OF ABBREVIATIONS

AAAA Addis Ababa Action Agenda
ACP African, Caribbean and Pacific Group of States
AU African Union
BEAM Business with Impact Programmes
CPA Consolidated Plan of Action
CSO Civil Society Organisation
CSR Corporate Social Responsibility
ECDPM European Centre for Development Policy Management
EDCTP European and Developing Countries Clinical Trial Partnership
EDUFI Finnish National Agency for Education
EEA European Economic Area
EEP The Energy and Environment Partnership in Southern and East Africa
ERAfrica Developing African-European Joint Collaboration for Science and Technology
EU European Union

FAO	Food and Agriculture Organisation of the United Nations
FinCEAL	Developing Finnish Science, Technology and Innovation Cooperation between Europe, Africa, Asia and the LAC Region
GTK	Geological Survey Finland
H2020	Horizon 2020
HEI ICI	Higher Education Institutes Institutional Cooperation Instrument
ICI	Institutional Cooperation Instrument
iNGO	International Non-Governmental Organisation
IPR	Intellectual Property Rights
JAES	Joint Africa EU Strategy
LAC	Latin America and the Caribbean
LEAPAgri	Long Term EU-Africa Research and Innovation Partnership on Food and Nutrition security and Sustainable Agriculture
Luke	Natural Resources Institute Finland
NGO	Non-Governmental Organization
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
PIF	Public Sector Investment Facility
SANORD	Southern African Nordic Centre
SDGs	Sustainable Development Goals
STI	Science, Technology and Innovation
Syke	Finnish Environment Institute
TEKES	Finnish Funding Agency for Technology and Innovation
TFM	Technology facilitation mechanism
UN	United Nations
UniPID	Finnish University Partnership for International Development
UNU-WIDER	United Nations University World Institute for Development Economics Research
VTT	Technical Research Centre of Finland

1. BACKGROUND

Broad policies and strategies contextualize cooperation between Finland and Africa, with prevalent themes being development cooperation and, more recently, business and trade. In this regard, different national funding and support schemes for cooperation between the regions have normally been designed along these lines.

This report is aimed at describing the science, technology and innovation (STI) cooperation between Finland and Africa. The study investigates and discusses the context in which Finland's STI cooperation with Africa occurs, the actors involved and the guiding policies at national and EU level that govern the cooperation. Furthermore, the study also looks at whether increased interest in trade and business engagement with Africa has had any contribution in changing STI cooperation with the region in the last 3–5 years.

The three main questions explored are:

1. **What are the strategies employed by Finnish stakeholders (ministries, agencies, institutions and other organisations) when engaging with African partners in the context of STI?**
2. **What is the profile of the Finnish-Africa STI ecosystem?**
3. **Has the drive for private sector engagement affected STI engagement between Africa and Finland?**

The report is an output of the "Developing Finnish Science, Technology and Innovation Cooperation between Europe, Africa, Asia and the LAC Region" (FinCEAL) Initiative. Envisioned by the Ministry of Education and Culture, FinCEAL supports Finnish involvement in the EU-bi-regional STI policy dialogues, and offers concrete support for the Finnish scientific community's research and innovation cooperation with developing countries – first targeting Africa and Latin America and the Caribbean and, from 2015 onwards, also Asia (Figure 1). The initiative has been funded by the Ministry of Education and Culture in three consecutive project cycles: FinCEAL (2013–2014), FinCEAL+ (2015–2016) and FinCEAL+ Continuation (2017–2018). FinCEAL has been coordinated by the Finnish University Partnership for International Development (UniPID) network, with the Africa component being coordinated by the University of Jyväskylä. On a national level, the activities have been overseen by the FinCEAL Steering Committee made up of strategic ministries, funding agencies and representatives of the scientific community. To ensure policy coherence with the EU-Africa STI priorities, the focus areas for FinCEAL Africa have been health, renewable energy, climate change, food and nutrition security and sustainable agriculture, ICT, transport and space.

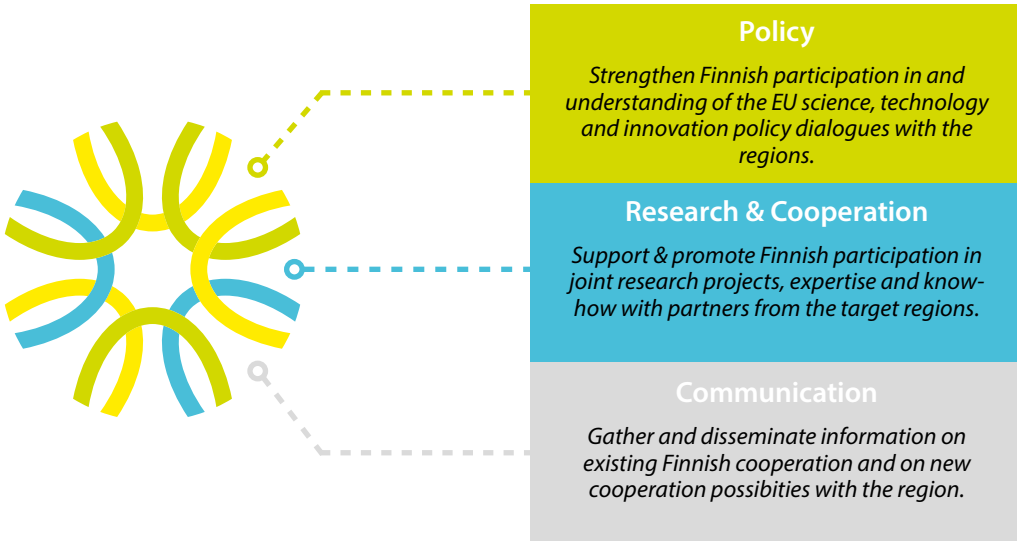
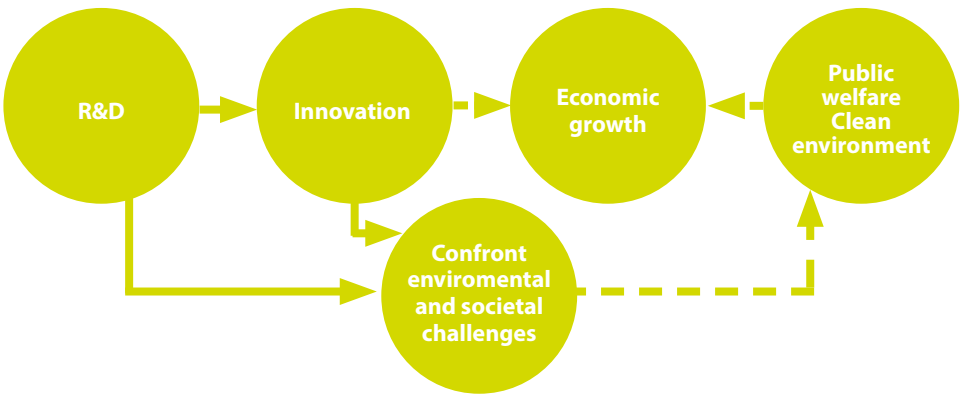


Figure 1: The objectives of the FinCEAL initiative (FinCEAL internal document)

2. DEFINING SCIENCE, TECHNOLOGY AND INNOVATION

Fundamental thoughts on STI have normally been rooted around economic growth and industry and the policies attributed to things like "the knowledge-based economy," "the information economy," "the new economy," and "national systems of innovation" (Mavhunga, 2017). Finland's own STI understanding and policy have been deeply embedded in strengthening its National System of Innovation. As one of the early adopters of this approach in the 1990s following the Organisation for Economic Cooperation and Development's (OECD) wide use of the concept, it was used as the basis for formulating strategies for the country's economic growth (Chaminade, Bengt-Åke and Shagufta, 2018).

In recent years, however, the role and understanding of STI has transitioned. Global challenges demanding global solutions, shifting economic powers to countries that have altered social and economic landscapes and the realisation that economic growth does not equate to inclusivity or equity, have required STI to expand beyond its traditional parameters and to re-define how best to capitalise on it. This has led, for instance, to the transformative innovation policy – an emerging frame in this arena, that looks at STI in the context of socio-technical system change (Figure 2) and reflects on the use of STI policy to meet social needs sustainably and inclusively (Kautonen, 2018; Schot and Steinmueller, 2018).



Frame 3: Transformative innovation policy

- Point of departure that negative externalities/impacts of innovation can overtake positive contributions
- Emphasis on policies that direct socio-technical system into socially and ecologically desirable directions
- Explicitly societal goals as a primary focus; assumption that social and environmental welfare leads to greater productivity and less inequality, and to economic growth.

Modified from TIPC program paper 2017

Figure 2: Transformative innovation policy (Kautonen, 2018)

The transformation mentioned above has, perhaps, been seen most recently in Agenda 2030, adopted at the United Nations Sustainable Development Summit in September 2015, which positioned STI as a key means of implementing the sustainable development goals (SDGs) (United Nations, 2015). This saw the launch of the United Nations (UN) technology facilitation mechanism (TFM) to facilitate and assist countries align STI in their SDG roadmaps. The definition of what STI encompasses within the UN and for the SDGs is grounded in the Addis Ababa Action Agenda (AAAA) (United Nations, 2015). The STI actions defined in the AAAA as crucial for achieving the SDGs can be grouped into five themes (United Nations, 2017):

1. National STI frameworks
2. Scientific research and education
3. Industry and innovation systems
4. Technologies supporting specific development outcomes
5. Supportive international arrangements

A summary of commitment actions relevant to these themes is found in Appendix 1. The UN recognizes the role of STI as important for achieving the SDGs but also asserts that success is only possible through international cooperation. The commitments in Appendix 1 especially lean towards:

- The importance of streamlining STI in SDG national implementation roadmaps
- Maximizing available technologies for sustainable development
- Enhancing cross-sector cooperation and international cooperation
- Building STI capacity in low-income partner countries
- Enhancing equality
- Open access

These elements encompass some characteristics of transformative innovation policy, and also act as part of the contextual backdrop in which this study was conducted.

On a national level, the Finnish innovation policy takes the position that innovations are not mere ideas or inventions, but new kinds of useful products, services, processes or methods (Ministry of Economic Affairs and Employment, 2018). The premise is that collaboration between enterprises, universities and research institutions (the so-called triple-helix) refine science, knowledge and skills into innovations and wellbeing, through various networks and ecosystems, not only domestically, but increasingly also through international cooperation (Ministry of Economic Affairs and Employment, 2018). Thus, this forms part of the basis of the strategies for STI cooperation with Africa.

3. METHODOLOGY AND LIMITATIONS OF THE STUDY

This study was conducted through a four-tired process. First, in the spring of 2018, we conducted, a desk review and document analysis of Finnish and EU policy documents related to cooperation with Africa. Second, Finnish ministries and their agencies (Ministry for Foreign Affairs, Ministry of Economic Affairs and Employment, Ministry of Education and Culture, BEAM, Academy of Finland, Finnish National Agency of Education), two network organisations, a private sector actor and two NGO/CSOs (total 11 organisations) were selected for Delphi interviews (Appendix 2). These were conducted between June and August 2018, and covered 11 individuals in seven organisations. Due to unavoidable circumstances, the Ministry of Education and Culture and the Ministry of Economic Affairs and Employment and CSO representatives (i.e. four organisations) did not participate in Delphi interviews but rather answered a semi-structured questionnaire in written form, over e-mail (Appendix 2).

Third, an online semi-structured questionnaire (Appendix 3) was sent out to the scientific community and private sector in July–August 2018 through various mailing lists and social media. In total, the questionnaire was distributed to over 300 persons. Of these, 137 were directly targeted via e-mail, and the rest through the FinCEAL Plus and UniPID's Focus on Africa newsletters. The mailing lists' subscribers, and those e-mailed directly, were scientists based in Finnish institutions. The questionnaire received 40 anonymous responses.

Fourth, a workshop on "A Policy Brief on Existing and New Approaches for Science, Technology and Innovation Cooperation between Finland and Africa" was organised during the 11th Annual SANORD Conference in Jyväskylä. A focus group discussion and learning café were utilized to collate data on experiences of STI collaboration between Africa and Finland.

While this study endeavoured to research and find information from multiple sources and platforms, it is by no means exhaustive. Due to limitations of time and resources, the information gathered here is based only on the interviews and data mentioned in the methodology and sources cited in the references.

The study recognizes the high representation of the research community in the information gathered, in comparison to the private sector and other actors who may be equally relevant for STI cooperation with Africa.

Notably, it does not seek to assume that the respondents of the questionnaire are wholly representative of the sectors they represent. It also puts into consideration that there are still open questions that would need to be researched further to give more input into the core questions. This is especially recognizable in the lack of information related to STI cooperation occurring through the private sector, input from other private sector funding agencies (Finnfund, Finnvera, Finnpartnership) and input from African partners involved in Finnish-Africa STI cooperation. Any other issues that may arise and require clarification from this study are the responsibility of the authors.

4. RESULTS AND DISCUSSION

4.1 POLICY ANALYSIS

4.1.1 Finland's STI ecosystem

The major components of the Finnish STI ecosystem (Figure 3) consists of the national education system, research infrastructure and policy measures that support product and service development and the growth of knowledge-intensive firms (Berghäll and Kiander, 2003). The two main ministries that dominate research and innovation policy in Finland are the Ministry of Education and Culture and the Ministry of Economic Affairs and the Economy, under which there are various funding agencies, disseminating funding to higher education institutions, public research institutions and enterprises.

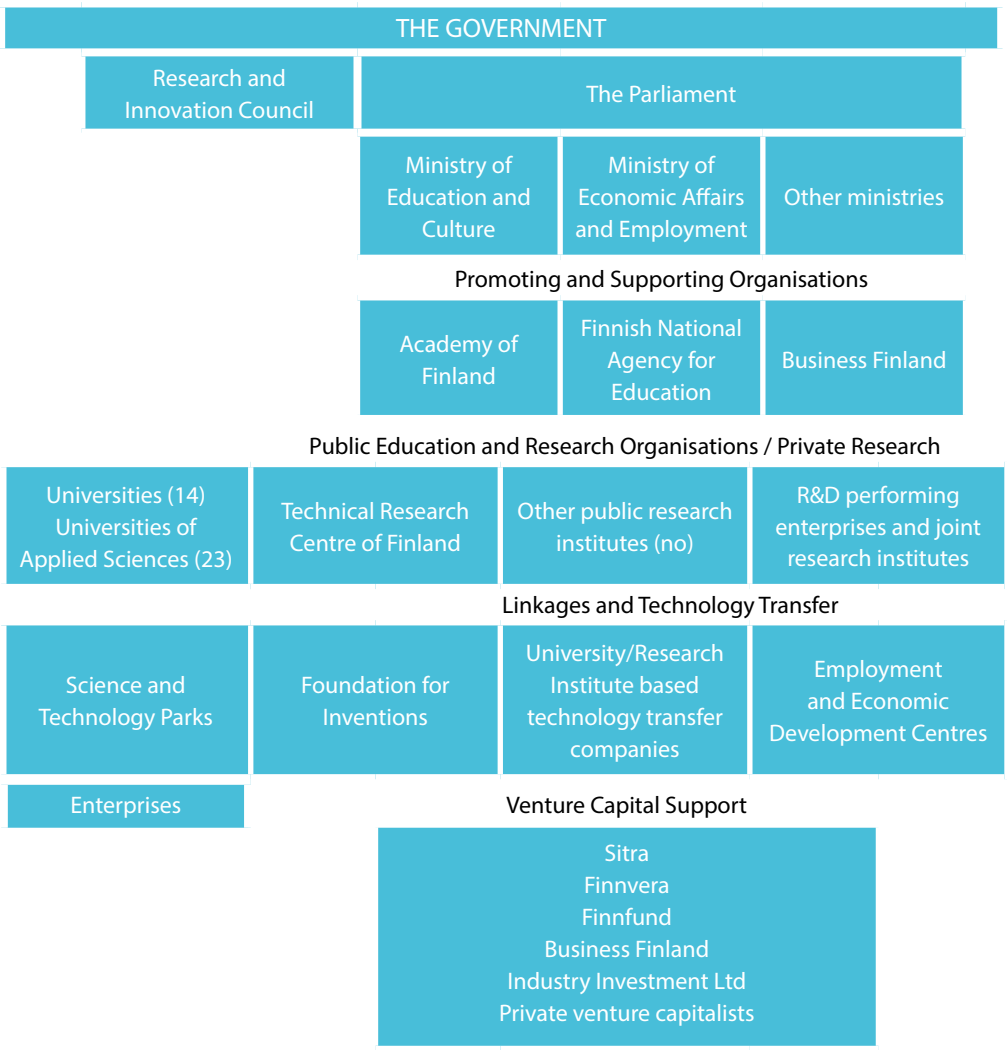


Figure 3: Finland's science, technology and innovation ecosystem

THE RESEARCH AND INNOVATION COUNCIL, chaired by the Prime Minister, coordinates the development of Finland's innovation system. The Minister of Education and Culture, and the Minister of Economic Affairs and Employment serve as vice-chairs to the council as well as one more minister appointed by the government. In addition to the ministers, the council has five other members appointed by the government for the duration of the parliamentary term. The council members must provide extensive expertise in research, development and innovation

Finnish innovation policy is prepared and implemented by the Ministry of Economic Affairs and Employment, which is also responsible for industrial and technology policies. Its main bodies in policy implementation are Business Finland (formerly the Finnish Funding Agency for Technology and Innovation, Tekes), the Technical Research Centre of Finland (VTT) and the Geological Survey, Finland (GTK). The Ministry of Education and Culture is responsible for education, training, science policy, higher education and the Academy of Finland.

The council discusses key issues relating to the development of research and innovation policy that support wellbeing, growth and competitiveness. The purpose of the Research and Innovation Council is to support the government in the development and coordination of long term research and innovation policy, to monitor the changes in the national and international operating environment, and to put forward initiatives related to the research and innovation policy.

The Vision for STI in Finland (Research and Innovation Council, 2017) aims at achieving the measures outlined in Box 1, through the action points in Figure 4.

Box 1: Vision for STI in Finland: Finland in 2030 (Research and Innovation Council, 2017)

- Finland is an innovative, caring and safe country with world-class quality of living and possibilities for entrepreneurship.
- The welfare, sustainable growth and competitiveness of Finland are based on a high level of competence, education, creativity, openness, trust, productivity, adaptability, and experiment-based cutting-edge innovations.
- We are willing to learn new things, we appreciate know-how in its various forms, and we utilise it effectively both in business life and in the other sectors of society. We build a solid competence base consistently over a long period of time. We seize the opportunities and address the needs for change brought along by megatrends such as digitalisation and artificial intelligence in a timely manner. We produce solutions to global problems and respond to international demand.
- The Finnish public and private sector together invest 4% of GDP in research and innovation activities in an effective and profitable manner. These investments improve, for their part, the wellbeing of the population and society. Working together, both in Finland and abroad, is our strength.

Finland is the most attractive and competent environment for experimentation and innovation

Ensuring the competence base	Development of competence platforms and growth ecosystems	Internationality as a prerequisite for quality and effectiveness	
Higher level of competence that also meets the needs	Public administration as an enabler	More attractive Finland	Clear procedures for making strategic choices that support renewal
Consolidation and effectiveness of R&D&I resources	Competence platforms accelerate the introduction of new solutions	Habit of mobility	
Cross-sectoral R&D&I activities and education	Innovation partnerships and ecosystems renew the economy	Finnish actors claim their position in global networks	
Knowledge, inclusion and meaningfulness as Finland's strengths	Data and artificial intelligence as drivers of platform economy		

Figure 4: Action plan for STI in Finland: Finland in 2030 (Research and Innovation Council, 2017)

THE MINISTRY OF EDUCATION AND CULTURE supports STI through higher education policy and science policy, and contributes to the higher education and science ecosystem in co-operation with other stakeholders. The higher education and science policy aims at strengthening Finland's higher education institutions and research and innovation systems. Higher education policy aims at promoting Finnish competitiveness, wellbeing, education, learning and sustainable development, whereas science policy helps channel competence into forms such as information, knowledge, processes, products and services. Linked to innovation policy, science policy supports knowledge production (Ministry of Education

Figure 5. The Ministry of Education and Culture's vision for promotion of Internationalisation in Finnish higher education and research (Ministry of Education and Culture, 2017b)

and Culture, 2017a). The Ministry of Education and Culture guides internationalisation activities through internationalisation policy and has identified seven points (Figure 5) in its Strategy to Promote Internationalisation in Finnish Higher Education and Research from 2017–2025 (Ministry of Education and Culture, 2017b).

THE MINISTRY OF ECONOMIC AFFAIRS AND EMPLOYMENT runs Business Finland and the Emerging Market Growth Programme, and finances Finnvera's financial instrument, the Public Sector Investment Facility (PIF) (see Table 1). In addition, the Ministry of Economic Affairs and Employment coordinates the mineral policy that guides the activities of GTK, focusing on solutions to the challenges of global mineral chains, reduction of environmental impact, promotion of food security and development of mineral management. Last, but not least, the Ministry of Economic Affairs and Employment is responsible for the Corporate Responsibility Work Plan and engages with the International Labour Organisation (ILO) on the topic of decent work. The activities of the Ministry of Economic Affairs and Employment are based on attracting foreign investment to Finland and are guided by the National Development Policy, Agenda 2030 and the Agenda for Sustainable Growth: Growth Policy Deployment.

THE MINISTRY FOR FOREIGN AFFAIRS also plays a large role in the STI ecosystem, being responsible for Finland's foreign and security policy, trade policy, development policy, significant foreign policy issues and international relations in general. It also assists other branches of government in the coordination of international affairs. The Ministry for Foreign Affair's role in the planning of development policy and implementation of development cooperation activities is perhaps what is of greater importance in Finnish-Africa STI cooperation. Finland's development policy is outlined in the Government Report on Development Policy, published in February 2016. The extensive policy takes into account the situation in developing countries, the UN Agenda 2030 for Sustainable Development, the binding climate convention, the present refugee situation and the resources available in Finland. Finland has identified four priority areas of action (Ministry for Foreign Affairs, 2016):

1. Strengthening the rights and status of women and girls
2. Enabling developing countries' own economies generate jobs, livelihood opportunities and wellbeing
3. Strengthening democracy and functionality in societies
4. Food security and access to water and energy, and sustainable use of resources.

These focus areas are underlined by the cross-cutting themes of human rights, openness, coherence, quality and sustainable results and partner countries' responsibility for their own development.

The Ministry for Foreign Affairs also engages with Africa through regional development cooperation strategies, country bilateral and multilateral cooperation strategies and embassies' strategies – though all these are ultimately governed by the development policy. Implementation of development activities occurs at various levels: international NGOs (e.g. World Bank, UN); international regional level (Nordic cooperation, e.g.

the EEP programme); bilateral and multilateral (government to government, sometimes implemented by consulting companies like NIRAS and the Finnish Consulting Group), national level (through Finnish NGOs/CSOs, Finnish companies, Finnish government agencies and research institutions and Finnish HEIs) and at the local level (directly with local NGOs/CSOs through the Finnish embassies).

THE MINISTRY OF AGRICULTURE AND FORESTRY steers the policy on sustainable use of natural resources. In intergovernmental negotiations, coordinated by the Ministry for Foreign Affairs, on the SDGs and Agenda 2030, the Ministry of Agriculture and Forestry focuses on development policy and food security (Ministry of Agriculture and Forestry, 2018). The Ministry of Agriculture and Forestry's key partners are the UN's Food and Agriculture Organisation (FAO) and the Organisation for Economic Co-operation and Development (OECD). While the Ministry of Agriculture and Forestry mainly collaborates with other Nordic countries and EU member states, Russia and China, Africa collaboration does also occur although mainly through the Ministry's own agencies, for instance, the Natural Resources Institute Finland (Luke) and the Finnish Environment Institute (Syke). The former has implemented food security related projects in Africa, the most recent being the FoodAfrica Programme, while the latter has provided capacity building support to organisations in Egypt and South-Africa. These bilateral and multilateral projects have been funded by the Ministry for Foreign Affairs.

THE FINNISH NATIONAL AGENCY FOR EDUCATION (EDUFI) operates under the Ministry of Education and Culture and is responsible for developing education and training, early childhood education and care and lifelong learning as well as for promoting internationalisation. The latter is implemented through international cooperation and mobility programmes, and also provision of information on internationalisation opportunities and promotion of Finnish education and training abroad. EDUFI is not only the national agency for the EU education and youth programmes, but also for the Nordic Nordplus programmes. In addition, EDUFI is in charge of coordinating the development cooperation programmes for higher education: the Higher Education Institutes Institutional Cooperation Instrument (HEI ICI) and the Eritrea Programme, both of which are funded by the Ministry of Foreign Affairs. EDUFI runs a scholarship programme, mainly for PhD studies.

EDUFI also hosts a programme called Education Finland, funded by the Ministry of Education and Culture, aimed at enhancing education export. Education export is defined as any business venture based on education/training, education systems or knowledge transfer which is paid for by a foreign entity (Ministry of Education and Culture, 2016). Education Finland supports education exporters in collaboration with the Team Finland network. Education Finland has 94 members (Tuomi, 2018) of whom the majority are companies in the field of education technology, followed by universities of applied sciences (6) and vocational institutions. Only three universities are members of Education Finland, although some universities and universities of applied sciences may be represented by companies they have established solely for the purpose of education export. Education Finland estimates the turnover of Finnish education exports at €310 million in 2017 and estimates annual growth at 10% on average.

THE ACADEMY OF FINLAND is a research funding organisation under the remit of the Ministry of Education and Culture. The Academy of Finland is financed from the national budget and is tasked with improving the quality and appreciation of Finnish basic research with research funding based on competitive bidding. The Academy finances diverse basic research, which paves the way for innovative applied research and the utilisation of new data. Most of the Academy's financing is channelled to research carried out at universities and research institutions. The Academy also handles the administration of EU research programmes and international research organisations in cooperation with Business Finland.

THE FINNISH UNIVERSITY PARTNERSHIP FOR INTERNATIONAL DEVELOPMENT (UniPID) is a partnership network of 9 Finnish universities (Aalto University, Åbo Akademi University, University of Eastern Finland, University of Helsinki, University of Jyväskylä, University of Lapland, University of Oulu, University of Tampere and University of Turku). UniPID was established in response to the Johannesburg Summit on Sustainable Development in 2002, where institutional partnerships for development were encouraged. UniPID provides strategic coordination for building ties and increasing cooperation between Finnish universities in the field of international development cooperation. UniPID supports Finnish universities in the promotion and implementation of sustainable development in higher education and fosters the exchange of knowledge between Finnish universities and universities in developing and transition countries. Furthermore, UniPID links Finnish universities to European and global policy debates and development networks. The network builds university capacities through the sharing of scientific knowledge, cooperation on common interests, understanding of development impacts, gathering and dissemination of information, and supporting long term exchange and cooperation. These activities are essential in accomplishing true sustainable development and equal-footing partnerships both in the North and the South. UniPID hosts virtual courses under the theme of development studies and hosts a network for doctoral students and their supervisors (DocNET).

In 2013, **FINCEAL (FINNISH SCIENCE, TECHNOLOGY AND INNOVATION COOPERATION WITH EUROPE, AFRICA, ASIA AND LAC)** was established under UniPID, with financing from the Ministry of Education and Culture. An initiative that supports STI cooperation with Africa, Asia and LAC regions, FinCEAL supported third country cooperation (i.e. non-EU partners) by providing grants to scientists to kick-start and strengthen existing STI cooperation with the three regions. Between 2013 and 2018, the initiative has awarded 206 grants to researchers in Finland.

4.1.2 Finnish-African STI collaboration

The Finnish ministries have identified Africa as an important region for cooperation, albeit at different levels. Indeed, Finland has had a history of partnering and implementing science, technology and innovation (STI) projects with African partners. Many of these programmes have been carried out at a bilateral, multilateral or national level against the backdrop of development cooperation policy (Ethiopia, Kenya, Somalia, Tanzania,

Zambia and Mozambique are Finland's long term development cooperation partners), international economic growth policy or education internationalisation policy. The different ministries have periodically funded various initiatives that support Finnish-Africa STI.

Bilateral and multilateral projects like *BioFISA I and II* (SANBio, 2018), *the Southern Africa Innovation Support programme*, SAIS I and II (SAIS, 2018), *the Information Society and ICT Sector Development Project in Tanzania*, TanzICT (TanzICT, 2018) and the *FoodAfrica Programme* (Luke, 2018) funded by the Ministry for Foreign Affairs, are indicators of the interest in highlighting STI within development cooperation.

Furthermore, the Ministry for Foreign Affairs has been funding the Academy of Finland's Programme in Development Research and the Higher Education Institution Cooperation Instrument (HEI ICI), which recently also assimilated the North-South-South Higher Education Institution Network Programme. Though these latter programmes do not target Africa explicitly, a good number of funded projects have included cooperation between Finnish and African partners.[1]

The Ministry for Foreign Affairs also supports government agencies through the Institutional Cooperation Instrument (ICI), funds international NGOS (iNGOs) e.g. FAO, UN Women, UNDP, the Red Cross etc. and Finnish NGOs/CSOs. The year 2018 also saw the launch of the first European-based UN Technology Innovation Lab in Aalto University. The lab, co-financed by the Ministry for Foreign Affairs, will act as a launching pad for disseminating Finnish solutions to global problems to the rest of the world.

The Ministry for Foreign Affairs, together with other donors, also funds the European Centre for Development Policy Management (ECDPM), a leading independent think tank that provides research and analysis, policy advice and training in Europe and Africa for inclusive and sustainable development. ECDPM focuses on EU foreign policy and European and African policies related to conflict, migration, governance, food security, regional integration, business, finance and trade.

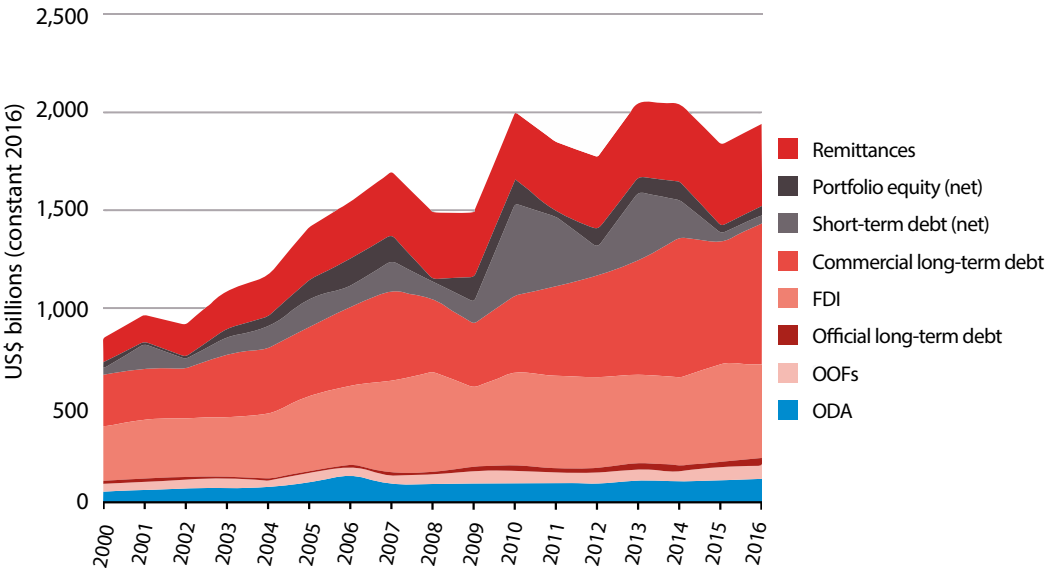
Another institution worth mentioning is the United Nations University World Institute for Development Economics Research (UNU-WIDER), located in Helsinki, which provides economic analysis and policy advice, aiming at promoting sustainable and equitable development (UNU-WIDER, 2018). The Institute is funded through an endowment fund with additional contributions from Denmark, Finland, Norway, Republic of Korea, South Africa, Sweden, and the United Kingdom.

Recently, the Ministry for Foreign Affairs has increased support for private sector activities in developing countries, with various types of support especially for the energy and environmental sectors (Table 1). In the 2017 Organisation for Economic Co-operation and Development (OECD) development cooperation peer review, changes in the Finnish ODA funding landscape were also shown to be moving increasingly to the private sector. The report noted, for instance, that in 2016 the aid budget faced the first of annual cuts of 38%, (EUR 330 million) for the period of the government's fiscal plan (2016-20). This cut was deeper than for any other part of the Finnish administration. An additional EUR 25 million (USD 28 million) in annual cuts are planned for 2018–20. Out of this annual cuts, EUR 130 million was converted from grants to loans and capital investments. The

1 Through North-South-South funding, a total of 124 networks between Finnish and Africa HEIs were formed from 2008 to 2015. Through HEI ICI, 36 projects involving African partners have been funded between 2011 and 2019.

outcomes related to increased private sector funding in the 2016 policy have however not yet been produced (OECD, 2017).

The shift from traditional official development assistance (ODA) funding mechanisms to increased injection into private sector cooperation is a reflection of a global trend in this arena (Figure 6).



Source: Development initiatives based on OECD DAC, UNCTAD and World Bank data
Note: FDI: Foreign direct investment; OOFs: other official flows

Figure 6: International resource flows to developing countries 2000–2016 (source: Development Initiatives, 2017)

The rise of education as a marketable product globally has also seen Finland re-orient itself from a giver of free education. In 2009, the Ministry for Foreign Affairs and the Ministry of Education and Culture initiated policy-level discussions on education export leading to the Finnish education export strategy. (Ministry of Education and Culture, 2010). Furthermore, since 2017, non-EU/EEA students training at bachelor's and master's level in Finland are charged tuition fees. The change in the education landscape has led Finnish HEIs to rethink how they form their international cooperation.

The Ministry of Economic Affairs and Employment which steers Business Finland has financed project-based STI activities in developing countries. 2015 saw the emergence of the Business with Impact (BEAM) programme, a mechanism meant to support Finnish enterprises' access to emerging markets. Financed through development cooperation funding from the Ministry for Foreign Affairs and Business Finland, it was perhaps one of the most recent visible shifts in the Ministry for Foreign Affair's broadening approach to international development. A unique factor of the BEAM programme was the possibility it availed for research institutions and companies to work together on business projects, funding 34 projects in total to date. In 2016, the Ministry signed a memorandum of understanding (MoU) with South Africa in 2016 to increase cooperation in STI between the

two nations. The MoU highlights establishing a framework of cooperation between various STI actors in both countries as one of its key objectives and facilitating identification of joint projects and initiatives (commercial and non-commercial).

Beyond these bilateral, multilateral and national initiatives, there has been cooperation on a bi-regional level in the context of EU-Africa STI relations. The Ministry for Foreign Affairs through the Academy of Finland, funded *ERAfrica*, an EU-Africa Research Area Network in the 7th framework programme. Most notably, the Academy is currently involved in *LEAP-Agri* (ERA-Net Co-fund) and the European and Developing Country Clinical Trials Partnership (*EDCTP 2*).

Table 1: Funding for the private sector from the Ministry for Foreign Affairs of Finland (Ministry for Foreign Affairs, 2018)

The Finnish Business Partnership Support Programme, Finnpartnership	Supports the start of business activities in developing countries, serving as a kind of startup grant. Companies can use it, for instance for finding a local cooperation partner, planning activities and training their employees. A grant is typically in the range of a few tens of thousands of euros.
The Business with Impact {BEAM) Programme	BEAM provides grants and loans for the development of new business ideas and models of generating income. BEAM is jointly funded by the Ministry of Economic Affairs and Employment's agency Business Finland.
The Energy and Environment Partnership	The Energy and Environment Partnership in Southern and East Africa (EEP Africa) is a multi-donor fund for development of business ideas and models of generating income, focused on clean energy and environmentally friendly business models.
Finnfund	Finnfund is a development finance company that offers equity financing and investment loans to companies that have already established their operations in a developing country. The sums vary from a few up to tens of millions of euros. The company does not finance export but supports Finnish business operations in the target countries.
The Public Sector Investment Facility {PIF)	PIF is designed to fund public sector investments in developing countries. Investments must make use of Finnish expertise and technology. The funding amounts from a few to tens of millions of euros. Funding for this programme is run through the Ministry of Economic Affairs and Employment's financial agency Finnvera.
A new climate fund jointly founded by Finland and the International Finance Corporation {IFC}	The climate fund provides investment- and grant-based funding for projects combating climate change. The average size of projects supported by the IFC ranges between €60 and 100 million.

4.1.3 Finland in the EU-AU STI Policy

The Joint Africa-EU Strategy

There has been tremendous advancement in EU-African Union (AU) cooperation in the last 10 years. In 2007, heads of state from Europe and Africa met in Lisbon at the second EU-Africa summit to discuss a new partnership (Figure 7). The emerging framework for the renewed collaboration was the Joint Africa EU Strategy (JAES), an instrument of political dialogue and cooperation (Africa-EU Partnership Portal). This strategy has been constantly updated every 4 years at the summits. These have been organized consecutively in 2010, 2014 and most recently in 2017, alternating in both regions. The JAES aims to:

- Reinforce political relations between Africa and the EU, and jointly address common global challenges, such as climate change, protection of the environment and peace and security. Through joint positions, Africa and Europe have more weight in global fora
- Expand EU-AU cooperation in traditional development cooperation areas, such as human development and natural resources, into promising new areas of common interest, such as governance and human rights, trade and regional integration, energy, climate change, migration, mobility and employment, science, information and communication technologies and space applications
- Facilitate and promote a broad-based and wide-ranging people-centred partnership, by ensuring the effective participation of civil society and the private sector, and by delivering direct benefits for African and European citizens

Following each summit, the heads of states agreed on a consolidated plan of action based on different thematic partnership areas[2]. In the most recently concluded summit, the two regions agreed to commit to these four key areas leading up to the next summit:

1. Investing in people – education, science, technology and skills development
2. Strengthening resilience, peace, security and governance
3. Migration and mobility
4. Mobilizing investments for African structural sustainable transformation

STI has continued to feature in each action plan from the onset of the JAES. This prevalence has meant that funding mechanisms like the EU Research Framework Programmes have included and earmarked resources to research and innovation initiatives, enhancing cooperation with Africa.

The EU, through European development funding, also allocates funding to some STI initiatives that are defined within the political discussions of the JAES, for instance, through the African, Caribbean and Pacific (ACP) Group of States that is governed by the Cotonou Agreement (European Union, 2014). This report will, however, only focus on initiatives under the framework programmes.

2 Specific thematic dialogues or expert meetings make an important contribution to the Partnership and include: the AU-EU Human Rights Dialogue; the High-Level Policy Dialogue (HLPD) on Science, Technology and Innovation (STI); the Africa-EU Energy Partnership (AEEP); and the Africa-EU Reference Group on Infrastructure (RGI).

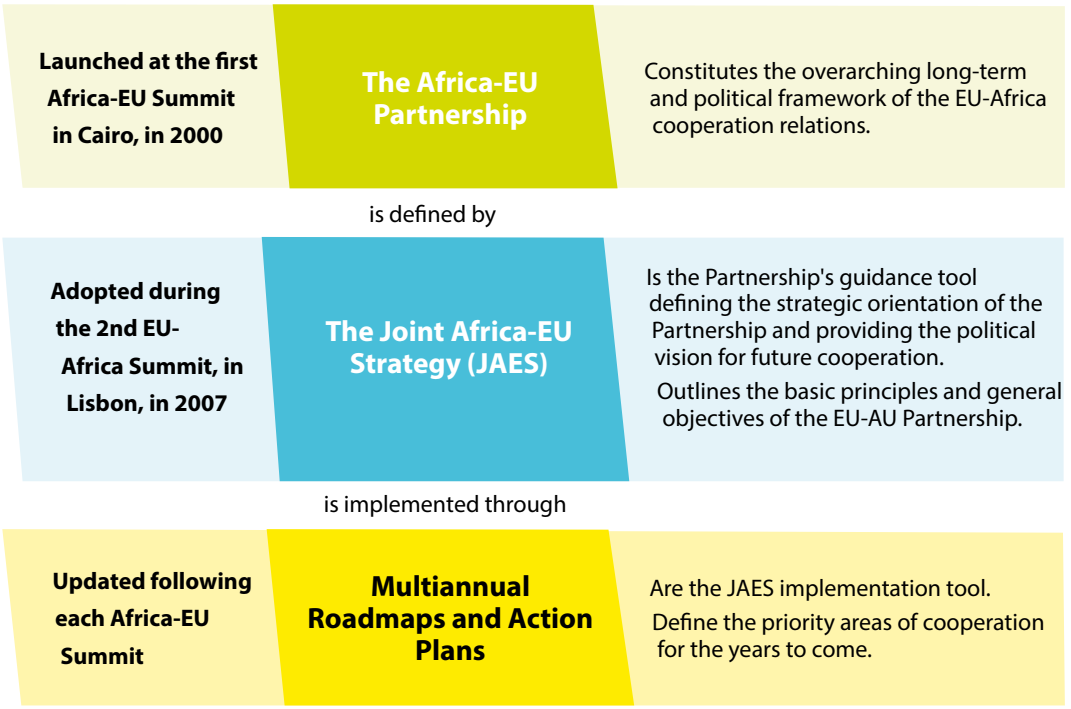


Figure 7: Illustration of the EU-Africa partnership (source: Africa-EU Partnership Portal, 2017a)

The Science, Technology and Innovation Strategy for Africa (STISA)

The negotiations that go into JAES are based on the mutual interests and priorities of the two regions. Looking specifically at cooperation on STI, Africa's own strategy plays a crucial role in directing the continent's STI focus. In 2014, the African Union re-committed itself to STI by setting up STISA-2024 to replace the Consolidated Plan of Action (CPA). The strategy was developed during an important period when the AU was formulating the broader and long term Agenda 2063. It has six priority areas:

1. Eradication of hunger and achieving food security
2. Prevention and control of diseases
3. Communication (physical and intellectual mobility)
4. Protection of our space
5. Live together – build the society
6. Wealth creation

The strategy is designed to respond to the need of transforming Africa into a knowledge-based and innovation-led society (African Union Commission, 2014) and has a 10-year incremental approach. The STISA is representative of all African countries in the AU. However, there are other agreements pertaining to and acting as frameworks for cooperation on STI between the EU and specific African countries. Most notable is the EU-South Africa Strategic Partnership Agreement signed in 2007 (European Commission, 2007). It is the only existing partnership between the EU and an African country and one

of only 10 that the EU has engaged in globally. In the joint action plan of the partnership agreement, science and technology is recognized as an area of cooperation between the two. The European Commission also has the European neighbourhood policy, which includes countries in North Africa (Algeria, Tunisia, Egypt, Libya and Morocco) as part of the Southern Mediterranean group.

Profile of Finnish-Africa STI initiatives at EU level

Finnish-Africa cooperation in the EU context occurs within three frameworks:

(a) Bilateral programmes: bilateral agreements based on the overarching EU-Africa STI cooperation agreement
(b) Bi-regional ERA-Net programmes: co-financing specific initiatives based on mutual agreement among EU-Africa member states within the EU Research and Innovation Framework
(c) Bi-regional research framework programmes and Erasmus programmes: HEI and research institution participation in joint research or capacity building projects under the competitive Research and Innovation European Union Framework programmes (e.g. FP7, H2020) and Erasmus+

a) Bilateral programmes

Following the adoption of the JAES' first action plan in 2007, Finland was especially interested in Partnership 8 on science, information, society and space (European Council, 2007). The focus was to:

- Support the development of an inclusive information society in Africa
- Support S&T capacity building in Africa and implement Africa's Science and Technology Consolidated Plan of Action
- Enhance cooperation on space applications and technology

Born out of this interest, the Ministry for Foreign Affairs initiated the African Leadership in ICT (ALICT) training course as one of the African Union's Lighthouse Projects in 2010–2013. ALICT provided a tailored course that trained future African leaders to contribute effectively to the development of knowledge societies by equipping them with new leadership skills' (European Commission, 2014). The project has been cited as example of an EU member state bilaterally engaging African states in an STI initiative guided by the JAES.

b) Bi-regional ERA-Net programmes

Finland has continued to be quite keen and active in the political processes that define the focus areas in EU-Africa STI cooperation. Since the inception of FinCEAL in 2013, the Ministry of Foreign Affairs shifted the responsibility of engaging with the EU-Africa high-level policy dialogue on STI to the Ministry of Education and Culture. This interest has translated into the country's participation in two European ERA-Net programmes – Developing African-European joint collaboration for Science and Technology (ERAfrica)

and the long term EU-Africa research and innovation partnership on food and nutrition security and sustainable agriculture (LEAPAgri).

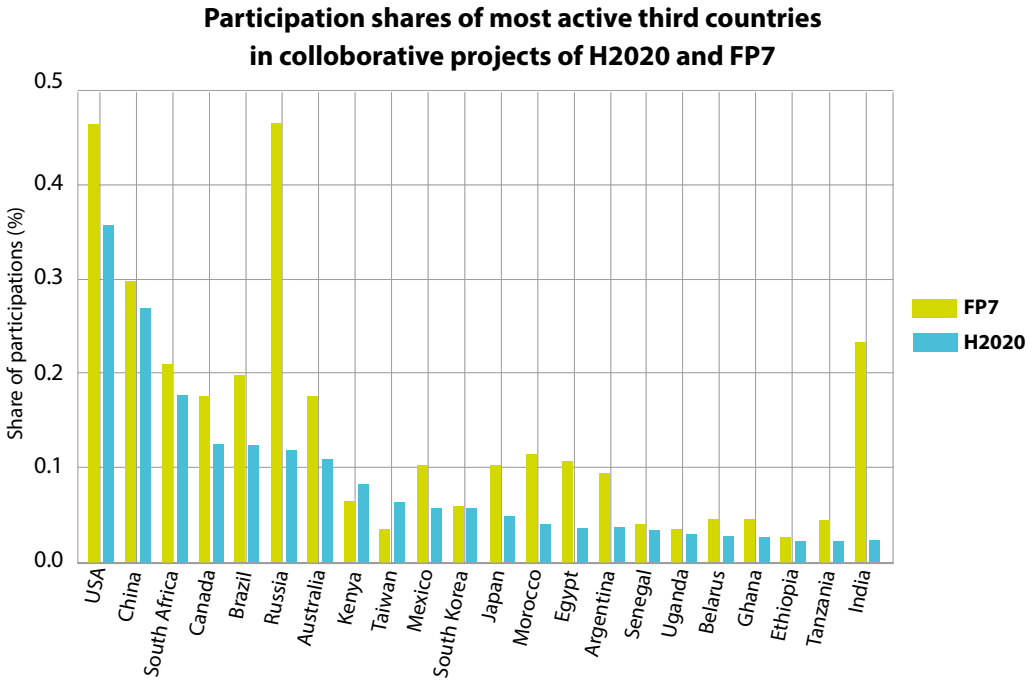
ERAfrica was funded under the 7th framework programme and was the first European Research Network Area programme for Africa. The Ministry of Economic Affairs and Employment participated as a consortium member and the Academy of Finland (with funding from the Ministry for Foreign Affairs), Tekes, and the Finnish Cultural Foundation each participated in the joint call for proposals. Seventeen projects were funded for 3 years with a total of more than €8 million (Commission for Development Research at the OeAD-GmbH, 2014). ERAfrica marked the beginning of a transformation in EU-Africa research cooperation. For the first time, African countries contributed towards the research initiatives, shifting the balance from what was traditionally an unequal partnership inhibited by resources and historical attachments.

Following the success of ERAfrica and the prioritization of food, nutrition security and sustainable agriculture in the EU-Africa STI political dialogue, another ERA-Net cofund call was launched under Horizon 2020. Under the Work Programme 2014–2016, the call on EU-Africa Research and Innovation Partnership on Food and Nutrition Security and Sustainable Agriculture aimed to pool financial resources from both African and European member states with an aim of implementing a joint call for proposals (European Commission, 2017). The Academy of Finland, in a consortium made up of 30 partners, put up €1 million and an application towards the call. The ensuing project, LEAPAgri, has recently concluded a funding round.

Worth mentioning in this context, though governed by slightly different policies, is the European and Developing Countries Clinical Trial Partnership (EDCTP). The EDCTP is funded under the European Commission's Article 185 agreement. At the commencement of Horizon 2020, the Academy of Finland joined EDCTP2 along with 13 other EU member states and 14 AU member states.

c) Bi-regional research framework programmes and Erasmus programmes

Africa's participation in EU framework programmes increased between FP6 and FP7. In FP6 there were 882 participants in 322 research projects. This number rose in FP7 to 1315 participants in 565 projects. Not surprisingly cooperation with South Africa has been the most prevalent – typical of the overall landscape of African participation in the framework programmes. In FP7, South Africa, followed by Ghana, Uganda and Kenya were the leading participating countries. This rising trend did not continue in Horizon 2020. As of October 2016, there were 191 African participants in Horizon 2020. In comparison, in FP7, there were 368 partners from 37 African countries in the same time period (Kraemer-Mbula et al., 2018). The decline in participation by African countries in Horizon 2020 is not unique. It was observed in the overall programme and was highlighted in the interim evaluation report (European Union, 2017)



Note: signed colloborative projects. Participations of beneficiaries or third parties.
Source: DG RTD - International Cooperation
Data: CORDA (jRC, EIT & art. 185 not included), extraction date: 17/10/2017

Figure 8: Graph representation of international cooperation in H2020 compared to FP7 (Vialette, 2017)

Between 2015 and 2017, Finland has cooperated with African countries in six Erasmus+ projects with partners from South Africa, Egypt, Mozambique and Zambia. Similarly to the framework programmes, South Africa was involved in most of the projects (four).

4.1.4 Cooperation at the Nordic level

Although Nordic-Africa cooperation is not extensively mentioned in this document, it is worth noting that there has been cooperation between Finnish and African HEIs through the Southern-Africa Nordic Centre (SANORD) network, a non-profit, membership organisation of institutions of higher education and research, in southern Africa and the Nordics founded in 2007.

SANORD supports multilateral academic collaboration especially focused on impact-driven action aligned to the SDGs and provides seed funding in thematic fields, facilitates collaboration with governments and civil society, provides scholarships, funds mobility and arranges workshops symposia and academic conferences (SANORD, 2018). Finnish members of SANORD are the University of Eastern Finland, University of Jyväskylä, University of Tampere and University of Turku,

Research cooperation has also been visible indirectly through the Nordic Africa Institute (NAI). Partly funded by Finland, the institute supports and carries out research and analysis of Africa in the Nordic countries (NAI, 2018).

4.1.5 Summary of the findings on policy analysis

The policy analysis shows there are several policies guiding STI and development cooperation between Africa and Finland, but they lack a coherent connector. Development policy guides most of the collaboration with Africa but with little connection to other Finnish STI policies. It is questionable if the development policy as it is, although important in its own right, is the right tool for guiding STI cooperation.

While Africa's own priorities on STI have been defined as (1) eradication of hunger and achieving food security, (2) prevention and control of diseases, (3) communication (physical and intellectual mobility), (4) protection of our space (5) live together – build the society and (6) wealth creation; Finland's development policy's priorities are (1) strengthening the rights and status of women and girls, (2) enabling developing countries' own economies generate jobs, livelihood opportunities and wellbeing, (3) strengthening democracy and functionality in societies and (4) food security and access to water and energy, and sustainable use of resources. **This infers that at first glance, only two objectives from the two sides interject: (1) food and nutrition security and (2) economic development to create jobs and wealth.**

The Ministry for Foreign Affairs already in 2014, noted that Finland's ability to take the food security of developing countries into account was inadequate and that there was a lack of a comprehensive strategy or action plan to integrate food security and policy coherence in the decision-making of related policies (Ministry for Foreign Affairs, 2014). Since then food security was integrated into Finland's development policy, which was a positive development.

4.2 STAKEHOLDER ANALYSIS

4.2.1 Sectoral and thematic background

Responses were received from the Ministry for Foreign Affairs, Ministry of Education and Culture, Ministry of Economic Affairs and Employment, Finnish National Agency of Education, Academy of Finland, the BEAM programme, two network organizations, two private sector representatives and two NGO/CSO representatives. The vast majority of respondents to the questionnaire were from a university background (~73%), followed by NGOs or CSOs at ~12% and finally government research institutes (9.8%). Respondents from universities of applied sciences and private sector equally comprised 2.4% of the respondents.

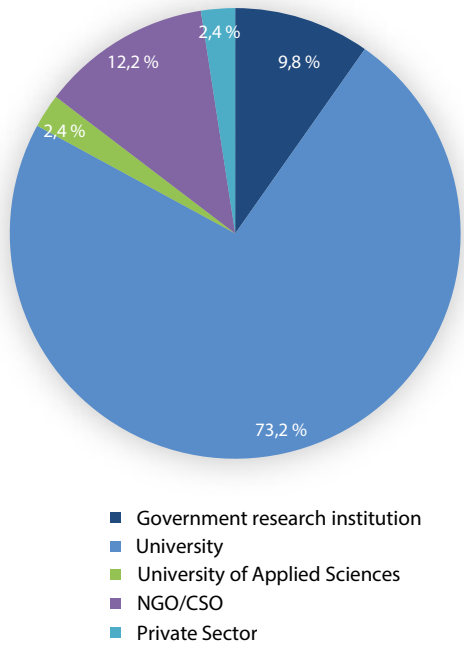


Figure 9: Organisations that participated in the FinCEAL Plus questionnaire on Finnish-African STI collaboration

The Africa-related activities of the Finnish ministries and agencies have been outlined earlier (sections 4.1.3 and 4.1.4).

According to the data, Finnish-African collaboration is centred over several fields (Figure 10), with a high focus on **health** (17%) as well as **food and nutrition security** (12%). The water sector, natural sciences, energy and education are also popular fields of cooperation. There were also a large number (17%) of singular responses ranging from logistics to social sciences, showing diversity in the fields of cooperation, indicating that collaboration is not focused on any one particular area, but is instead rather sporadic. When asked specifically about collaboration in STI activities, a majority of the respondents (20%) mention **education**, followed by **health** (17%) and **food and nutrition security** (17%). The network organisations and CSOs that participated in the Delphi interviews also work in similar fields (health, food and nutrition security, education).

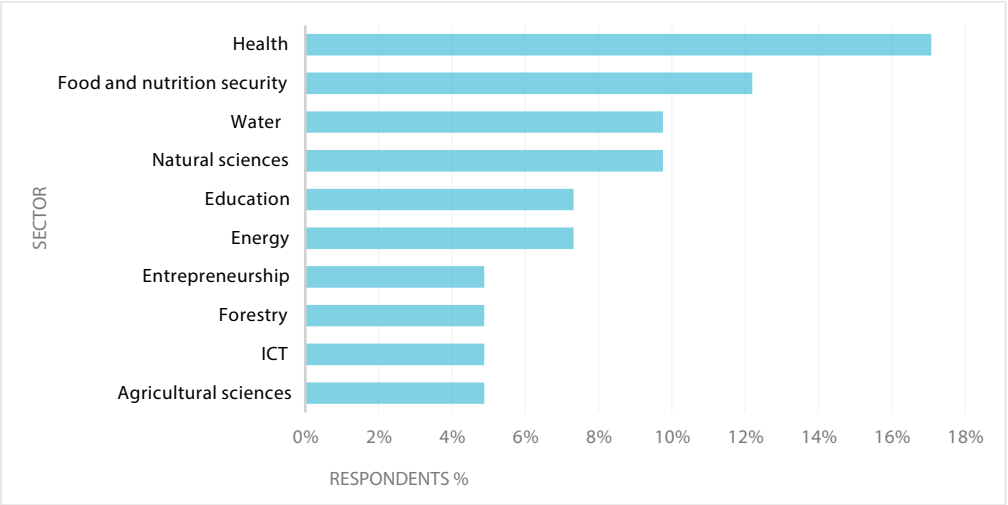


Figure 10: Finnish-African STI cooperation by sector mentioned on the FinCEAL Plus questionnaire on Finnish-African STI collaboration

When asked '*What type of STI activities have you been involved in over the last 3 years?*' 59% of the respondents indicated that they focus on **research** projects, which is logical given the high number of participants from universities (Figure 9), while 15% and 12% focus on **product and service development**, and **commercialization of new technologies, products or services** respectively. In general, STI activities between Finland and Africa are, to a large extent, focused on **capacity building and knowledge generation**, with 64% of the respondents working on issues such as education, training, development of learning environments, supervision of PhD students, mentoring, knowledge transfer and community development.

This is very much in line with responses given by ministries and government agencies, where most funding directed to Africa is tied to development cooperation. For instance funding of the Development Research Programme at the Academy of Finland, and the HEI ICI programme at the EDUFI, originates at the Ministry for Foreign Affairs, which aims to implement development policy through these programmes. Similarly, the

large STI programmes with Africa are largely funded by the Ministry for Foreign Affairs. Although the Ministry for Foreign Affairs also funds private sector programmes (Table 1) and even co-funds programmes like BEAM, **development policy seems to play a larger role in guiding the activities, than say science policy, industrial policy or technology policy**. Activities related to the Ministry of Education and Culture's Internationalisation Policy and Strategy for Education Export (international research, education and training) are however occurring, and thus these two policies and strategies seem to guide at least part of the activities.

The respondents mentioned research and higher education institutions as their most important partners, well in line with the activity focus on research. Collaboration with NGOs was also deemed important, whereas private sector collaboration was less important, with only 6/40 mentions of entrepreneurs and companies. About 33% of the respondents have been involved in private sector engagement to some extent. However, the respondents indicated that the Finnish private sector is more actively involved than the African private sector. Private sector engagement has been limited more to provision of material support and/or the role of associate partners. While EDUFI notes that there has been a clear increase in private sector engagement in the projects they fund, they also see more involvement of non-academic partners like NGOs and local communities. The Academy of Finland, on the other hand, does not note much increase in private sector engagement. This is attributed to the thematic focuses of the research programme. Cross- sector cooperation is seen more in the fields of natural sciences, engineering and ICT, which work more closely with industry. The BEAM programme, however, is focused on the private sector, and they have not seen many new actors enter the scene. Those funded through the programme are familiar with Africa. These funded entities are usually private sector and they may sometimes partner with research institutions, and tend to work with other private sector in Africa or iNGOs.

Finnish NGOs/CSOs mostly engage in capacity building activities, but do participate in STI through research and technology innovation, for example among rural farmers. Finnish NGOs/CSOs are involved in the development of innovative solutions that are easily adapted to local contexts in Africa. Collaborations are usually forged with other NGOs/CSOs (e.g. farmer associations, cooperatives, cooperative unions) and local technology research institutes.

The duration of STI collaboration projects between Finland and Africa vary highly, depending on funding instruments. However, the majority fall within the frame of 3–5 year projects (48%). Only 38% of the respondents were well aware of the funding instruments for STI collaboration, whereas the majority of respondents (62%) said they were only slightly aware or not aware and needed more information on funding instruments for STI.

4.2.2 Collaboration with African countries

STI collaboration between Finland and Africa distinctively occurs in **East Africa**, **Southern Africa** and in **Anglophone West Africa** (Figure 11). The most popular partner countries for Finland are **Kenya**, **Tanzania**, **South Africa**, **Ghana** and **Nigeria**. **Ethiopia**, **Zambia** and **Namibia** form the second most popular group of partner countries for Finland.

Most of these are the defined long-term Africa country partners within development policy. Other collaboration with Africa is more ad hoc and is spread thinly over sub-Saharan Africa. Collaboration with Francophone West Africa is mostly non-existent except for one or two mentions of Burkina-Faso. The data shows surprisingly very little collaboration with North African countries.

Comparatively, Finnpartnership funding (private sector funding) to African countries has increased gradually between 2006 and 2017 (Finnpartnership, 2016; Finnpartnership, 2017) with total funding to the region by 2016 amounting to slightly over €11 million for 278 projects. In 2017, Finnpartnership funding for Africa-related projects grew from 31% to 44% of all Finnpartnership funding (Finnpartnership, 2017). The most popular African countries that have featured as partners in Finnpartnership projects in 2016 are Kenya (45 projects, €1.98 million), Tanzania (45 projects, €1.93 million), Ethiopia (26 projects, €1.2 million), South Africa (21 projects, €750 00), Ghana (20 projects, €1.1 million) and Namibia (19 projects, €740 000). This corresponds well to the data above on STI collaboration with Africa. However, Finnpartner-ship (2017) also notes that increases in funded projects in, for example, Kenya and Tanzania, stem from "Doing Business with Finland" seminars in Africa and business delegation trips to the region, where Finnish beneficiaries have been given Finnpartnership support.

On the other hand, Finnish-African trade occurs on another dimension (Figure 12). Statistics from the Finnish Customs indicate that in 2017, Finland's biggest trading partners in Africa were Egypt and Congo, followed by South

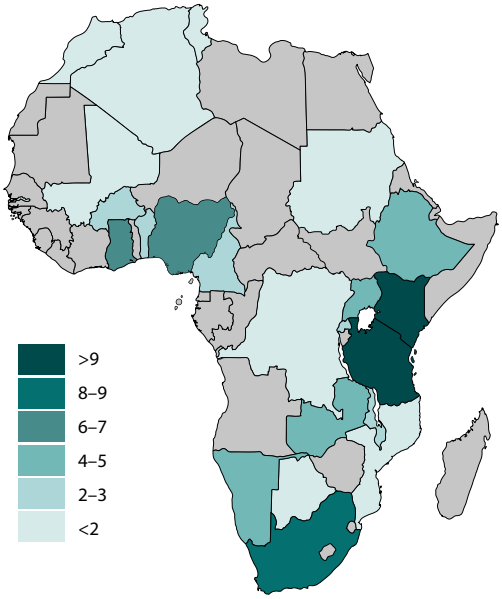


Figure 11: African countries mentioned on the FinCEAL Plus questionnaire, on Finnish-African STI collaboration, as Finland's partners on STI

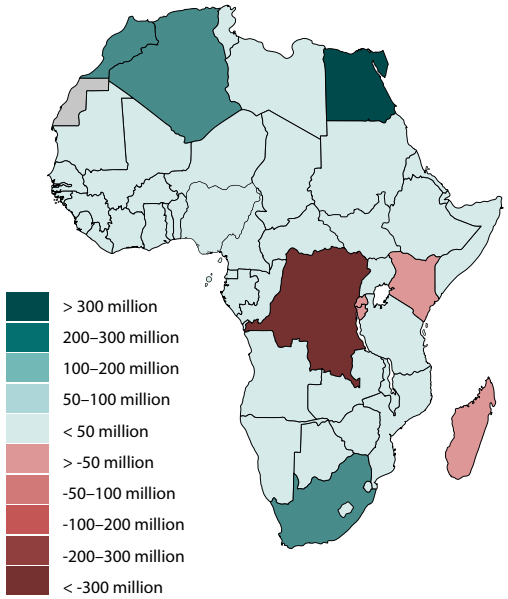


Figure 12. Finnish trade with African countries in 2017 (import and export balance, million EUR) Source: Finnish Customs Statistics, 2017.

Africa, Tanzania, Nigeria and Zambia. Finland has a trade surplus with all the countries mentioned, except Congo, with whom she shares a trade deficit.

Finland mainly exports paper and board to Egypt, while to the other countries, machinery is the most prominent export, e.g. to Tanzania (electric generators, hydraulic pumps). In addition, vehicles have recently been exported, e.g. to Ethiopia, Mali and Tanzania, while dump Vehicles used to carry bulk material, used on construction sites, road building etc.) have been exported to Zambia. Other Finnish exports to Africa include fertilisers and pharmaceutical drugs.

Finland imports mainly agricultural produce, coffee and tea from the above-mentioned African economies, except in Congo where Finland imports are mostly composed of different types of metals. In 2017, imports from Congo increased dramatically by 157%, compared to 2016 (Finnish Customs Statistics, 2017). This was most likely a large metal consignment and demonstrates the typical votality in raw metal imports from Africa.

The observation is that there is no clear connection between increase in Finnish-African trade and Finnish-STI collaboration. Furthermore, while there is increased facilitation for private sector collaboration (through Finnpartnership, Business Finland etc), this has not yet translated into increased trade between Finland and Africa.

On having a common approach for cooperation with Africa, half the respondents were not aware if their institution had an Africa strategy, whereas 18% said their institution had an Africa strategy that was in place or was being formulated and 20% said their institution had no Africa strategy. However, collaborations are aligned to the institutional strategies and broader policies in place in Finland and in the partner countries.

Empirical evidence gathered from the interviews indicates that the Finnish ministries and agencies do not have their own specific Africa strategies either, but rather, cooperation with Africa follows one or more broader policies or frameworks, e.g. Development Policy (with its four policy priorities), the Agenda 2030, Agenda for Sustainable Growth, Vision for Higher Education and Research in 2030, etc. Funding programmes are also aligned to these policies and strategies. Collaboration with Africa has traditionally been guided by development policy, and in the future, it seems will continue to be so.

The overall guiding principle when making decisions on collaboration with Africa is social impact. The Ministry for Foreign Affairs drafts country strategies for Finland's long term partners: Ethiopia, Kenya, Mozambique, Tanzania and Zambia, and these guide most of the Finnish funding directed to these countries, regardless of whether it is to support ODA activities or private sector engagement. The challenge it seems, lies in aligning development policy and other Finnish policies that govern STI. This was also noted by the OECD specifically in the context of increased interest in working with the private sector. Although the different Finnish stakeholders agree that it is vital and necessary for achieving sustainable development, there is no consensus as to what private sector engagement means for development (OECD, 2017).

While education does appear as a funded activity in the various African country strategies, it has not been emphasized within development policy. A recent report on Finland's role in education (Reinikka et al., 2018) recommends that the Ministry of Foreign Affairs and the Ministry of Education and Culture oversee preparation of a new education policy for stepping up Finland's global role in education within development cooperation.

Education export is an activity that the interviewees indicated could benefit well from the experiences of actors that implement ODA activities. Education export to Africa is still in its fledgling stage and no official statistics regarding this are yet available. However, there are education export activities in Namibia, Botswana and South Africa. Projections suggest that new markets are opening up in Egypt, Tanzania, Ghana and Ethiopia (Tuomi, 2018).

Education Finland notes that the novelty of education export does require the development of funding instruments specific for this sector, to facilitate activities such as partner-identification, market research, market entry and so forth. Establishment of credit-risk funds, collective investment funds etc. could well support the sector. Certainly, networking with other stakeholders already familiar with the region is always useful. On the other hand, EDUFI notes that sometimes education exporters may only meet the Agency's beneficiaries working with Africa in the field. This can lead to the creation of interesting networks, and sometimes education exporters wind up applying for ODA funding as a way to familiarize themselves with the region.

Strategy-wise, no institutions mention having a particular plan to export education to Africa. Education Finland also does not mention Africa as a key focus area, but rather as an area to watch. On a tactical level, education export is targeted to middle-income and high-income countries.

Where Finnish organisations lack a long term collaboration plan specific to Africa, activities are thus **ad hoc**, **informal** and **transitory**, which has led to an equivocal attitude towards private sector engagement, even though there is a high interest in collaborating with African partners beyond research, education and capacity building. This emerges from the interview data which shows that ministries and agencies have perceived high private sector interest to engage with Africa, whereas on an implementation level, NGOs/CSOs and the academic community cite challenges in private sector engagement (section 4.2.4).

4.2.3 Benefits of Finnish-Africa collaboration

Respondents cite several benefits of STI collaboration between Africa and Finland (Table 2). Benefits to Finnish organisations range from **network formation** to **knowledge exchange** and **global responsibility**, but the emphasis seems to be on **research collaboration** and **knowledge exchange.**

Box 2. Some Indicators for public funding of universities in Finland from the Ministry of Education and Culture from 2017

- Degrees awarded
- Employed graduates
- Mobility of students to and from Finland
- International teaching and research personnel
- Research funding
- International publications in highly ranked scientific journals and books

The focus on certain activities, for instance, research and producing publications on part of Finnish organisations, may be attributed to the steering of university activities (e.g. publication production) by the Ministry of Education and Culture, which rewards Finnish universities through its funding model (Box 2). However, these are activities that form the essence of a university.

The questionnaire responses indicate that Finnish organisations also consider STI collaboration as part of their global responsibility activities. However, it should be noted that during the interviews, observations were made that global responsibility activities seem to have decreased and the emphasis is on collaboration for business and trade. This discrepancy is attributed to a polarisation on the part of the policy makers and implementers. While policy makers have, in line with global trends, shifted policies and funding alignments to encourage business engagement and trade, the implementers on the ground (and especially in universities and universities of applied sciences) still view global responsibility as an important element of their work and of their role in society.

Furthermore, there is also clearly an interest in collaborating with African institutions in line with the Ministry of Education and Culture's international higher education and research policy, where there is an emphasis on internationalisation, promotion of Finnish education and education export. However, it should be noted that the policy itself does not emphasize Africa as a region, which further steers and aligns Africa collaboration to development policy.

The benefits of STI collaboration with African partners do correspond well to those of Finnish organisations, indicating coherence to some extent in terms of network formation, knowledge exchange, research collaboration, capacity building, education and training. It should, however, be noted that benefits highlighted for both African and Finnish organisations were given by respondents in Finland and not the African partner countries. African partners are deemed to benefit from **access to modern technology**, **infrastructure** and **publications**. Many African institutions do suffer from a lack of access to recent research articles and publications, compared to their Finnish counterparts. STI partnerships help in combating this particular challenge.

The results show that Finnish-African STI collaborations may be skewed not on development of Africa's STI capacity, but on developing Finland. The interviewees also noted that the arena is also undergoing a paradigm shift, for instance through calling for co-financing from the African private sector and replacing bilateral collaboration with larger multilateral collaboration. This is apparent also from the different funding instruments which call for larger and more diverse consortia and co-financing or self-financing.

Table 2: Benefits of Finnish-Africa STI collaboration according to Finnish STI actors

Benefits of Finnish-African STI collaboration to Finnish Organisations	Benefits of Finnish-African STI collaboration to African Organisations
Networks ● Forming networks (diverse and multidisciplinary networks) ● Expanding existing networks ● Forming partnerships (research partnerships, UN organisations) **Knowledge exchange** ● Learning experiences ● Coproduction of knowledge ● Increased Africa knowledge ● Integrating traditional and scientific knowledge **Research collaboration** ● Conducting collaborative research ● Publications ● New PhD students ● Research exchange ● Access to data in Africa ● Dissemination of research and media exposure ● Good research and project subjects ● Access to specimens **Capacity building** ● Enhanced capacity of scientists ● Increased cultural competencies **Education** ● Study credits for students **Employment** ● Employment opportunities within the projects **Global responsibility** ● Concrete actions in regard to HEIs' global responsibility ● Contribution to SDGs **Ministry of Education and Culture vision related** ● Internationalisation of personnel at HEIs ● Promotion of Finnish university and Finnish education system	**Networks** ● Strengthening of international and multidisciplinary networks ● Expertise and assistance in projects **Knowledge exchange** ● New ideas ● New insights for community development ● Distribution of knowledge ● Coproduction of knowledge **Research collaboration** ● Identification of problems in fieldwork ● Dissemination of research results ● Joint publications ● Scientific visits ● Sharing of research resources **Capacity building** ● Improved expertise ● Updating and enhancing research skills **Education** ● Production of training material ● Hosts for exchange students ● Master's and doctoral degrees ● Scholarships ● Free courses **Technology and methodology** ● Access to modern monitoring equipment and international data ● Material inputs ● Access to new knowledge and modern techniques ● Access to publications and libraries ● Access to internet **Awareness Raising** ● Raising awareness of African research ● Raising awareness about Africa **SDGs** ● Improved food security, less poverty

4.2.4 Outputs of Finnish-African STI collaboration

Finnish-African STI collaboration results are utilised in various ways (Table 3). Both Finnish and African partners use their results similarly in some instances **to enhance education, training and capacity, to inform policy and to enhance research collaboration**. However, in other instances, while African organisations are deemed to be using the results of the collaborations to adapt technologies and improve their processes, products and services, the same emphasis is lacking from the perspective of Finnish organisations, which use the opportunities more to promote Finland, for instance through education export.

Transfer of intellectual property rights (IPRs) related to STI collaboration is an issue, which seems unaddressed in most cases. In some instances, data and information is deemed as open access. On the other hand, some respondents cited joint ownership of the data, but there is little said on what this actually entails. Some respondents referred to the standard agreements made between Finnish organisations and their African counterparts, but the data does not actually show what the standard agreements actually say regarding IPRs and ownership or transfer.

STI collaboration results are disseminated through a variety of channels, ranging from scientific publications and reports to newspapers and television. Similarly, workshops, seminars, conferences and competitions like the Helsinki Challenge Cup and Slush are arenas that can be used. Respondents also sited ministries in both African partner countries and in Finland as a means to disseminate information about their STI collaboration. Only two respondents out of 40 mentioned social media as a means to disseminate information about their STI collaboration, which was a surprising find.

Table 3: The use of STI collaboration results by Finnish and African organisations

Use of STI collaboration results by Finnish organisations	Use of STI collaboration results by African organisations
Education, training and capacity building ● For education and training ● Fieldwork and demonstration sites for students and researchers ● For capacity building **Policy making** ● Proposing new policy ● Results used in identifying community needs **Research collaboration** ● Results published in scientific articles ● More research exposure ● Building research profile ● In planning of future projects and research ● Expansion of research ● For further product development **Promotion of Finland** ● Promotion of Finland, Finnish research, education and tourism opportunities ● Image building of Finland ● To enhance Finnish education export **Business development** ● For business renewal ● Some results may be exploited commercially **Networking and partnerships** ● Results will be used to widen networks	**Education, training and capacity building** ● Capacity building ● Increased number of scholars and researchers ● Stronger study programmes ● Increased investments into education and training locally **Policy making** ● To inform policy ● Results are commercially exploitable, can provide jobs locally **Research collaboration** ● Awareness raising of research ● Enhanced research capacity ● Joint publications **Improved processes, products and services** ● Improving processes e.g. farming and agriculture ● Provision of information on how to scale up **Technology transfer** ● Adapting technology locally ● Provision of technology to adapt ● Development of demonstration sites and field works sites for research and training **Networking and partnerships** ● More attractive partnerships through established Finnish partnerships (including public-private partnerships)

4.2.5 Positive experiences and challenges in the Finnish-African STI landscape

Respondents stated several positive experiences related to Finnish-African STI collaboration which centre on high motivation and interest in partnering, and in mutual trust and commitment to the activities and collaboration. In addition, the access to data and opportunities to use the results of the STI collaboration in solving real-life challenges is deemed positive. The Ministry of Economic Affairs and Employment notes increased private sector-NGO cooperation and emerging impact investment.

The challenges faced are multi-faceted. On one hand, respondents to the questionnaire and interviewees all indicated that cultural differences, language problems and different work cultures pose challenges. In addition, on many occasions Finnish organisations are not well aware of the working environments in African countries and may be inflexible in their working mode. Similarly, African partners may not respect deadlines as strictly as their Finnish counterparts do.

African research and higher education institutions may also not have a similar flexibility to Finnish institutions when it comes to collaborating with external stakeholders. It follows that African partners in STI projects are deemed to have little experience in partnering with external stakeholders, especially private sector, and thus tend to keep to their own institutions. Furthermore, lack of continuity in funding, lack of adequate funding and even slow release of funds by funders hinder STI collaboration.

There are bureaucratic and logistic challenges involved that hinder STI collaboration, for instance organising travel between Africa and Finland is sometimes complicated and access to certain areas and regions may simply be very difficult. Finnish start-ups also lack sufficient funds to finance projects in Africa. Moreover, responses suggest that Finnish companies may have a significant fear of venturing into emerging markets. Finnish companies are also sometimes inflexible in scaling down on issues like product design and localising their products. They then easily lose out on deals to other Nordic countries, for example.

Similarly, when it comes to education export, higher education institutions may have education export experts who are not familiar with international affairs in their own institutions. This leads to discrepancies and gaps in information.

From the perspective of the African partners, scenarios where the same Finnish partners (organisations or persons) serve multiple roles can be very confusing and leads to uncertainty on e.g. "is this venture about trade, education export, research or capacity building?"

Building large consortia with research institutions from African countries has been challenging and collaboration at EU level is complicated by EU regulations that may not always be aligned to national and institutional strategies in African partner countries.

Collaboration is often pursued with big, established institutions without involving communities, implying that collaboration focus is imminently narrow. Moreover, the academics at such institutions tend to be overworked due to the massification of education in many African countries. Consequently, it is sometimes difficult to find well-committed partners to implement projects, which sometimes results in frequent changes in project personnel.

Knowledge bases within African NGO/CSO community projects may be too low to extract maximum benefit from developed and adapted applications. Other challeng-

es are technological and infrastructure-related, where African partners may not have the necessary research infrastructure. Furthermore, African partners are deemed to lack published works in international journals, which makes it difficult to assess their research capacity and commitment. Shorter research histories and experience of the African partners also cumbers STI collaboration.

A huge challenge in Finnish-African STI collaboration is the lack of a collaboration framework and action plan. Finnish organisations hardly coordinate their efforts and work in silos, rather than in partnership with other Finnish stakeholders. This is not seen only at the implementation level of STI projects. The different Finnish ministries and agencies all have their own different funding programmes, but information exchange on programme level does not happen nearly enough. There is certainly room for better networking and collaboration, e.g. joint events, and even pooling of funds to support common interests and agendas.

African partners are not adequately involved in the formation of collaboration frameworks. African counterparts, during the focus group discussions, indicated that when discussing STI collaboration, expectations and focuses should be clearly discussed and agreed upon. Commercialization of innovations is of very high interest to African institutions, whereas in Finland, the interest is more focused on research and capacity building. Investors in Africa expect that a product or innovation will lead to a change in society or economic growth, whereas governments may want immediate results from their innovation funding. In STI work in Africa there is a belief in the notion of high efficiency of large companies, and that STI is always socially beneficial. This may or may not be true.

In Finland, the last evaluation of the HEI ICI programme (Salmi et al., 2014) gave recommendations for collaborating with smaller, less-known and rural institutions in emerging economies, which have largely gone unheeded by Finnish academia. The operating environments and implementing actors obviously decide on the focus of their own STI collaboration and their partners. While policy and evaluations may give recommendations, it is imperative to discern how to achieve these goals. Certainly, the implementing actors need to have incentives to align their activities a different way. For the moment, while the Ministry of Education and Culture rewards Finnish universities for research collaboration and production of publications (two-thirds of the funding), it is clear that Finnish universities will continue to emphasize research and publication production within their STI collaboration with Africa, and will partner with well-known institutions that can address this goal, rather than the small, rural, lesser-known ones.

4.2.6 Future outlook of STI collaboration between Finland and Africa

Africa will continue to remain an important collaboration partner for Finland. While Africa is one of the eight priority areas within the Team Finland Knowledge Network, various Finnish organisations have reorganized themselves to have regional teams to further boost their bilateral cooperation.

A great majority of the respondents (75%) intend to increase their collaboration with Africa, while 25% aim to maintain the current level. No respondent aimed at decreasing collaboration. The respondents mention that "Africa offers a unique environment for research and results and other outputs serve well the objectives of development cooper-

ation". The opportunity to make meaningful contributions and address the urgent need to continuously develop research in Africa is a motivating factor. Increasing STI collaboration is also seen as a means to promote the Finnish education system and education export. Indeed, the Ministry of Economic Affairs and Employment notes that the interest of private enterprises in collaborating with Africa has increased in the last 5 years. African counterparts call for more innovative collaboration between the North and South and to focus on commercialization of outputs.

While interest and focus within Finnish-African STI collaboration is predicted to remain relatively stable, there is no evidence to suggest that actors in the landscape will change either. Similarly, ministry and agency representatives indicated that while funding increments to the region are not expected, further funding cuts are not expected either.

Redirection of funds may, however, occur in order to meet the inherent changes in the landscape, for instance shifting from bilateral to multilateral collaborations and co-financing models as well as increased integration of the private sector.

The focus on business and trade engagement (including education export) is expected to rise, but this will require more stringent strategic planning. In fact, in a recent futures review of the Ministry for Foreign Affairs, the government highlights stronger partnership with Africa as one of its continued core missions: "*… invest in closer political and commercial relationships as well as more comprehensive and effective presence in Africa, and support sustainable development and economic growth in Africa. Partnerships will be diversified by focusing on commercial and economic cooperation as well as innovation cooperation.*" (Ministry for Foreign Affairs, 2018)

Team Finland arranges minister-headed business delegation visits regularly to the region, but more concrete outputs are hoped for, especially in terms of STI collaboration. Most of these visits are focused on promoting Finnish business engagement and the space for promotion of other STI collaboration with other stakeholders, for instance NGOs/CSOs, research institutions and higher education is limited. Proper engagement with African partners when planning these visits is required in order to achieve better partnerships that lead to concrete outputs, rather than purely the exchange of business cards.

Incorporation of education export into Finnish STI collaboration requires a definition of synergies between education export and other modes of collaboration, including the value added to African partners. With a few exceptions in Namibia, South Africa and Botswana, education export activities between Finland and Africa are limited to technical assistance and consultancy. Finance in education in Africa suffers a unique and persistent gap, and while the needs are imminent, it is imperative to explore how to build global partnerships to enable development of this sector, for instance new models for investing in education in Africa, and to ensure not just financial sustainability, but also social sustainability of the initiatives. Funding to ensure proper market entry research and partnership building would be valuable.

As there is increased emphasis on excellence and strategic partnerships, Finnish organisations envision a collaborative partnership with Africa that is long term, oriented with a solid strategy for continuity with flexible funding instruments that allow for a more diverse pool of participants within STI collaboration. Increased and deeper networking between Finnish stakeholders working in Africa is called for. This could be ar-

ranged across central themes and in collaboration with a varying pool of enabling actors e.g. a combined effort of the Finnish National Agency of Education, UniPID, a business network and an NGO/CSO network. Furthermore, there is a desire for a joint Nordic funding instrument to consolidate thematic STI activities implemented by partners in Africa and in the Nordics. Both Finnish and African counterparts call for deeper SDG-oriented STI work to produce innovations that can address the interconnectivity of the SDGs, which would be particularly valuable. Embedding entrepreneurial attitudes at universities is also important.

5. SUMMARY OF FINDINGS AND RECOMMENDATIONS

This report was compiled with three aims:

1. To explore the different strategies that exist in the Finnish-African STI landscape
2. To review the current context and landscape of Finnish-Africa STI cooperation
3. To explore if the drive for private sector engagement has affected Finnish-African STI collaboration

We conclude that while there are several policies and programmes to facilitate STI collaboration between Finland and Africa, **no clear national or institutional approach exists currently. Rather STI work is planned, facilitated and implemented in silos in an ad hoc and transitory manner.** In addition, we conclude that **while the drive for private sector engagement has affected Finnish-African STI collaboration, it is unclear what the real effects are.** Considering that policies encouraging private sector were only enacted in 2016, it would be useful to conduct a follow-up study in 2-3 years to gauge the impact. We observed that there is definitely an increase in interest in the region and in creating diverse partnerships, however the paths and incentives for doing this are lacking. Furthermore, while there has been increased seed funding to Africa from Finland and Finnish-African trade has increased, there is no correlation between the two issues and that the increase in Finnish-African trade is unrelated to STI activities. Furthermore, while private sector engagement has increased and is encouraged, benefits have not accrued to the scientific community.

We present our main findings and recommendations as follows:

1. NEED FOR A CLEAR, LONG TERM COLLABORATION PLAN SPECIFIC TO AFRICA

- STI cooperation between Finland and Africa is mostly ad hoc, informal and transitory.

WE RECOMMEND that **a long term collaborative roadmap for Africa be compiled with specific action plans** at different levels, in order to lend structure and become more goal-oriented. We recommend that this strategy be aligned to Agenda 2030 and innovative approaches like the Transformative Innovation Policy be explored as potential frameworks. We recommend that the strategy be relevant and streamlined across all the ministries and not be limited to development cooperation policy. Involvement of African partners in this work is essential in this process. The premise is set, thus: develop a strategy for Africa, with Africa. Furthermore, institutions may also be encouraged to devise action plans for their African collaboration.

2. NEED FOR BETTER ALIGNMENT AND COOPERATION BETWEEN THE DIFFERENT STAKEHOLDERS IN FINLAND

- Opportunities that Finnish bilateral and multilateral STI initiatives present to enhance Finnish-Africa STI cooperation are not fully explored. As a result, the initiatives do not reflect increased cooperation (or funding) between Finnish and African STI actors. While programmes and projects exist, information is not shared readily, even between ministries, funding agencies or even implementers.
- Initiatives by the funding agencies (Academy of Finland, Business Finland, Finnish National Agency of Education, BEAM) occur in silos with no pull or push factors encouraging cooperation among the beneficiaries.Education exporters at higher education institutions have may sometimes have little information about internationalization within their own institutions. They also may have little information on collaboration with the region.

WE RECOMMEND that **a platform for collaboration between Finnish actors active in Africa be convened**, for instance through a combined effort of EDUFI, the Academy of Finland, UniPID, SANORD, Business Finland and the ministries. Harnessing the experience of UniPID and SANORD can add value as they are well-established, member-based organisations, although still unfamiliar to the larger arena.

3. NEED TO MERGE DIFFERING INTERESTS OF FINNISH AND AFRICAN STAKEHOLDERS

- While both African and Finnish counterparts are interested in research and capacity building, there is also a high interest in commercialisation of innovation from the African side, which has received relatively little attention from the Finnish side.
- An ecosystem where the same stakeholders implement ODA projects but are also working to promote trade and education export is confusing to African partners, especially as the roles and positions of Finnish experts may not be very clear
- Different work cultures, differing levels of commitments and unclear role determination within projects hinder STI project progress.

WE RECOMMEND that **commercialisation of innovations is given added emphasis and financial support within funding programmes. We recommend deeper, better and clearer communication with African partners to determine interests, roles and expectations.** Trade promotion and education export delegations to Africa should better clarify the roles, objectives and expectations of Finnish participants to African counterparts. Partnering with African counterparts is essential to develop this arena in order that these trips are worthwhile to private sector and education exporters. Furthermore, deepening communication allows for less misunderstandings in regard to work culture and expectations. African partners should also be given the space to decline participation in situations where they cannot commit their time resources.

4. CROSS-SECTOR COOPERATION NEEDS MORE FLEXIBLE FUNDING INSTRUMENTS

- Rigid funding rules, especially in the private sector instruments, which hinder co-operation with the scientific community as more emphasis is placed on technology and innovation, rather than science and other cross-cutting themes
- Finnish businesses have mostly been involved in Finnish-African research focused STI projects as associate partners or as providers of material support

WE RECOMMEND **realigning funding mechanisms to allow for more flexibility** in allowing a wider array of partners in more dynamic roles in projects. Furthermore, we recommend exploring the possibilities of funding to **facilitate partner searchers and market studies related to education export to Africa**, including identification of funders and development of appropriate funding mechanisms. Finnpartnership and PIF may be instruments that could help facilitate.

5. NEED TO RECOGNISE THE GLOBAL RESPONSIBILITY ROLE OF HEIS AND ENCOURAGING OF STRATEGIC PARTNERSHIPS

The pull factors for the research community to partner with Africa remain rooted on capacity building and solving social and scientific problems. The research community still believe in global responsibility. A shift towards "business thinking" has not really occurred in basic research funding institutions or in the research community. In addition, while the Finnish business community indicate interest in engaging with Africa, there have not actually been any major breakthroughs in increasing trade with Africa through STI collaboration. While Finnish-African trade has increased, the African countries where trade occurs differ from those where STI collaboration takes place. In addition, traded goods are unrelated to the outputs of STI collaboration.

Increased focus on trade may deflect the activities needed to maximize STI as a tool to achieve the SDGs and sustainable growth. In addition, while companies have been encouraged to engage in corporate social responsibility (CSR) activities CSR, companies do not do business solely for CSR reasons. However, opportunities for creating diverse partnerships exist and should be well facilitated.

WE RECOMMEND **reinstating and recognising the global responsibility role of higher education** especially in regard to implementing the SDGs. Further, **enterprises are encouraged to venture to Africa with an open mind, ready to be flexible and localise their solutions. Strategic partnerships** between businesses, NGOs/CSOs and the scientific community may boost business and thus are encouraged.

6. NEED TO RECOGNISE NGOS/CSOS AS PART OF THE INNOVATION SYSTEM

There is no consolidated information available on STI activities conducted within Finnish-African NGO/CSO collaboration. Many NGOs/CSOs recruit professionals locally and are well-positioned on the community level in their African partner countries. Companies and higher education institutions are already slowly recognising the value of partnering with NGOs/CSOs, but Finnish innovation policy does not recognise the space NGOs/CSOs hold and how to better engage them.

WE RECOMMEND **that NGOs/CSOs should be given well-deserved recognition for their work in Finnish-African STI and collaboration with them encouraged and harnessed.**

7. NEED TO ADDRESS IPR ISSUES SYSTEMATICALLY AND COMPREHENSIVELY

Acknowledgement of partners' rights to create, own, share and utilize results is a cornerstone for STI collaboration. Transfer of ownership of results and/or clear models for ownership of results including commercialization are essential.

WE RECOMMEND that **clear mechanisms and models for transfer of IPRs be developed together with African partners.** The landscape on this issue is certainly also very diverse in Africa. However, selection of a pilot area in which to initiate a modelling intervention may prove to be useful.

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APPENDICES

APPENDIX 1.

Global Commitments on Science, Technology and Innovation for Sustainable Development Goals (United Nations, 2017).

Overall theme	Commitment Actions as defined in the AAAA
National STI frameworks	• adopt and integrate STI strategies in national sustainable development strategies and avail incentives that support creation of technologies for research and innovation in developing countries (§119 and §116)
Scientific Research and Education	• scale up investment in science, technology, engineering and mathematics education; enhance open access to research and critical projects; enhance vocational and tertiary education and training and equal access for women and girls in the same, increase access to online education on sustainable development, increase scholarships to students in developing countries to enrol in higher education (§119 and §118)
Industry and Innovation Systems	• setting up innovation funds where appropriate, on an open, competitive basis to support innovative enterprises, particularly during research, development and demonstration phases; encourage knowledge-sharing and promotion of cooperation between different stakeholders; promote entrepreneurship, social innovation recognize traditional knowledge, innovations and practices of indigenous peoples (§117, §116 and §118)
Technologies Supporting Specific Development Outcomes	• promote the development and use of information and communications technology infrastructure, as well as capacity building, particularly in LDCS, LLDCs and SIDs and promote accessibility for people with disabilities, women, youth and children(§114) • encourage the development, dissemination and diffusion of environmentally sound technologies to strengthen scientific, technological and innovative capacity and sustainable production and consumption of developing countries (§120) • step up international cooperation and collaboration in science, research, technology and innovation, including through public-private and multi stakeholder partnerships, on the basis of common interest and mutual benefit, focusing on the needs of developing countries and the achievement of the sustainable development goals (§ 120)

Supportive international arrangements	• enhance international cooperation in these areas, including ODA, in particular to LDCs, LLDCs, SIDS and countries in Africa and encourage other forms of international cooperation in these areas, including South-South cooperation (§120) • recognizes importance of adequate, balanced and effective protection of intellectual property rights in both developed and developing countries in line with nationally defined priorities and in full respect of WTO rules (§116) • strengthen coherence and synergies among science and technology initiatives within the UN system (§122) • establish a technology facilitation mechanism to support the SDGs (§123) • operationalize the Technology Bank for Least Developed Countries by 2017 (§124)

APPENDIX 2.
INTERVIEW QUESTIONS TO MINISTRIES AND IMPLEMENTING AGENCIES

FinCEAL+ Africa policy brief / questionnaire for policy makers and implementing agencies

The purpose of this interview is to collect information on a policy brief being carried out by FinCEAL+. The policy brief looks at how the drive for private sector engagement has influenced STI cooperation with Africa. The interviews are anonymous and no mention of names or institutions will be included.

Basic information – will only be used during the transcribing process

1. Name of organisation
2. Type of organisation
3. Your role in the organisation:

Strategy questions

1. Does your organisation have its own strategy/policy for cooperating with Africa?
2. Does your organisation have a long term vision of development and engagement with Africa?
3. What is the focus of your long term and short term objectives and is education export one of them?
4. Is education export affecting your strategies in Africa in any way?
5. What are the guiding principles for your organisation's strategy/policy? i.e how do you decide what to focus on and how to implement it?
6. How has this strategy/policy changed in the last 5 years?
7. How would you say cooperation with Africa is placed in your Ministry in comparison to other regions?
8. Does your Ministry intend to increase, decrease or continue activities on the same level in the future? (funding, and/or focus)

Implementation questions

1. What type of STI collaborative activities have you, in the last 3 years engaged with in collaboration with African partners?
2. What kind of partners have you collaborated with in Africa on these initiatives? (Countries, Higher Ed, Research, Private Sector, Government, NGOs, INGOs…..)
3. When implementing these activities, do you consolidate private sector involvement and how do you do it?
4. What would you say is impact of having collaboration with the private sector in the projects?
5. What are the challenges you have faced?
6. What have been your positive experiences?

7. In what other ways does your organisation carry out cooperation with the region
8. How do you evaluate the results of your organisation's activities? (methods?)
9. Could you give an example of an activity that your Ministry has carried out on STI that involves cooperation with the Private Sector and the main outcomes of that project?

Funding questions

1. To what degree do the general national policies/strategy influence funding decisions on cooperation with the region in your organisation?
2. How would you say the funding landscape supporting cooperation with Africa has changed in the last 5 years?
3. How have these changes impacted cooperation with the region? e.g has there been an increase/decrease in cooperation, a change in focus on the themes or the type of cooperation.

Extra questions

1. In an ideal situation, how would you envision Finnish-Africa STI cooperation would look like in the future? e.g in regard to funding, the partnership, areas of priority.
2. The Finnish government has a vision that by 2030 Finland is the most attractive and competent environment for experimentation and innovation. How does your Ministry align activities towards this vision, specifically in respect to Africa

APPENDIX 3.
ANONYMOUS QUESTIONNAIRE TO THE SCIENTIFIC COMMUNITY

https://elomake.uef.fi/lomakkeet/20359/lomake.html

Finceal+ Africa Policy Brief on Finnish - Africa STI

Finceal + is writing a policy brief on how to bridge existing and new approaches for science, technology and innovation cooperation between Finland and Africa. We are specifically interested in how the drive for private sector engagement has impacted STI cooperation with Africa. We would like to hear from researchers on your views, insight and experiences on STI cooperation, through this questionnaire. Your responses will be handled confidentially and anonymously and will be utilised in formulating the policy brief which is tentatively to be presented at a Finceal+ seminar on 11th October. For inquiries, please contact Eva Kagiri eva.m.kagiri@jyu.fi or Roseanna Avento roseanna.avento@uef.fi

In which category does the organisation you work for fall into?

- ☐ Government research institution
- ☐ University
- ☐ University of Applied Sciences
- ☐ NGO/CSO
- ☐ Private Sector

* What field of work are you involved in?

* What is your role in your organisation?

What type of STI activities have you been involved in over the last 3 years?

- ☐ Research
- ☐ Product or service development
- ☐ Commercialisation of new technologies, products or services
- ☐ Other
- ☐ I have not been involved in STI activities

* Please elaborate on the type of STI activities you have been involved in

Which organisation partners have you collaborated in STI in Africa over the past 3 years?

- ☐ Higher Education Institutions
- ☐ Governments
- ☐ Research Institutions
- ☐ NGOs/CSOs
- ☐ iNGOs
- ☐ Other

* In which African countries have you been actively engaged in STI activities over the last 3 years?

* What was the objective of your most important STI project with African partners?

- What is the duration of your most important STI project?
- Which type of partners have been involved in your project and has your organisation collaborated with the same partners earlier and for how long?
- What are the benefits to your organisation from this STI project? (Material and/or Non-material)
- What are the benefits to your African partners from this project? (Material and/or Non-material)
- How will the results of the collaboration be used by your organisation? Please distinguish between results in the public and private domain.
- How will the results from the collaboration be used by your African partners?
- How have or will you transfer or control ownership or user rights of the collaboration results
- How have you disseminated results or lessons learnt?
- Does your organisation have its own strategy for collaborating with Africa and how is it aligned with national or EU policies?
- Are you aware of funding instruments that can enhance Finnish-Africa STI collaboration? Please elaborate on your experiences of using these in your STI activities with African partners.

To what extent do you agree or disagree with the following statements

- Our organization is motivated to develop and avail access to new technologies and processes that allow an achievement of competitive advantage.
- Our organization is motivated by the need for solving concrete problems.
- Our organization is formally compelled to collaborate with African partners.
- Our organization is mostly oriented to solving short-term problems.
- Our organization has long-term vision of development and engagement with Africa.
- Our organization pays great attention to innovation and new technologies.
- Our organization has sufficient funds for investment in STI collaboration with Africa.
- Our organization has sufficient human resources for STI collaboration with Africa.
- Our organization has many persons who well understand the STI landscape in Africa and how we can succeed in the African region.
- Our organization is not well equipped to work on STI matters in the African region.
- Our organization has sufficient access to proper support services – banks, taxation experts, IPR lawyers- to support STI collaboration with African partners

* Is private sector engaged in your STI activities and how?

* Do you collaborate on education in Africa and how is this aligned with STI?

* What challenges have you faced when implementing STI collaboration with your African partners? What are your positive experiences?

What is your future outlook on your STI activities with African partners?

- ☐ We intend to increase STI collaboration with African partners
- ☐ We intend to decrease STI collaboration with African partners
- ☐ We intend to maintain the same level of activity with African partners

* Please elaborate on why you either intend to increase, decrease or maintain the same level of STI activities with African partners

Any other comments?

APPENDIX 4. POLICY BRIEF

POLICY BRIEF

Eva Kagiri-Kalanzi, Roseanna Avento

BRIDGING EXISTING AND NEW APPROACHES FOR SCIENCE, TECHNOLOGY AND INNOVATION COOPERATION BETWEEN FINLAND AND AFRICA

UNIPID
FINNISH UNIVERSITY PARTNERSHIP FOR INTERNATIONAL DEVELOPMENT

FinCEAL+

EXECUTIVE SUMMARY

This policy brief on science, technology and innovation collaboration (STI) between Finland and Africa was compiled with three aims:

1. To explore the different strategies that exist in the Finnish-African STI landscape
2. To review the current context and landscape of Finnish-Africa STI cooperation
3. To explore if the drive for private sector engagement has affected Finnish-African STI collaboration

Though there are several policies and programmes to facilitate STI collaboration between Finland and Africa, there are no clear national or institutional strategies to guide or steer the activities. Rather, STI work is planned, facilitated, and implemented in silos, in an ad hoc and short-lived manner. It is also clear that the drive for private sector engagement has affected Finnish-Africa STI collaboration, however, the extent to which this has occurred is uncertain. Trade with Africa has increased, but most of the activities are not linked to STI, and while private sector engagement has grown and is encouraged, benefits have not accrued to the scientific community. It has been observed that there is definitely an increased interest in the region and in creating diverse partnerships, but there still remains challenges attributed to policy coherence, resource availability, incentives for cross-sector cooperation and strengthening cooperation based on mutual interests. This policy brief is recommending 6 actions:

1) **The development of a national and cohesive STI roadmap and implementation plan for Africa,**
2) **Convening a platform of actors active in Finnish-Africa STI cooperation to strengthen national cooperation,**
3) **Increasing flexibility within STI funding mechanisms to allow for cross-sector cooperation,**
4) **Realigning the policy on private sector engagement to incorporate higher education institutions' (HEIs) interests in global responsibility,**
5) **Added emphasis and financial support for commercialisation of innovations from project outputs, and better communication on the roles, objectives and expectations of Finnish participants to their African counterparts,**
6) **Developing guidelines for Intellectual Property Rights (IPRs) in Finnish-Africa STI projects.**

BACKGROUND

The move towards increased commercial engagement with Africa is not unique to Finland. Statistics in a 2016 report on international resource flows to developing countries from 2000 to 2016, show official development aid (ODA) has remained constant while commercial long term debt has increased (Development Initiatives, 2017). Finland's current development policy also emphasizes strengthening private sector engagement in Africa, an aim that led to the introduction of development policy investments to complement ODA in 2016. The rise of education as a marketable product globally has also seen Finland re-orient itself from a giver of free education. In 2009, the Ministry for Foreign Affairs and the Ministry of Education and Culture initiated policy-level discussions on education export leading to the Finnish education export strategy. Furthermore, since 2017, non-EU/EEA students training at bachelor's and master's level in Finland are charged tuition fees. On a policy level, Finland has a history of implementing STI projects with African partners. Many of these programmes have been carried out against the backdrop of development policy, international economic growth policy or internationalisation policy in education[1]. All these activities are however carried out within the individual ministerial frameworks, without a common strategy targeting Africa. This policy brief reviews the current Finnish-Africa STI landscape, synthesizes the different policies and approaches governing Finnish-Africa STI cooperation and analyses the extent to which the shift in Finland's policies towards increased private sector engagement has affected STI cooperation with the region.

APPROACH

This policy brief is based on a study conducted in the spring of 2018, by 1) carrying out a desk review and document analysis of Finnish and EU policy documents related to cooperation with Africa; 2) interviews with Finnish ministries and their agencies (Ministry for Foreign Affairs, Ministry of Economic Affairs and Employment, Ministry of Education and Culture, the Business with Impact Programme (BEAM), Academy of Finland, Finnish National Agency of Education), two network organisations, a private sector actor and two NGO/CSOs (a total of 11 organisations)[2]; 3) an online semi-structured questionnaire was also sent out to the scientific community and private sector from July to August 2018 through various mailing lists and social media; and 4) a workshop on "A Policy Brief on Existing and New Approaches for Science, Technology and Innovation Cooperation between Finland and Africa" organised during the 11th Annual SANORD (Southern Africa Nordic Research Centre) Conference in Jyväskylä in August 2018, where a focus group discussion and learning café were utilised to collate data on experiences of STI collaboration between Africa and Finland.

1 There are various examples of projects supporting Finnish-Africa STI cooperation. In 2013, **FinCEAL** (Finnish Science, Technology and Innovation Cooperation with Europe, Africa, Asia and Latin America and the Caribbean) was established with financing from the Ministry of Education and Culture to strengthen STI cooperation with the regions. The Ministry for Foreign Affairs is currently funding **SANBio-BioFISA I and II, The Southern Africa Innovation Support programme, SAIS I and II, FoodAfrica Programme**, The Academy of Finland's **Programme in Development Research** and The Finnish National Agency for Education's (EDUFI) **Higher Education Institution Cooperation Instrument (HEI ICI)**. The Ministry of Economic Affairs and Employment which steers Business Finland (formerly Tekes), has been co-financing the **Business with Impact (BEAM)** programme since 2015, a mechanism meant to support the access of Finnish enterprises to emerging markets. It also finances the **Emerging Market Growth Programme**.

2 Interviews were conducted between June and August 2018, and covered 11 individuals in the seven organisations. Due to unavoidable circumstances, the Ministry of Education and Culture and the Ministry of Economic Affairs and Employment and CSO representatives (i.e. four organisations) did not participate in Delphi interviews but rather answered a semi-structured questionnaire in written form over e-mail.
In total, the questionnaire was distributed to over 300 persons. Of these, 137 were directly targeted via e-mail, and the rest through the FinCEAL Plus and UniPID's "Focus on Africa" newsletters. The mailing lists subscribers and those e-mailed directly were scientists based in Finnish institutions.

The questionnaire received 40 anonymous responses. The vast majority of respondents to the questionnaire were from a university background (~73%), followed by NGOs or CSOs at ~12% and finally government research institutes (9.8%). Respondents from universities of applied sciences and the private sector equally comprised 2.4% of the respondents (Figure 1).

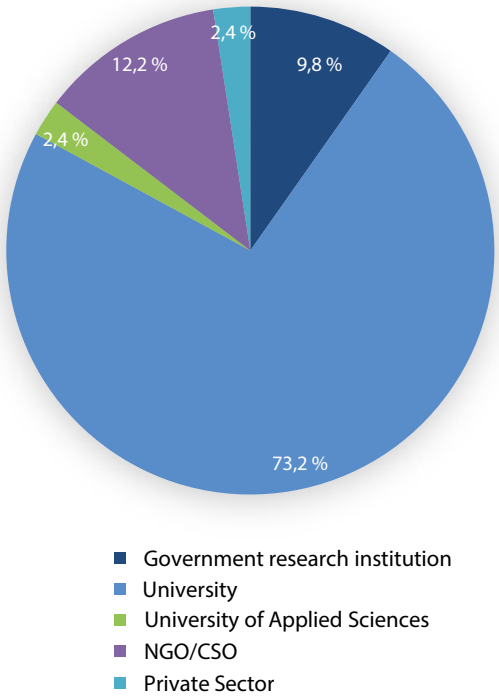


Figure 1. Organisations that participated in the FinCEAL Plus questionnaire on Finnish-African STI collaboration (Kagiri-Kalanzi and Avento, 2018)

RESULTS

STI COLLABORATION WITH AFRICA IS STILL LARGELY GUIDED BY DEVELOPMENT COOPERATION POLICY

Finnish national STI policy is primarily steered by the Ministry of Education and Culture and the Ministry of Employment and the Economy. However, when it comes to collaboration between Finland and Africa, the Ministry for Foreign Affairs' development policy plays the main role. Most Finnish-STI activities occur in **East Africa**, **southern Africa** and in **Anglophone West Africa** (Figure 2). The most popular partner countries for Finland are **Kenya, Tanzania, South Africa, Ghana** and **Nigeria**. **Ethiopia, Zambia** and **Namibia**. Most of these countries are Finland's long term development partners. The lean towards development cooperation is also visible in the sectoral representation of the data. Sectors that have been the focus of funding using ODA were also cited as the main areas of STI collaboration: health, food and nutrition security, water and natural sciences (Figure 3).

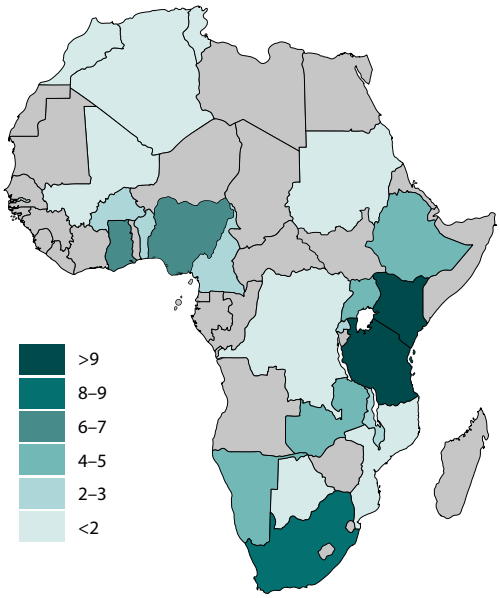


Figure 2. African countries mentioned on the FinCEAL Plus questionnaire, on Finnish-African STI collaboration, as Finland's partners on STI (Kagiri-Kalanzi and Avento, 2018).

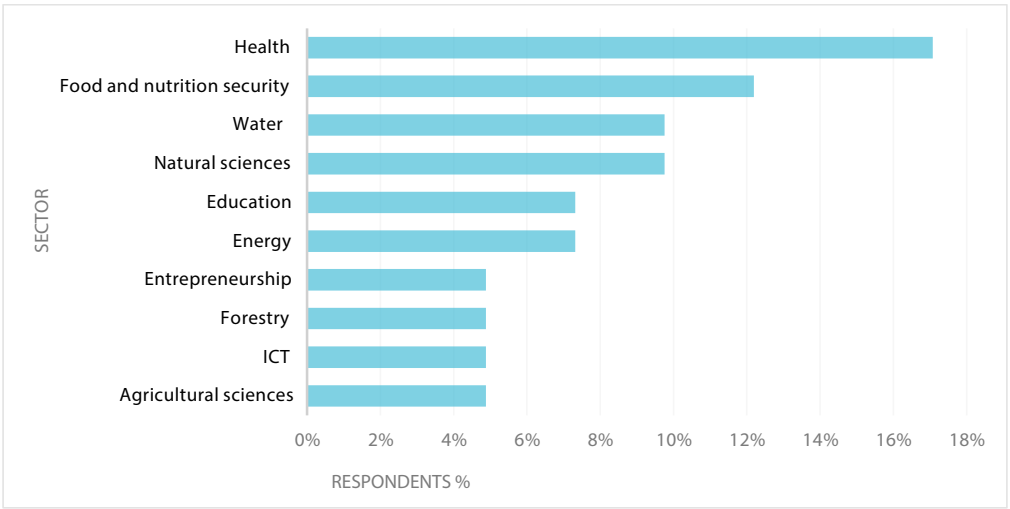


Figure 3. Finnish-African STI cooperation by sector mentioned on the FinCEAL Plus questionnaire on Finnish-African STI collaboration (Kagiri-Kalanzi and Avento, 2018)

BENEFITS FOR FINNISH-AFRICAN STI COOPERATION ARE NOT PRIMARILY ROOTED IN COMMERCIAL GAIN

Finnish organisations view STI cooperation with their African partners as important, citing a range of benefits from **network formation** to **knowledge exchange** and **global responsibility**, but the emphasis appears to be on **research collaboration** and **knowledge exchange** (Figure 4). Whereas Finnish organisations consider STI collaboration as part of their global responsibility activities, these activities have to a certain extent decreased through the emphasis on business and trade. This discrepancy is attributed to a polarisation on the part of policy makers and implementers. While policy makers have, in line with global trends, shifted policies and funding alignments to encourage business engagement and trade, the implementers on the ground, especially in higher education institutions (HEIs), still view global responsibility as an important element of their work and role in society.

Benefits of Finnish-African STI collaboration to Finnish organisations	Benefits of Finnish-African STI collaboration to African organisations
Networks • Forming networks (diverse and multidisciplinary networks) • Expanding existing networks • Forming partnerships (research partnerships, UN organisations) **Knowledge exchange** • Learning experiences • Coproduction of knowledge • Increased Africa knowledge • Integrating traditional and scientific knowledge **Research collaboration** • Conducting collaborative research • Publications • New PhD students • Research exchange • Access to data in Africa • Dissemination of research and media exposure • Good research and project subjects • Access to specimens **Capacity building** • Enhanced capacity of scientists • Increased cultural competencies **Study opportunities** • Study credits for students **Employment** • Employment opportunities within the projects **Global responsibility** • Concrete actions in regard to HEI's global responsibility • Contribution to SDGs **Ministry of Education and Culture vision related** • Internationalisation of personnel at HEIs • Promotion of Finnish universities and Finnish education system	**Networks** • Strengthening of international and multidisciplinary networks • Expertise and assistance in projects **Knowledge exchange** • New ideas • New insights for community development • Distribution of knowledge • Coproduction of knowledge **Research collaboration** • Identification of problems in fieldwork • Dissemination of research results • Joint publications • Scientific visits • Sharing of research resources **Capacity building** • Improved expertise • Updating and enhancing research skills **Training and education** • Production of training material • Hosts for exchange students • Master's and doctoral degrees • Scholarships • Free courses **Technology and methodology** • Access to modern monitoring equipment and international data • Material inputs • Access to new knowledge and modern techniques • Access to publications and libraries • Access to internet **Promotion** • Raising awareness of African research • Raising awareness about Africa **SDGs** • Improved food security, less poverty

Figure 4. Benefits of Finnish-African STI collaboration according to Finnish STI actors

OPPORTUNITY TO DEVELOP A COHESIVE FINNISH-AFRICAN STI ROADMAP

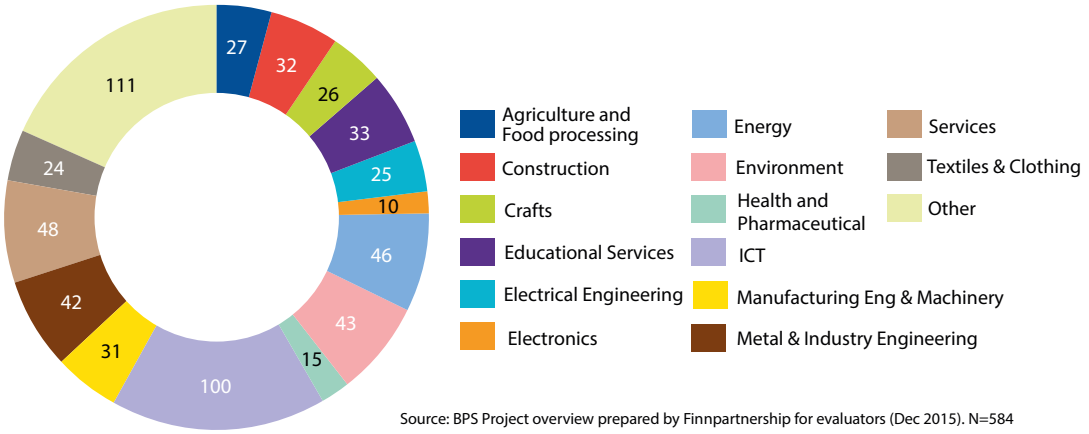
A large number of the institutions represented in the study do not have an Africa strategy. Only 18% of the 40 respondents said their institution had an Africa strategy in place or being formulated, and 20% said their institution had no Africa strategy. 62% were not aware or did not know if their institution had an Africa strategy. As a result, collaborations are aligned to the general institutional strategies and broader policies in place in Finland and in the partner countries. Finnish ministries and agencies interviewed do not have their own specific Africa strategies either, but rather cooperation with Africa follows one or more policies and frameworks, e.g. development policy (with its four priorities), the Agenda 2030, Agenda for Sustainable Growth, Vision for Higher Education and Research in 2030, etc. The funding landscape has a considerable impact on which policies guide cooperation, this has normally meant a lean towards the development policy. Additionally, different Finnish ministries and agencies all have their individual funding programmes, but information exchange on the programme level is not done nearly enough. There is certainly room for better networking and collaboration, e.g. joint events, and even pooling resources for joint initiatives. The lack of a joint national roadmap on STI cooperation with Africa also provides an oppor-tunity for strengthening cooperation and testing new approaches like the **transformative innovation policy**[3] – an emerging frame that looks at STI in the context of socio-technical system change and goes beyond economic growth.

SUPPORT FOR TRADE WITH AFRICA HAS INCREASED – BENEFITS HAVE NOT ACCRUED TO THE SCIENTIFIC COMMUNITY

There are various private sector instruments supporting STI cooperation between Finland and Africa derived from ODA allocations. An example is the Finnpartnership instrument[4]. Finnpartnership funding to African countries has increased gradually between 2006 and 2017. Specifically, funding for Africa-related projects grew from 31% in 2016 to 44% in 2017. From 2010–2015, Finnpartnership disbursed Business Partnership Support (BPS) funds covering 27 different sectors – ICT, Energy and Environment were in the top 5 and Education was 6th with 33 funded projects (Figure 5). The BEAM programme, launched in 2015 with co-financing from ODA, funded 34 research collaborative projects. The two instruments potentially provide an opportunity for cross-sector research – business cooperation. Pathways to this type of cooperation, however, do not exist. The BEAM research funding, which would have created a foundation for such a long-term strategy, was carried out as a pilot and has since been discontinued, and the rules surrounding access to Finnpartnership funding also do not fully support research-business collaboration.

3 "A third frame for innovation policy is that of transformative change which takes as a starting point that negative impacts or externalities of innovation can overtake positive contributions. This frame focuses on mobilising the power of innovation to address a wide range of societal challenges including inequality, unemployment and climate change. It emphasises policies for directing socio-technical systems into socially desirable directions and embeds processes of change in society. Innovation 3.0 explores issues around socio-technical system change to give a structural transformation in: governance arrangements between the state, the market, civil society and science; experimentation and societal learning; responsible research and innovation; and, finally, a more constructive role for foresight to shape innovation processes from the outset and on a continuing basis." http://tipconsortium.net/about/

4 The Finnpartnership business partnership programme supports Finnish companies and companies in developing countries in finding new business opportunities and partners. The programme is funded annually with about EUR 4 million from the development cooperation appropriations of the Ministry for Foreign Affairs. In 2016, 278 projects, ~€11 million were funded for Africa. Most popular African countries: Kenya 45 projects, €1.98 million; Tanzania 45 projects, €1.93 million; Ethiopia 26 projects, €1.2 million; South Africa 21 projects, €750 000; Ghana 20 projects, €1.1 million and; Namibia 19 projects €740 000.



Source: BPS Project overview prepared by Finnpartnership for evaluators (Dec 2015). N=584

Figure 5. Sectoral spread of Business Partnership Support (BPS) projects approved in the period 2010–2015 (Ministry for Foreign Affairs, 2016.)

OPPORTUNITY FOR ENGAGING MORE ACTORS

Finnish NGOs/CSOs are not well represented in discussions on STI cooperation with Africa. Although companies and HEIs are slowly recognising the value of partnering with NGOs/CSOs, Finnish innovation policy still lags behind and has not recognised their value. As actors involved in development activities, NGOs/CSOs have much to offer in STI collaboration. While many engage in capacity building, a good number do also carry out STI-relevant work through research and technology innovation, for example among rural farmers. Collaborations are usually forged with other NGOs/CSOs (e.g. farmer associations, cooperatives, cooperative unions) and local technology research institutes. These partnerships are crucial for the diffusion of innovative approaches locally and for building sustainability. Recognition of their role in STI is, therefore, imperative as their expertise can very well be harnessed for strategic and sustainable partnerships. There is also a need to gather and disseminate consolidated information on STI activities conducted within Finnish-African NGO/CSO collaboration.

To summarise, the lack of a cohesive collaboration framework and action plan poses a challenge and issues identified from the study can easily be linked to this gap. In an already complex system of actors, Finnish organisations hardly coordinate their efforts and work in silos. This is seen not only at the implementation level of STI projects but also at the political level. In addition, the absence of a long term collaboration plan specific to Africa, activities will continue to be **ad hoc, informal** and **transitory**. Developing a national Africa STI strategy and action plan for implementation could very well utilise the various opportunities that have been created by the long-term initiatives of the Ministry for Foreign Affairs within Africa and the Finnish scientific community.

CONCLUSIONS AND THE WAY FORWARD

1. NEED FOR A CLEAR, LONG TERM COLLABORATION PLAN SPECIFIC TO AFRICA

- STI cooperation between Finland and Africa is mostly ad hoc, informal and transitory

WE RECOMMEND **that a long term collaborative strategy for Africa be compiled with specific action plans at different levels,** in order to lend structure and become more goal-oriented. We recommend that this **strategy be aligned to Agenda 2030 and innovative approaches like the Transformative Innovation Policy be explored as potential frameworks**. We recommend that the strategy be relevant and streamlined across all the ministries and not be limited to development cooperation policy. Involvement of African partners in this work is essential in this process. The premise is set, thus: ***develop a strategy for Africa, with Africa***. Furthermore, institutions may also be encouraged to devise action plans for their African collaboration.

2. NEED FOR BETTER ALIGNMENT AND COOPERATION BETWEEN THE DIFFERENT STAKEHOLDERS IN FINLAND

- Opportunities that Finnish bilateral and multilateral STI initiatives present to enhance Finnish-Africa STI cooperation are not fully explored. As a result, the initiatives do not reflect increased cooperation (or funding) between Finnish and African STI actors. While programmes and projects exist, information is not shared readily, even between ministries, funding agencies or even implementers.
- Initiatives by the funding and implementing agencies (Development Research, HEI ICI, BEAM pro-gramme, bilateral and multilateral programmes etc.) occur in silos with no pull or push factors encouraging coopera-tion among the beneficiaries.

WE RECOMMEND that collaboration between Finnish STI actors in Africa be **strengthened by establishing a region specific working group at the Ministry of Education and Culture's Forum for Internationalisation** and that **a platform for collaboration between multiple Finnish actors active in Africa be convened**, for instance through a combined effort of the Finnish National Agency of Education, the Academy of Finland, UniPID, SANORD, Business Finland and the ministries.

3. CROSS-SECTOR COOPERATION NEEDS MORE FLEXIBLE FUNDING INSTRUMENTS

- Rigid funding rules, especially in the private sector instruments, hinder cooperation with the scientific community as more emphasis is placed on technology and innovation, rather than on science and other cross-cutting sectors like social sciences.
- Finnish businesses have mostly been involved in Finnish-African research focused STI projects as associate partners or as providers of material support.
- NGOs/CSOs are not recognised as part of the innovation system, despite the significant role they play in Finnish-African collaboration.

WE RECOMMEND **realigning funding mechanisms to allow for more flexibility** in allowing a wider array of partners in more dynamic roles in projects.

4. NEED TO RECOGNISE THE GLOBAL RESPONSIBILITY ROLE OF HEIS AND ENCOURAGE STRATEGIC PARTNERSHIPS

- The pull factors for the research community to partner with Africa remain rooted in capacity building and solving social and scientific problems. A shift towards "business thinking" has not really occurred in basic research funding institutions or in the research community.
- In spite of the Finnish business community's increased interest in engaging with Africa, there have not actually been any major breakthroughs in increasing trade with Africa through STI collaboration. Finnish-African trade is still based on traditional models i.e. agricultural goods and technologies and extractive raw materials.

WE RECOMMEND **reinstatement and recognition of the global responsibility role of HEIs,** especially in regard to implementing the SDGs. **Strategic partnerships** between businesses, NGOs/CSOs and the scientific community may boost business and thus are encouraged.

5. NEED TO MERGE DIFFERING INTERESTS OF FINNISH AND AFRICAN STAKEHOLDERS

- While both African and Finnish counterparts are interested in research and capacity building, there is also a high interest in commercialisation of innovation from the African side, which has received relatively little attention from the Finnish side.
- An ecosystem where the same stakeholders implement ODA projects but are also working to promote trade and education export is confusing to African partners, especially as the roles and positions of Finnish experts may not be very clear.

WE RECOMMEND that **innovations from project outputs are given added emphasis and financial support within funding programmes.** We recommend that **trade promotion and education export delegations to Africa should better clarify the roles, objectives and expectations of Finnish participants to African counterparts.** Furthermore, we also recommend deeper, better and clearer communication with African partners to determine interests, roles and expectations.

6. NEED TO ADDRESS IPR ISSUES SYSTEMATICALLY AND COMPREHENSIVELY

- Acknowledgement of partners' rights to create, own, share and utilize results is a cornerstone for STI collaboration. Transfer of ownership of results and/or clear models for ownership of results, including commercialisation, are essential.

WE RECOMMEND that **clear mechanisms and models for transfer of IPRs should be developed together with African partners for the different funding instruments, following concrete examples like the Research Fairness Initiative**.

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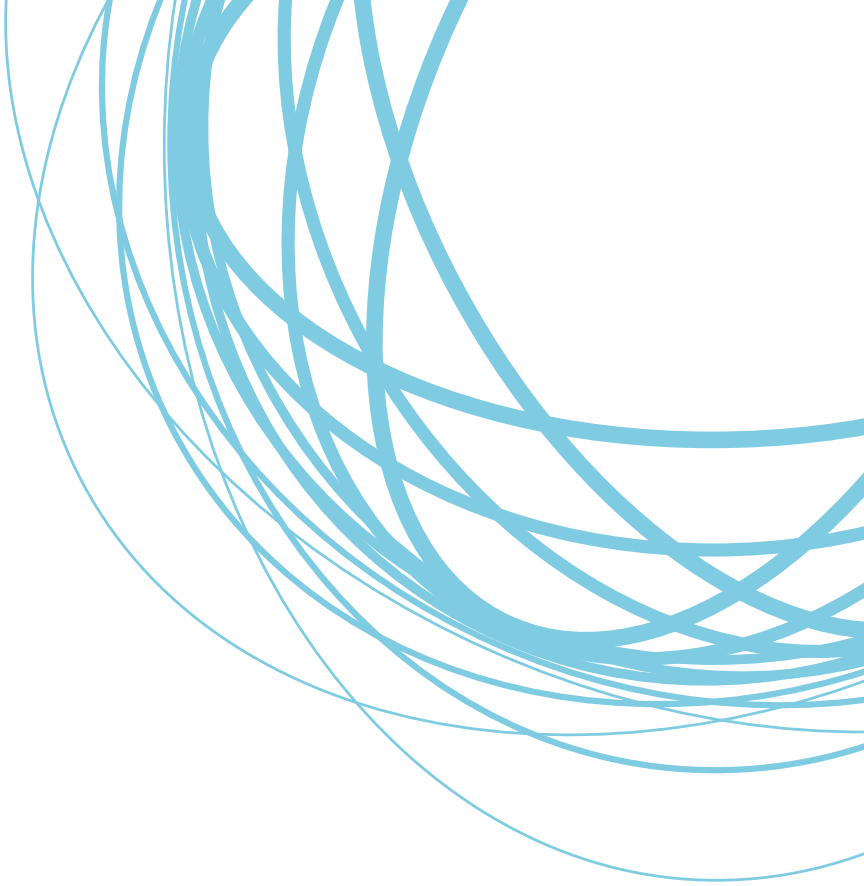


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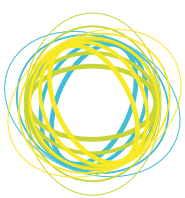


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