The Africa Strategy of the BMBF

Creating Prospects! New Impetus for Cooperation with African Partners in Education, Science and Research
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Foreword

Africa is a continent of potentials and opportunities. We want to utilise these potentials and create new prospects by cooperating with African partners in education, science and research.

The challenges we face are considerable. Africa will be severely affected by the consequences of climate change, threatening the livelihoods of many people. Moreover, the population of Africa is set to double within the next 30 years. The growing population requires safe access to clean water, food, medicines and energy.

Education, research and innovation are key to turning these challenges into opportunities. By investigating causes and correlations, science can generate innovative solutions and technologies. Education is the foundation on which the ability to lead a self-determined life is based. Especially in Africa, with a very young population, education holds out important prospects for broad sections of the population.

Creating prospects is the goal of our Africa Strategy. It provides a reliable framework for establishing and developing contacts and partnerships with African partner institutions. It is forward-looking, as it strengthens cooperation with African partners, primarily in areas that sustainably create, preserve and improve people’s livelihoods. And it is locally effective because it tackles problems on the ground that we have identified together with our African partners.

In this way, we are fostering sustainable development opportunities in Africa, and contributing to a new quality of German-African cooperation.

Anja Karliczek
Member of the German Bundestag
Federal Minister of Education and Research
Education, science and research are the key driving forces behind the social and economic development of societies, contributing to prosperity, social cohesion, and social participation. In African countries, which have a particularly young and dynamic population structure, and in some cases also face other major challenges, education, science and research are of particular importance. This is because over the coming decades, the population of Africa is set to keep growing, doubling to 2.5 billion people by 2050. There will be a disproportionate increase in the number of young people. Africa’s current level of economic growth cannot keep pace with this development – high youth unemployment is the result.

The population growth will cause further challenges with regard to rising nutritional needs, rapid urbanisation and an increasing demand for electricity and energy. At the same time, the African continent is especially hard hit by the consequences of climate change, threatening people’s livelihoods. A lack of life prospects, particularly among young people, is already causing large migration movements within Africa and towards Europe. Sustainable economic growth, enough employment opportunities, and skills development through education and training are essential if the potential of Africa’s growing young population is to be realised as a powerful macroeconomic driving force.

This is where the possibilities of German-African cooperation in education, science and research come in: Quality education on all levels and robust science structures are prerequisites not only for innovation, economic growth and employment, but also for security and stability.

This is succinctly expressed in “Agenda 2063”, the African Union (AU)’s key strategy framework, together with its sector-specific strategies, such as the “Continental Education Strategy for Africa 2016–2025” (CESA 16-25), the “Continental Strategy for Technical and Vocational Education and Training”, and the “Science, Technology and Innovation Strategy for Africa 2024” (STISA), in
which the AU defines requirements and measures in the areas of education, vocational training, as well as research, technology and innovation.

Developing people’s skills is key both to individual advancement and to a prosperous society. Human capital creates lasting value: where knowledge and skills are shared, they become more, not less. Young people are central to this process. And so it is all the more important to support the transformation of African societies into knowledge societies – as Agenda 2063 calls for – to achieve lasting structural impact.

In this task, we can build on broad partnership structures, whose foundations were laid by the German Federal Ministry of Education and Research (BMBF) with its Africa Strategy 2014–2018. German-African partnerships in education, science and research cover a wide range of topics. The focus lies on regional as well as global challenges that are particularly critical for African countries and that are tackled together. These include environmental and climate-related issues as well as health care provision (especially in relation to tropical diseases like malaria), and meeting rising food and energy demands. A responsible partnership is the key to overcoming these challenges.

We want to build on these successes and, at the same time, press ahead with new approaches.

Research networks for health innovations in sub-Saharan Africa

With five African-German research networks for health innovations, the BMBF has specifically funded health research in sub-Saharan African countries since 2014. The initiative supports cooperation between German medical research institutions and universities in Africa as well as networking between African research institutions, and aims to establish and expand research capacities.

The research focuses on combating diseases that are a particular danger to people on the African continent. These include tuberculosis, HIV/AIDS and the so-called “neglected tropical diseases”, but also the increased prevalence of diabetes-related and cardiovascular diseases, which are an additional problem for often weakly developed African health systems.

The five networks utilise synergies by building on existing structures and resources. They are coordinated by African scientists and researchers. The research networks cooperate closely with universities and care facilities. In this way, they will strengthen the education and health systems of the African partners in the medium term.
With its updated Africa Strategy, the BMBF is pursuing three main goals:

- We want to further advance the internationalisation of education, science and research. The BMBF’s Africa Strategy offers the German science community a reliable framework for establishing and developing contacts and cooperation with African partner institutions.
- With the methods and instruments of education, science and research, we want to boost future prospects and sustainable development opportunities in Africa to a greater extent. The Africa Strategy of the BMBF provides fresh impetus for a better joint future.
- We are looking to add a new dimension to cooperation, by increasingly focusing on synergies in keeping with the German Federal Government’s strategy for the Internationalisation of Education, Science and Research. The BMBF’s Africa Strategy helps ensure coherence in the cooperation with Africa.

We want to achieve these three goals with measures in five areas of action:

1. We want to promote knowledge transfer and innovation, contribute to growth and prosperity, and improve economic prospects in our African partner countries.
2. We want to support higher education and junior researchers, to improve individual life prospects.
3. We want to strengthen the employability of university graduates and make vocational education and training (VET) more practice-oriented.
4. We are committed to ensuring that research collaboration increasingly contributes to implementing the United Nations Sustainable Development Goals (SDGs).
5. We want to exploit potential synergies at national, European and international level.
In the implementation of these five action areas, we are placing a special emphasis on two cross-cutting issues, which we want to take into consideration in all action areas:

- **We want to increasingly support women in higher education, research and innovation.** Women play a central role in the economic development of the African continent, since gender equality is not only a question of social justice, but also leads to greater economic prosperity. For women to realise their full potential and use it effectively for the benefit of society, gender inequalities must be overcome. The African Union’s “Agenda 2063” states that existing inequalities at all levels of the education system should be eliminated so that Africa’s human capital can fully develop.

- **We want to utilise the opportunities of digitalisation to facilitate and improve access to knowledge.** Digitalisation offers great opportunities for the African continent, especially for mobile internet applications: the number of people in Africa who have mobile internet access is growing. At the same time, mobile communication technologies and services account for a growing share of Africa’s gross domestic product. In education, science and research, as elsewhere, digital applications – such as digital teaching methods and tools – create value for people locally. We want to support this.

The five action areas and the two cross-cutting themes reflect African priorities and measures in the African Union’s “Agenda 2063” together with its sector-specific strategies, and support the implementation of the United Nations Sustainable Development Goals.
1. We want to promote knowledge transfer and innovation, contribute to growth and prosperity, and improve economic prospects in our partner countries.

Various African countries have rapidly growing economies. Yet large parts of the African population are not benefiting from this development. For everyone in Africa to enjoy rising living standards, innovation potentials should be exploited more fully. This includes bringing more knowledge generated at African universities into practice.

It is therefore necessary to strengthen networks between science and industry, and develop mechanisms and structures to better utilise and market innovations and scientific findings as well as specialist knowledge existing in the region. This will create attractive jobs that open up future prospects in Africa. Digital solutions have an important role to play here.

Modern scientific systems create innovation, social participation, employment and economic growth. We therefore encourage our African partners to develop an integrated approach to education, research and innovation. This encompasses individually tailored vocational education and training as well as high-quality and application-oriented higher education. We aim to ensure that synergies from education, research and innovation are used to achieve an increase in quality and impact.

With the Africa Strategy, we want to place a greater focus on knowledge development, knowledge management and knowledge transfer for the expansion of innovation systems:

- We will increasingly gear cooperation in education, science and research to innovation and the exploitation of research results. In this way, we strengthen African research and innovation systems, and help our African partners to create the conditions for better local economic development, along with non-academic areas of employment that are rich in prospects for university graduates.
We will strengthen networks between science and industry in the interests of better utilisation, e.g. through projects involving German and African research institutions, universities and private enterprises, as well as by supporting spin-off firms from universities. Regional innovation networks (clusters) play an important role here.

We will support the continued development of management structures at African universities for innovation, technology transfer and entrepreneurship. There is a special role here for the use of local innovations following the principle of African solutions to African challenges.

Through a new funding measure, we will support women scientists in transferring the results of their research into industry, society and policy-making.

We will offer national and regional African partners as well as global stakeholders the opportunity to benefit from the results and findings of our open access initiatives. Access to scientific information and improved possibilities for publishing one’s own scientific findings based on good scientific practice are prerequisites for stronger participation of African research in global knowledge production, and for the exploitation of research results.

We will use the collaboration with UNESCO-UNEVOC (United Nations Educational, Scientific and Cultural Organization – International Centre for Technical and Vocational Education and Training) to take full advantage of the opportunities of digitalisation for teachers and students in the field of vocational and educational training.

Product development partnerships for prevention, treatment and diagnosis in tropical medicine

From 2016 until 2022, the BMBF is funding product development partnerships (PDPs) focusing on malaria, tuberculosis, leishmaniasis, African trypanosomiasis and HIV, as well as on the diagnosis of emerging infectious diseases such as ebola.

PDPs are non-profit organisations in which various stakeholders such as academic institutions, public research institutions, pharmaceutical companies and NGOs work together to develop vaccines, drugs and diagnostic procedures for the better treatment of neglected and poverty-related diseases. PDPs are financed mainly by private foundations and public funding bodies like the BMBF. The goal is to support collaboration between public research organisations and the pharmaceutical industry so that urgently needed products can be developed quickly and then made available in the worst affected regions of the world (mainly in Africa) at affordable prices.

Products developed in PDPs are of particular significance to the African continent. PDPs are an excellent example of successful cooperation between public and private-sector stakeholders in combating pressing global problems. Experience gained here serves as a model for future projects.
2. We want to support higher education and junior researchers, to improve individual life prospects.

Many African universities have a large number of students and relatively few university teachers. As the population of Africa grows, the demand for university education will continue to increase, and the mismatch between the numbers of students and academic staff will worsen. To ensure that supply grows to meet demand, the qualitative expansion of African university and scientific systems is vitally important. This will also benefit local businesses by facilitating access to local specialists.

University collaborations play a major role in supporting African university structures. Back in 2003, the German University in Cairo (GUC) was established as the first bi-national university in Africa. Close cooperation between German and African universities is being continuously expanded. There are now more than 800 university and institutional partnerships between German and African institutions.

In order for Africa’s human capital to fully develop, we also wish to increase the representation of women in higher education and research – especially in leadership positions.

With the Africa Strategy of the BMBF, we want to strengthen support for higher education and junior researchers through concrete measures:

- We will gear cooperation with Africa to supporting scientific systems according to their needs with strengthened institutions and well trained scientific personnel, to make them fit for the future.
- We will foster more institutional partnerships in higher education that aim to support local structures. To ensure the sustainability of collaboration, we will strengthen bottom-up processes in the transnational education programme (TNB) of the German Academic Exchange Service (DAAD), with particular attention to pilot projects in Africa.
In research cooperation, we will enable African universities to expand graduate training capacities, and thus address the urgent need to foster young talent in science and industry. In this context, research cooperation goes hand-in-hand with training components for junior researchers, e.g. in the form of joint Master’s programmes. It is intended that partners should consolidate their cooperation, e.g. through joint virtual research centres with digital infrastructures.

We will create incentives so that African scientists with links to Germany through studies and research are able to use their skills in their home countries as well. We will promote joint German-African research groups to strengthen the development of local structures and create attractive conditions for junior researchers. In addition, models for professorships should be considered that facilitate working at both locations with the aid of digital solutions.

We want to improve access to education, science and research in Africa through the use of digital technologies, and support innovation in this field. Consequently, we will support online services from German higher education institutions that are geared to Africa’s needs, and further develop these together with our partners.

We will extend funding for chairs with high standards of excellence in African partner countries, such as the German Research Chairs at the centres of the African Institute for Mathematical Sciences (AIMS).

Transnational education and German university projects abroad

Since 2001, DAAD has funded the “German Universities Abroad” programme. Projects funded to date range from setting up individual courses leading to a qualification that is recognised in Germany and the partner country, to establishing faculties and institutes, and building entire universities. The transnational education (TNB) programme funds the German share. In Africa, a total of five sites will be supported with BMBF funding from 2018.

Besides successful natural science and technical courses in Meknès (Morocco) and El Gouna (Egypt), there is also an interdisciplinary offer for Master’s and doctoral students in global studies with a focus on “peace and security in Africa” in Addis Ababa (Ethiopia). A new two-year Master’s programme in Archival Studies is being set up in Jos (Nigeria) by the Goethe University Frankfurt in partnership with the Deutsches Filminstitut, with funding from 1 October 2018.

The German University in Cairo (GUC) in Egypt currently has around 12,000 students and is among the largest and most successful projects in the “German Universities Abroad” programme. The GUC is a private university on the model of German technical universities. The German partner universities of Ulm, Stuttgart and Tübingen have contributed to the academic profile of the GUC since it was founded in 2003. Focus subject areas are engineering, applied natural sciences, pharmaceutics and technology-oriented management. TNB funding is currently supporting the development and expansion of research partnerships with the GUC.
We will set up alumni networks for the WASCAL (West African Science Service Centre on Climate Change and Adapted Land Use) and SASSCAL (Southern African Science Service Centre for Climate Change and Adaptive Land Management) climate competence centres to secure knowledge and experience for Africa and make it available for everyone.

With a focus on new research programmes for sustainable land management and urban development (cf. action area 4), we will support junior researchers in Africa by ensuring that the graduate programmes (Master’s and doctoral schools) which are successfully running under WASCAL are more firmly anchored in SASSCAL too, and also have a wider thematic and regional scope.

The German Research Chair programme is a successful example of wide-reaching effects through a funding measure targeted at individuals: firstly, the chairs work in an application-oriented way on solutions to local challenges; secondly, they educate to high standards the junior researchers of tomorrow; and thirdly, apart from the research chairs themselves, the mathematical sciences in the respective countries benefit from the research chair’s cooperative relations with German universities.

By funding the German Research Chairs at the AIMS centres, the BMBF is successfully helping to expand local capacities and ensure sustained cooperation between Germany and its African partners.
3. We want to strengthen the employability of university graduates and make vocational education and training (VET) more practice-oriented.

One of the biggest challenges in Africa is high youth unemployment, which particularly in North Africa also affects university graduates to a significant extent. Accordingly, the African Union’s “Continental Education Strategy for Africa 2016–2025” attaches great importance to vocational education and training (VET), and employability.

Youth unemployment in Africa is caused in part by a lack of absorption capacity in the labour market. On the other hand, in many places there is a shortage of high-quality vocational education and sensible linkage between higher education curricula and the local job market, to prepare for the requirements of working life. A lack of development opportunities results in a lack of prospects, even for university graduates and young researchers. This harbours significant potential for conflict, and may encourage “brain drain” of urgently needed knowledge carriers.

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**European and Developing Countries Clinical Trials Partnership**

The European and Developing Countries Clinical Trials Partnership (EDCTP) was created in 2003 as a European response to the global health crisis. The participating partner countries include 14 European member countries, 2 associated countries, and 48 countries in sub-Saharan Africa.

In 2014, the European Parliament and European Council agreed to continue the programme as EDCTP 2. The goal is to develop diagnostic tools, drugs and vaccines to combat the three major poverty-related diseases HIV/AIDS, malaria and tuberculosis, as well as other neglected infectious diseases. In light of the preceding project’s successes, Germany is actively involved in the continuation of this programme too.

Since its creation in 2003, the EDCTP has developed to become a globally recognised model for cooperation between African and European countries.
Signing of the vocational education and training cooperation agreement with South Africa by Head of Directorate Susanne Burger.

**WASCAL and SASSCAL climate initiatives**

Together with partners in ten countries in West Africa and five countries in Southern Africa, the BMBF is establishing two regional centres of competence for climate change and sustainable land management in Southern and West Africa. The goal is to ensure that people and the environment are better able to adapt to climate change.

In West Africa, Benin, Burkina Faso, Gambia, Ghana, Côte d’Ivoire, Mali, Niger, Nigeria, Senegal and Togo are collaborating in WASCAL (West African Science Service Centre on Climate Change and Adapted Land Use). SASSCAL (Southern African Science Service Centre for Climate Change and Adaptive Land Management) is being implemented jointly with Angola, Botswana, Namibia, South Africa and Zambia. The centres of competence are co-financed by the partner countries.

Since 2010, WASCAL and SASSCAL have assisted the regions in Southern and West Africa most affected by climate change with the development of scientific and university structures as well as structures outside of the academic setting. This is taking place in close cooperation with German universities, research institutions and their networks.

Together with users, both competence centres develop, trial and implement exemplary solutions for climate protection and adaptation. As such, they are prime examples of a successful combination of academic education, research cooperation and research infrastructure.

In this context, the BMBF’s Africa Strategy puts a focus on employability. We want to make courses more application-oriented and needs-driven, and also better utilise the potentials of vocational education and training:

- We will continue to support the development of study courses that meet the needs of the labour market, the adaptation of curricula (“quality of teaching”), and programmes for the continuing education of university teaching staff.
- In the large-scale WASCAL and SASSCAL projects, we will develop accompanying training and development measures as well as start-up grants (“entry into entrepreneurship” scheme) so that it is easier for graduates to make the leap into private enterprise. This will be based on the experiences and successes of existing WASCAL graduate schools.
- We will support the introduction of dual study programmes in Africa, with their combination of academic studies and training in enterprises.
- We will specifically integrate vocational training components into research projects.
- Following the African Union’s “Agenda 2063”, together with other departments as well as German and African industry stakeholders we will explore and realise the private sector’s potential to develop and trial cooperative in-company and inter-company vocational education and training. Through targeted instruments such as collaborative
training schemes, in which training components from several enterprises are combined, we will support mainly German and African small and medium-sized enterprises (SMEs) that are engaged in vocational education and training.

- In interested African countries, we will gauge the need for systemic consulting in VET (legal framework, funding, governance) and offer needs-oriented consultancy services.
- We will work to ensure that the potentials of German VET research are specifically harnessed to support corresponding reform efforts in Africa. Here we will also include the field of informal vocational training, and cooperate with multilateral stakeholders.
- We will help to improve the training of vocational teachers as well as in-company instructors. Our guiding principle is “train the trainer”.

**Partnerships for sustainable solutions with sub-Saharan Africa – measures for research and integrated postgraduate training and continuing education**

In an integrated modular approach, the “Partnerships for sustainable solutions with sub-Saharan Africa” funding programme links joint research on topics relevant to sub-Saharan Africa with capacity development in postgraduate training and continuing education for African Master’s and PhD students. The priority topics are bioeconomics, sustainable urban development, and resource management (raw materials). Partners from 14 African countries are involved in a total of 13 German-African networks.

The partnerships are a good example of how an important contribution to the development of teaching and research capacities can be made in the partner countries in parallel with joint research.
4. We are committed to ensuring that research collaboration increasingly contributes to implementing the United Nations Sustainable Development Goals (SDGs).

In September 2015, the United Nations General Assembly adopted “Agenda 2030” with its 17 Sustainable Development Goals (SDGs). “Agenda 2030” is of fundamental importance to sustainable and peaceful development in the world, since the SDGs reflect the global and inseparable relationship between social, economic and environmental challenges.

Education, research and innovation are key drivers for sustainable development and hence for the implementation of “Agenda 2030”. They can illustrate the closely linked SDGs and make them more manageable, investigate and resolve conflicts of goals between social, economic and environmental needs, provide new sustainable technologies, and develop well-founded guidance for social and political action.

In line with the SDGs, the African Union’s development strategy “Agenda 2063” also pursues prosperity for the people of Africa, based on inclusive growth and sustainable development. It emphasises the special role of research and technology in achieving this goal.

With the Africa Strategy of the BMBF, we are therefore placing a focus on promoting German-African research collaboration in areas which simultaneously contribute to tackling development challenges on the African continent and achieving the SDGs:

- We will strengthen research collaboration with African partners specifically in those areas that create and maintain sustainable livelihoods for people locally and promote resilience. To this end, we will
develop recommendations for action and demonstrate solutions that bring about concrete improvements in local living conditions (SDGs 1 and 2).

- Through our support for health research in the African partner countries, we will continue to help sustainably create and maintain research capacities to improve the general health of the population and strengthen African health systems. With our funding measures, we want to help our African partners to systematically transfer current research results and evidence-based practices into health care (SDG 3). This includes, for example:
  - Implementation research on health products and services that are new or in the final phase of development; if possible together with product development partnerships (PDPs) that are active in the field, the European and Developing Countries Clinical Trials Partnership (EDCTP), other public or private funding providers, and non-governmental organisations (NGOs).
  - Epidemiological and public health research that addresses the needs of the African partners (e.g. the increasing significance of non-communicable diseases) and provides essential knowledge for comprehensive and targeted health promotion and health care.
  - Research in the area of pandemic prevention and health crisis management, to develop strategies and tools for combating dangerous infectious diseases effectively but in line with available resources.
  - We will increasingly gear research collaboration with African partners to creating an enabling environment for women scientists, since gender equality is globally relevant (SDG 5) and, especially on the African continent, essential for important leverage effects to unfold for the economic and social development of countries and regions.
  - We will strengthen research to implement sustainable water management in Africa (SDG 6). The focus is on needs-based provision of clean water, efficient usage, conservation of aquatic ecosystems, and protection against droughts and floods as elements of an integrated water resource management system.
  - In a new initiative (including Energize West Africa) with Africa, we will set up, develop and implement research projects in the energy sector. The focus here is on sustainable energy system solutions to provide people with affordable and clean energy (SDG 7). At the same time, the aim is to implement solutions that generate positive effects on the economy and new employment opportunities.
CLIENT II – International Partnerships for Sustainable Innovations

Under its “Research for Sustainable Development (FONA³)” framework programme, from 2017 to 2023 the BMBF with its CLIENT II funding programme is supporting partnerships with emerging and developing countries in the areas of climate, environment and energy. Topics and instruments for promoting innovative and sustainable solutions are geared to specific needs in the respective partner countries. Priority CLIENT II focal areas with relevance to African countries or regions are currently climate protection / energy efficiency, adaptation to climate change, land management, and sustainable energy systems. Southern and West Africa as well as Morocco are among the target countries and regions for this programme.

CLIENT II also helps German companies to bring their internationally sought-after technological expertise to international markets for the purpose of tackling global challenges.

CLIENT II therefore has a particular practical relevance. Through the involvement of stakeholders from politics and industry in the partner country, research results can be swiftly implemented in practice.

- Together with African partner countries, we will develop and implement a new research programme for the sustainable development of urban regions (SDG 11). We are therefore addressing a global problem that is particularly relevant to the African continent because of rapid population growth. The focus is on the development and application of specific planning tools that enable cities to rapidly find workable solutions to the challenges of urbanisation.
- Within national and international research programmes, together with our African partners, we will continue to address global challenges in climate and ocean research (SDG 13 and SDG 14), as Southern Africa will be one of the regions worst affected by climate change.

Data acquisition in Angola at SASSCAL (Southern African Science Service Centre for Climate Change and Adaptive Land Management), an initiative supported by the BMBF.
Together with African partner countries, we will develop and implement a new research programme for sustainability-oriented land use (SDG 15), and continue existing programmes such as SPACES (Science Partnerships for the Assessment of Complex Earth System Processes).

With the International Disaster and Risk Management (IKARIM) funding measure, which is part of the German Federal Government’s “Research for Civil Security” programme, we will promote research in the field of disaster and risk management. The goal of the funding measure, which refers to the United Nations’ “Sendai Framework for Disaster Risk Reduction” action plan and the United Nations’ International Strategy for Disaster Reduction (UNISDR), is to strengthen the resilience of partner countries in Africa (and Asia) to natural and technical disasters. This also supports the implementation of the SDGs.

SPACES II is being implemented within the “Research for Sustainable Development (FONA³)” framework programme from 2018 to 2022. SPACES II is aimed at implementing scientific cooperation projects in Southern Africa. This key region is expected to experience particularly severe climate change effects. The research programme focuses on interactions between the geosphere, atmosphere and ocean, between land and sea, and between the biosphere and atmosphere. SPACES was developed in close consultation with South Africa and Namibia. The SPACES research projects will be accompanied by capacity-building measures such as summer schools, training on research vessels, research stays, networking activities, and workshops with decision-makers.

SPACES will play a role in formulating science-based recommendations for policy-makers, and ensure the sustainable use and preservation of various ecosystem services in the region.

In northern Ghana: configuring and operating a weather station at WASCAL (West African Science Service Centre on Climate Change and Adapted Land Use), an initiative supported by the BMBF.
5. We want to exploit potential synergies at national, European and international level.

In our cooperation with Africa, measures in education, science and research do not stand in isolation. They complement and support the German Federal Government’s processes and measures in other policy areas. For example, German involvement in the G20 Partnership with Africa gains more weight through education and research partnerships in the Reform Partnership Countries and the countries of the “Compact with Africa”.

To achieve the greatest possible impact with the instruments of education, science and research, it is always worth considering possible synergies between the activities of the various stakeholders in industry, science and politics. This is true at national, European and international level.

In the national context, we want to ensure that the activities of the various stakeholders are better interconnected. The German Federal Government itself, in keeping with its strategy of internationalising education, science and research, will step up departmental collaboration in the international field through joint measures, where this can achieve a greater impact. Key instruments here are the Federal Government’s Round Table on the internationalisation of education, science and research, as well as the newly established interministerial working group on Africa, which will develop more interdepartmental synergy projects.

We also want to find sustainable solutions to global challenges together with our partners in Europe and around the world. Pooling resources and know-how to realise synergies can create a high leverage effect for multilateral partnerships. But these can only lead to success if science and innovation-friendly conditions are put in place for international cooperation. This is the only way that African countries can benefit from the global increase in knowledge and the resulting utilisation potentials. Making a contribution here is also one of the goals of the BMBF’s Africa Strategy.

More synergies, more coherence, more “bridge-building” – these are our goals in international cooperation, including in cooperation with Africa. We are setting the following focuses with the Africa Strategy of the BMBF:

- In order for partnerships in education, science and research between German and African partners to be successful, our aim is to put in place science and innovation-friendly conditions for international cooperation.
- In areas of particular relevance to Africa (such as health, agriculture, nutrition and food production, water, energy and climate as well as administration, business and finance), we will develop interdisciplinary initiatives and implement them together with German science and research organisations.
- We will integrate our measures into international processes and into the EU-Africa partnership, provide impetus for new measures at European and international level, and thereby create synergies.
- Research policy dialogue prepares the way for effective cooperation. We will therefore continue our active involvement in deepening research policy cooperation with Africa in international forums, such as the policy dialogue between the African

Pan African University

Germany is supporting the development of the Pan African University (PAU) by the African Union. The PAU has five thematic institutes in five regions, dedicated to boosting excellence in science and higher education in Africa. Germany has adopted the role of “key thematic partner” for the PAU site in Algeria (PAUWES). Here the German Federal Ministry for Economic Cooperation and Development (BMZ) and the BMBF have jointly funded and assisted the development of the Institute for Water and Energy Sciences (including climate change) since 2015. The division of tasks is complementary: the BMBF supports PAUWES in shaping the research dimension. A research agenda has been jointly drawn up, and is currently being implemented, overseen by a research coordinator.

Quality-assured, pan-African, and with an international orientation, PAU is making an important contribution to the sustainable development of the continent.
Union and European Union (High Level Policy Dialogue on Science, Technology and Innovation) and the Euro-Mediterranean Group (Euro-Med Group of Senior Officials).

- Germany is one of the strongest countries in the world for research and innovation, and one of the most competitive. So, in the international setting too, we will continue to kick-start joint initiatives for cooperation in research, development and innovation, both in and with Africa, support their ongoing development, and play an active part in their implementation. Here we will build on our successful engagement in numerous multilateral initiatives and networks in Africa, e.g., EDCTP (European and Developing Countries Clinical Trials Partnership), PAUWES (Pan African University Institute of Water and Energy Sciences in Algeria), and PRIMA (Partnership for Research and Innovation in the Mediterranean Area).

- We will continue to support global science and research networks, while specifically strengthening the involvement of institutions in Africa, for example by funding science academies.

PRIMA – Partnership for Research and Innovation in the Mediterranean Area

PRIMA (Partnership for Research and Innovation in the Mediterranean Area) is a new international funding initiative that was launched in early 2018. Its main objective is to devise new and effective research and innovation (R&I) approaches to challenges in the Mediterranean area such as water availability, population growth, urbanisation and climate change. Based on a strategic R&I agenda, annual calls for proposals will be launched for the thematic areas of “water management”, “farming systems” and “agro-food chains”. This offers many opportunities for German science and industry to participate in all three thematic areas.

A total of 19 countries in Europe and the southern and eastern Mediterranean area are involved in PRIMA, along with the European Commission. The participating countries comprise eleven EU Member States (Croatia, Cyprus, France, Germany, Greece, Italy, Luxembourg, Malta, Portugal, Slovenia, Spain) and eight Mediterranean partner countries (Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Tunisia, Turkey). Third countries in the southern and eastern Mediterranean region are also involved in the decision-making bodies on an equal basis. PRIMA therefore plays an important role in science diplomacy.
Stakeholders

The **Alexander von Humboldt Foundation (AvH)** promotes academic cooperation between excellent scientists and scholars from abroad and from Germany. To date, AvH has supported more than 1,300 scientists and researchers from Africa. Alongside Egypt, Nigeria and South Africa, in particular Cameroon, Ethiopia and Kenya are continuously contributing to the growth of the Humboldt network. AvH takes the view that in collaboration with Africa, one thing matters above all else: academic quality. [www.avh.de](http://www.avh.de)

The **German Federal Institute for Vocational Education and Training (BIBB)**, following its mandate under the German Vocational Training Act (Berufsbildungsgesetz, BBiG), takes an active part in international collaboration in vocational education and training (VET). The German Federal Government’s Office for International Cooperation in Vocational Education and Training (GOVET) in the BIBB coordinates activities by German stakeholders abroad in the interests of coherent cooperation in VET. In bilateral cooperation with South Africa, GOVET helps to shape the development of the South African Institute for Vocational and Continuing Education and Training (SAIVCET). GOVET supports the BMBF in Africa-related VET research activities, and advises the ministry on the establishment and implementation of partnerships with new partner countries in Africa. Also within BIBB, the BMBF’s iMOVE initiative helps German providers of vocational training and continuing education to access international markets, including in Africa. [www.bibb.de](http://www.bibb.de)

**DAAD**

In Africa, the **German Academic Exchange Service (DAAD)** maintains two regional offices in Cairo and Nairobi. With funding from various German government departments, it funds extensive scholarship and cooperation programmes in Africa. DAAD also operates four information centres (in Cameroon, Ethiopia, Ghana and South Africa). In its 2014 Africa Strategy, DAAD set out five priority action areas: (a) expanding scholarships for young university lecturers in Africa, (b) building capacities for graduate education and research, (c) providing knowledge for African-German academic cooperation, (d) strengthening links between universities and civil society, and (e) exploring and better utilising synergies with other stakeholders, especially with Africa’s regional university associations. [www.daad.de](http://www.daad.de)

The core mission of the **German Research Foundation (DFG)** is to select and fund on a competitive basis the best research projects at universities and research institutions. At the same time, the increasing internationalisation of excellent research requires optimal conditions to be put in place, especially also with regard to German-African collaboration. To this end, the DFG maintains bilateral cooperation agreements (currently with Egypt, Morocco, Mozambique, South Africa and Zambia), and works together with regional networks that bring structural benefits to regional scientific systems. [www.dfg.de](http://www.dfg.de)

The **Fraunhofer-Gesellschaft (FhG)** is Europe’s largest application-oriented research organisation. It has an active involvement in contract research, scientific cooperation, and capacity-building on the African continent. One focus of Fraunhofer’s activities in Africa is in South Africa, where Fraunhofer Senior Advisors help the Fraunhofer Institutes and their partners to set up business connections and collaborations. Launched in 2015, the “F4D – Fraunhofer for Development” programme aims to step up activities in international collaboration for sustainable development. In the future, via an innovation platform, solutions will be developed mainly with partners in Africa that combine research results with knowledge about regional circumstances and the specific needs of local people. [www.fraunhofer.de](http://www.fraunhofer.de)
As a research organisation with a national mandate, the Helmholtz Association of German Research Centres (HGF) develops solutions to pressing issues in science, industry and society. HGF and its centres maintain numerous strategic partnerships worldwide. The organisation has been active in Africa for many years in the context of education and research projects. Since 2017, the GEOMAR Helmholtz Centre for Ocean Research Kiel and the Ocean Science Centre Mindelo (OSCM) in Cape Verde have jointly operated an international research and logistics station as a meeting point and workplace for Cape Verdean and international scientific groups. The OSCM strengthens ocean research in Cape Verde on a sustained basis and advances the field internationally. www.helmholtz.de

HRK – Hochschulrektorenkonferenz

Under its internationalisation initiative, the German Rectors’ Conference (HRK) helps member universities to expand and deepen collaboration with African universities. HRK’s “Higher Education Compass” has undergone very significant expansion over the last four years, and now comprises some 600 subject-specific partnerships. This support takes tangible form in an agreement with South Africa – by far the most important partner country – and a Rector’s Forum between German and South African university presidents. www.hrk.de

The Leibniz Association (WGL) connects 93 independent research institutions that range in focus from the natural, engineering and environmental sciences via economics, spatial and social sciences to the humanities. Almost half of the Leibniz Institutes have an involvement in Africa, for example in health science, biodiversity, bioeconomics, climate science, historical sciences and social sciences. Scientific collaborations between Leibniz Institutes and African research institutions can be explored interactively at www.leibniz-in-africa.de. Leibniz Institutes also maintain field research stations on the African continent. www.leibniz-gemeinschaft.de

The Leopoldina was appointed the German National Academy of Sciences in 2008. In this capacity, it represents the German scientific community in international committees and assumes a nonpartisan scientific position on social and political issues. The Leopoldina cooperates closely with the Academy of Science of South Africa, the Network of African Science Academies, and other African partners. www.leopoldina.org

The Max Planck Society (MPG) with its 84 Max Planck Institutes conducts basic research in the natural sciences, life sciences, and humanities. The individual Max Planck Institutes cooperate globally in more than 3,000 projects, including with African partners – mainly in South Africa. In 2017, the Max Planck Society reported that 190 junior scientists and guest researchers from Africa were working at the Max Planck Institutes. Since 2012, the Max Planck Institute for Infection Biology has had two research groups at the Africa Health Research Institute in Durban, South Africa. At the end of 2015, the Max Planck Institute for Chemical Ecology formed a Max Planck Partner Group for a maximum of five years at the University of Pretoria. www.mpg.de
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>AIMS</td>
<td>African Institute for Mathematical Sciences</td>
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<tr>
<td>AU</td>
<td>African Union</td>
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<tr>
<td>AvH</td>
<td>Alexander von Humboldt Foundation</td>
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<tr>
<td>BIBB</td>
<td>German Federal Institute for Vocational Education and Training</td>
</tr>
<tr>
<td>BMBF</td>
<td>German Federal Ministry of Education and Research</td>
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<tr>
<td>BMZ</td>
<td>German Federal Ministry for Economic Cooperation and Development</td>
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<tr>
<td>CESA 16-25</td>
<td>Continental Education Strategy for Africa 2016–2025</td>
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<tr>
<td>CLIENT II</td>
<td>International Partnerships for Sustainable Innovations</td>
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<tr>
<td>DAAD</td>
<td>German Academic Exchange Service</td>
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<tr>
<td>DFG</td>
<td>German Research Foundation</td>
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<tr>
<td>EDCTP</td>
<td>European and Developing Countries Clinical Trials Partnership</td>
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<tr>
<td>EU</td>
<td>European Union</td>
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<tr>
<td>F4D</td>
<td>Fraunhofer for Development</td>
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<tr>
<td>FhG</td>
<td>Fraunhofer-Gesellschaft</td>
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<tr>
<td>FONA³</td>
<td>“Research for Sustainable Development” framework programme</td>
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<tr>
<td>GEOMAR</td>
<td>Helmholtz Centre for Ocean Research Kiel</td>
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<tr>
<td>GIGA</td>
<td>German Institute of Global and Area Studies</td>
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<tr>
<td>GOVET</td>
<td>German Federal Government’s Office for International Cooperation in Vocational Education and Training</td>
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<tr>
<td>GUC</td>
<td>German University in Cairo</td>
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<tr>
<td>HGF</td>
<td>Helmholtz Association of German Research Centres</td>
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<tr>
<td>HRK</td>
<td>German Rectors’ Conference</td>
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<tr>
<td>IKARIM</td>
<td>International Disaster and Risk Management funding measure</td>
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<tr>
<td>iMOVE</td>
<td>International Marketing of Vocational Education – working area of the “International Vocational Education and Training” department at the German Federal Institute for Vocational Education and Training (BIBB).</td>
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<tr>
<td>SME</td>
<td>Small and medium-sized enterprises</td>
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<tr>
<td>MIASA</td>
<td>Merian International Institute for Advanced Studies in Africa</td>
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<tr>
<td>MPG</td>
<td>Max Planck Society</td>
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<tr>
<td>NGO</td>
<td>Non-governmental organisation</td>
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<tr>
<td>OSCM</td>
<td>Ocean Science Centre Mindelo</td>
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<tr>
<td>PAU</td>
<td>Pan African University</td>
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<tr>
<td>PAUWES</td>
<td>Pan African University Institute of Water and Energy Sciences</td>
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<tr>
<td>PDP</td>
<td>Product Development Partnership</td>
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<tr>
<td>PRIMA</td>
<td>Partnership for Research and Innovation in the Mediterranean Area</td>
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<tr>
<td>SAIVCET</td>
<td>South African Institute for Vocational and Continuing Education and Training</td>
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<tr>
<td>SASSCAL</td>
<td>Southern African Science Service Centre for Climate Change and Adaptive Land Management</td>
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<tr>
<td>SDG</td>
<td>United Nations Sustainable Development Goals</td>
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<tr>
<td>SPACES</td>
<td>Science Partnerships for the Assessment of Complex Earth System Processes</td>
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<td>STISA</td>
<td>Science, Technology and Innovation Strategy for Africa 2024</td>
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<td>TNB</td>
<td>Transnational education programme of the DAAD</td>
</tr>
<tr>
<td>WASCAL</td>
<td>West African Science Service Centre on Climate Change and Adapted Land Use</td>
</tr>
<tr>
<td>WGL</td>
<td>Leibniz Association</td>
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