

diture on research cooperation activities with developing countries or emerging economies are available, obtainable numbers at least show the large dimensions of BMBF funding. The BMBF exceeds the BMZ's EUR 36.7 million spent on research activities in 2012 (BMBF 2014a: 492) by far – BMBF expenditures for cooperation with BRICS countries alone amounted to app. EUR 47 million in 2012 (BMBF 2014a: 410).

In view of the BMBF funding for cooperation with developing countries, the only numbers available were those reported as Official Development Assistance (ODA) expenditures, which added up to EUR 112.7 million in 2012 (BMZ 2013), although quite likely this number includes activities of cooperation in education as well as in research. Other official sources state that between 2011 and 2015, the BMBF allocated EUR 206 million on cooperation with African partner countries (18. Deutscher Bundestag 2017: 13). With the BMBF as large provider of funds for research cooperation between German researchers and those in developing countries and emerging economies, it is worthwhile to take a closer look at BMBF funding.

5.2 The BMBF as funder of international research cooperation

The BMBF does not primarily aim at international policy making, but rather focuses on the German national context in its policies and funding measures (ch. 5.3). Nevertheless, international cooperation is part of its policy spectrum. Across its departments, the BMBF funds international research cooperation in the scope of different strategies, within different funding initiatives, with different partner countries, on different topics and with different objectives. It is relevant to differentiate between the origins of funding within the BMBF, which is organized into eight *departments*, or *directorate-generals* (BMBF 2014c). At the time of research, five departments dealt with crosscutting or structural issues: the departments for *Central Services*; *Strategies and Policy Issues*; *European and International Cooperation in Education and Research*; *Vocational Training and Lifelong Learning*; and *Science Systems*. In addition, three further departments were set up according to the thematic issues of *Key technologies – Research for Innovation*; *Life Sciences – Research for Health*; and *Provision for the Future – Basic and Sustainability Research* (BMBF 2014c).²

2 After the federal elections in 2017, a new minister, Anja Karliczek/CDU, took over. The change in political leadership was accompanied by a few changes within the ministry. Among other changes to the organisation of the BMBF, digitalisation is now embedded as a crosscutting issue in all thematic departments (BMBF 2019b).

5.2.1 International vs. thematic departments

International research cooperation is not exclusively funded by the BMBF's Department of European and International Cooperation in Education and Research (short: International Department), but in its thematic departments as well (Appendix B-2). Indeed, as a crosscutting department, the International Department is equipped with lesser resources than the thematic departments. In 2012, the International Department's total budget for international cooperation amounted to only 0.93% of the total BMBF budget (or EUR 44.9 million, of which EUR 14.6 million were dedicated to cooperation with developing countries and emerging economies). In comparison, the Department of Basic and Sustainability Research had more than twice the budget available for the international cooperation activities in FONA (BMF 2014; Bundesregierung 2012a).

In addition to budgetary differences, the departments also differ regarding their approaches to international cooperation (ch. 6). The International Department regularly funds a large number of smaller-scale international cooperation activities in the frame of ST&I cooperation agreements, usually only covering travel costs or costs for joint workshops, not personnel or research costs. The schemes available through the International Department range from funding for exploratory activities such as the preparation of projects to bilateral mobility projects for international cooperation, which are cofunded by the respective partner country. The research topics of mobility projects are usually topics of joint interest that the BMBF and the partner country agree on in government negotiations on ST&I (International Bureau of the BMBF 2014). A list of developing countries and emerging economies which have signed cooperation agreements with the BMBF is included as Appendix B-1.

With some partner countries of particular interest, the International Department sets up joint financial funds in order to pool resources for joint calls for research projects, as in case of Egypt, for example (BMBF 2011a). The International Department further organizes joint science years, which entail activities for enhancing the visibility of bilateral cooperation, and additional funding for cooperation projects (BMBF 2014d). In view of strategic policy development, the International Department is responsible for the Strategy of the Federal Government for the Internationalisation of Science and Research (BMBF 2008a) as well as the follow-up International Cooperation Action Plan of the BMBF (BMBF 2014e), with the main responsibility lying within the Unit on Policy Issues, Internationalisation Strategy (interviews with PA07, PA09). The Unit on Cooperation with Developing Countries and Emerging Economies, Africa and the Middle East, provided strategic input on cooperation with the respective countries to the Internationalisation Strategy (interviews with PA01, PA08).

The Department of Key Technologies – Research for Innovation had not yet funded cooperation with developing countries and emerging economies at the time of research. If international cooperation is funded at all – rather focuses on cooperation with worldwide leading-edge researchers in order to strengthen “Germany’s top position through international cooperation” (BMBF 2014f). Within the ministry, the Key Technology Department’s lack of international cooperation activities – especially in view of cooperation with developing countries and emerging economies has been attributed to the fear of granting future competitors insights into state-of-the-art industry-oriented research and thereby losing the worldwide competitive advantage (interview with PA05).

The Department of Life Sciences – Research for Health, which despite its name also hosted the working unit on Bioeconomy at the time of empirical research (but has now shifted into the Sustainability Subdepartment, BMBF 2019b), has shown more interest in international activities in the past. Within the department, two thematic strategies additionally frame international cooperation. Under the umbrella of these strategies, initiatives for research cooperation with developing countries and emerging economies have been funded in the last years. The National Research Strategy BioEconomy 2030, a joint BMU, BMZ and BMBF strategy lead by BMBF guides funding in the area of bioeconomy research, defining global food security as one out of five research priorities (BMBF 2010a). In the frame of the Bioeconomy Strategy, the Department of Life Sciences launched Globe, a funding initiative for German-African cooperative projects pursuing a systemic approach of global food security research, in 2011 (BMBF 2011e, interview with PA13). From 2013 onwards, a funding initiative on Bioeconomy International, coordinated with partner countries such as Argentina, Brazil or Malaysia, launched repeated calls for proposals (BMBF 2017).

In the field of health research, the first major initiative for cooperation with developing countries dates back to the early 2000s, when the BMBF started cofunding the European and Developing Countries Clinical Trials Partnerships, a programme by EU member states and EU-Commission and several countries in Sub-Saharan Africa (interview with PT08). Since 2011, international cooperation is also inscribed in the national health research strategy. Funding now takes place in the framework of the Research Funding Concept Neglected and Poverty-related Diseases (BMBF 2011b). Within this programme, several funding initiatives for German-African cooperation existed. A funding initiative for German-African Cooperative Product Development Partnerships for Prevention, Diagnosis and Treatment of Neglected and Poverty-related Diseases started in 2011 (BMBF 2011c); a funding measure for German-African Health Networks followed in 2013 (BMBF 2013h).

The Unit on Humanities, Social and Cultural Sciences, Academies, Research Museums, hidden within the Science System Department started a funding initiative on Maria Sibylla Merian International Centres for Advanced Studies in the

Humanities and Social Sciences. The calls for proposals targeted cooperation with partners from Latin America and Sub-Saharan Africa and proposed funds for establishing centres, the initiative was not coordinated with any partner countries' governments, however (BMBF 2015d; BMBF 2016a).

5.2.2 International cooperation for sustainability, climate, and energy

Among the thematic departments, the Subdepartment for Sustainability, Climate, Energy, (the *Sustainability Subdepartment*)³ located within the Department for Basic and Sustainability Research has the longest tradition of cooperating with developing countries and emerging economies – both of cooperation on a political level as well of funding cooperative research (ch. 8.2, 8.3).

The BMBF's environmental and sustainability sciences funding programmes and initiatives date back to the 1980s. Since 2005, FONA is the main programmatic strategy in place: the Framework Programme on Research for Sustainable Development, implemented in its second edition (FONA2) from 2009–2015 and since then followed up by FONA3 (Kahn-Neetix 2014). Cooperation with developing countries and emerging economies is not limited to a specific subprogramme of FONA; these are thematically oriented. While some funding initiatives within thematic subthemes include international projects now and then⁴, international research is mainly funded within the subareas of *Global Change* and *Resources and Sustainability*, which organisationally correspond to the working units with the same names (BMBF 2009a). The table included in Appendix B-2 gives an overview of the different funding initiatives originating in different departments.⁵

The importance given to the international dimension of sustainability and environmental issues shows in the high amount of expenditures for international cooperation, which amounted to 20% of the total funds of FONA, EUR 100 million per year from 2010–2014 (Fischer and Mennicken 2013). According to official ministerial budgetary plans, this included EUR 18 million for international partnerships for environment and climate protection; EUR 5.8 million for international activities in earth system research, EUR 42 million and EUR 14 million for funding on sustainable water and land management (with main focus on international activities),

3 In the BMBF's new organisational shape, the Subdepartment has been renamed into *Subdepartment Sustainability, Provision for the Future* (BMBF 2019b).

4 In the funding initiative for Transdisciplinary Junior Research Groups in the scope of the Social-Ecological Research Programme (SÖF) within FONA, for example, a collaborative project on agrobiodiversity in South India was funded (BMBF 2013a).

5 With the BMBF's organisational adjustment in the new legislative period, the subdepartment's working units have been slightly reorganized, as well. New units, such as the Unit on Systemic Mobility /City of the Future have been established; previous units have extended their responsibilities, such as the Unit on Resources, Circular Economy, Geosciences (BMBF 2019b).

not counting expenditures on the Regional Science Service Centers in Africa (BMF 2014; Bundesregierung 2012a). In case of water related research, international cooperation plays an even bigger role:

“For the last ten years, BMBF-funded research on water has increasingly focused on international aspects, and it is increasingly fostered. International cooperation takes place with Israel, Palestine, Jordan, China, Russia, Indonesia, Vietnam, Iran and South Africa. Internationally oriented projects now amount to 30 to 40 %.” (BMBF and BMU 2008a: 20; *own translation*)

According to interviews, in 2012, the share of financial funds spent on international cooperation had further increased to 50% (interview with PA02).

5.2.3 Research funding in FONA: from calls for proposals to projects

In general, BMBF research funding is granted as project funding in the frame of research programmes in specific thematic areas. This can be attributed to the science policy-makers aspirations of directing diverse science projects into a coherent line of investigation (Shove 2003). The Sustainability Subdepartment is no exception to this general BMBF norm. In FONA, most projects are funded through funding initiatives within thematic subpriorities that combine different projects under a common umbrella. In order to strengthen coherence and exchange among the projects of a funding priority or funding initiative, the BMBF often also funds so-called accompanying projects, aimed at networking or coordinating actions, general public relation and communication as well as crosscutting analysis. For example, this is the case in the funding priorities Integrated Water Resource Management (IWRM), Integrated Land Management, or Future Megacities (BMBF 2013b; 2014g; PT-DLR 2014a). In case of IWRM and CLIENT, the accompanying project AIM (Assistance for Implementation) additionally supports projects in crosscutting issues such as establishing contacts to stakeholders on political levels or to development banks, aimed at supporting the implementation of project results (BMBF 2014h).

Most projects in FONA – as in other BMBF programmes – come into being based on official calls for proposals, which the BMBF announces publicly. These calls, officially termed “announcements of regulations for funding measures”, specify the topic of the funding measure, give details about the envisaged project structure and define criteria that have to be fulfilled, such as scientific excellence, country expertise, composition of the consortium and applicability of results. Project proposals undergo a competitive process of scientific review by external experts (BMBF 2009a; 2014i).

The BMBF commonly funds international projects as collaborative projects (*Verbundprojekte*), consisting of research partners in Germany and in the cooperation country. Additionally, depending on the call for proposals, the BMBF requires part-

ners from companies or other stakeholders (from governmental bodies, implementation agencies etc.) to be included in the consortium, such as in the IWRM or CLIENT calls (BMBF 2004a; 2004b; 2010b,) (ch. 10).

5.3 International funding initiatives in FONA

As other BMBF research programmes, FONA is primarily dedicated to supporting German researchers. Nevertheless, FONA has served as a framework programme for funding many initiatives aimed at supporting cooperation between Germany and developing countries and emerging economies (Appendix B-2). Whereas in chapters 6 and 7 I will present an analysis of the actors involved and processes leading to the concretisation of funding initiatives, programmes and strategies, this section shall at introduce FONA's different funding initiatives of recent years for the sake of a broad overview.

As an umbrella, FONA gathers a large variety of different funding initiatives. Apart from the topic of the individual funding initiatives, main differences between them are to be found in their structural set up, which in turn is linked to the mode of agenda setting. Older funding initiatives for international cooperation are mainly *unilateral* initiatives, such as the Megacities initiative or the IWRM initiative. As unilateral initiatives, they were designed by the BMBF according to German research interests, without consultations with the governments of cooperation countries. As a consequence, although international in their scope, they are financed solely through the BMBF and generally not cofinanced by the partner countries. The mode of agenda setting as well as funding modalities in unilateral funding initiatives have severe consequences for the research projects implemented in their scope. Effects range from practical problems, such as finding funding for researchers in the partner country, to the ethical problem of repeating old patterns of cooperation between well-paid foreign experts and local researchers as mere recipients of knowledge (ch. 7, 9).

However, newer initiatives also emerge from *bilateral* initiatives with other countries or regions. For example, CLIENT, the funding initiative for International Partnerships for Sustainable Technologies and Services for Climate Protection and the Environment (BMBF 2010b; 2015i) stems from a joint political initiative, the Dialogue for Sustainability between Germany, Brazil, Russia, India, China, South Africa (the BRICS countries) and Vietnam, which started in 2008 (BMBF 2009b; 2009c; BMBF and MCT 2010; BMBF and DST 2010; BMBF and Indian Department of Science and Technology 2011). CLIENT emerged as a follow up of the dialogue as a call coordinated between Germany and the partner countries (BMBF 2010b). Similarly, the German-African Regional Science Service Centers (RSSCs) are examples of bilateral or even multilateral funding initiatives. In their