5 Public funding for international research cooperation in Germany

Research cooperation between Germany and developing countries or emerging economies is located at the borderline of responsibilities between science policy and development policy. Depending on the thematic field of science, other technical fields of policy, such as environmental policy, agrarian policy or health policy, may overlap thematically as well. Whereas in other countries, such as France, responsibilities for science for development issues are shared between the Ministry of Development Cooperation and the Ministry of Science (interview with EE19), in Germany the framework for research cooperation is provided mainly through science policy, which is defined by the BMBF. Development cooperation policy, in contrast, is determined through the BMZ. It is important to understand that scientific cooperation and development cooperation operate within different institutional settings, have different objectives and also focus on different target groups. As the subject of my research is research cooperation between Germany and developing countries or emerging economies, not technical development cooperation, my focus is German science policy and funding, not development policy and funding.

5.1 Research funders for cooperation with developing countries and emerging economies

5.1.1 Institutional and project-based research funding

The German constitution obliges the German state to foster science, research and tertiary education (Heinrich 2003). Thus, public funds are made available for scientific endeavours of different kinds. In 2012, the German state spent a total of EUR 23.1 billion on research (DFG 2015: 24). This public funding of science is based on institutional funding on the one hand and on competitive research funding on a project base on the other.

Public core funding – i.e. institutional funding for university-based as well as non-university affiliated research and research infrastructure – is mainly distributed through the German national state and through its federal states, the *Bundesländer* (BMBF 2014a). Public German universities receive their core funds through the *Bundesländer.*[1] In addition, the German research landscape consists of four big non-universitarian research institutions: The Max Planck Institutes, the institutes of the Leibniz Association, the Helmholtz Centres and Fraunhofer Institutes. All of them receive cofunding through the national government and *Bundesländer*, with varying shares of funding – and an increasing share of third-party funding (for a detailed overview, see GWK 2017: 38).

Furthermore, app. 40 research institutes are funded publicly in order to carry out policy-relevant research on behalf of different German federal ministries, such as the Federal Research Institute for Rural Areas, Forestry and Fisheries, the Thünen Institute, under the auspices of the Federal Ministry of Food and Agriculture (BMEL) (Thünen Institut 2014) or the German Development Institute (DIE), which provides policy advice to the BMZ and receives core funding through BMZ and the State of North-Rhine-Westphalia (Deutsches Institut für Entwicklungspolitik 2014).

Next to public core funding, project funding – both from public as well as private sources – has been playing an increasing role in Germany since the 1990s. The quota of third-party funding increased from 16% in 1998 (DFG 2012: 29) to 28% of the total funds available in 2012 (DFG 2015: 25). In project-based funding of research, both *Bundesländer* as well as the federal German government rely on the Deutsche Forschungsgemeinschaft (DFG), Germany's largest research funding institution, which functions as an intermediary in distributing competitive project-based research funds (Hinze 2010; DFG 2012). Among all public and private donors, the German Research Foundation (DFG) supplies the highest share of third-party funds: In 2012, the DFG came up for around a third of the total third-party funds. The *Bundesländer* only financed a minor share of the total third-party funds, amounting to under 2% (Statistisches Bundesamt 2015: 28). The EU's research programmes, currently Horizon 2020, are an important source of third-party funding for research projects in Germany as well (European Commission 2015). As all member state, Germany contributes funds to the budget of Horizon 2020. In return, German researchers are encouraged to apply for funding. In 2013, German researchers obtained a total of EUR 549.883 million from the 7th European Framework programme in place at the time, amounting to roughly 10.8% of the total third-party funds distributed within the German research community in 2013 (Statistisches

1 Since 2015, a change in Article 91b of the German constitution enables the German national state to cofund public universities along the *Bundesländer* (BMBF 2015c). It remains to be seen if this affects the share between core and project-based research funding in the long term.

Bundesamt 2015: 28). In contrast to these different sources of public funding, private sources only supplied a total share around 20% (DFG 2015: 26).

The German state thus is an important source of third-party funding distributed through intermediaries such as the DFG or the EU-Commission. However, the German national state also supplies and distributes around 25% of the third-party funds available on its own (DFG 2015: 26). Different ministries are endowed with distributing research funds in Germany. Among them, the BMBF supplies the biggest share of research funding on project basis, with EUR 3,064.5 million in 2012 (BMBF 2014a: 502).

It is worthwhile to question why the BMBF distributes a large amount of third-party funds itself instead of commissioning the DFG with the task. The shared responsibilities of the *Bundesländer* and the federal government in view of higher education and research explain this fact: Until the change in Article 91b of the German constitution, the BMBF was not allowed to provide institutional funds to universities (BMBF 2015c). However, the funds distributed among the German research community via the DFG are predominantly used in research projects whose focus is defined bottom-up by the researchers themselves. The BMBF therefore only has a limited structural influence on universities. As a consequence, the ministry needs to define and fund research projects on its own in order to direct research activities towards national objectives of science policy (Stucke 2010; DFG 2012: 43).

5.1.2 German research funding for cooperation with the developing countries and emerging economies

Within the bigger picture of public third-party research funding, some funds are specifically dedicated to funding cooperation between German scientists and scientists from developing countries or emerging economies. Table 5-1 gives an overview of the main German actors in the area of funding science cooperation and their most relevant programmes for cooperation in research between Germany and developing countries and emerging economies (Programmes of the BMBF are excluded from table 5-1 and illustrated separately and in more detail in Appendix B-2).

As the table shows, various institutions support international cooperation between Germany and developing countries or emerging economies in different ways and on different levels. International research cooperation is mainly funded through mobility schemes, such as individual research scholarships abroad. Most institutions do not exclusively support research cooperation, but support the internationalisation of education as well, e.g. through enabling studies abroad or through the exchange of educational staff or engage on a more strategic level in order to enhance internationalisation. In doing so, the various institutions do not

necessarily follow the same agenda. Comparable to findings in other countries, different German actors or donors in the field of international research cooperation follow diverging objectives and act based on different motivations (Flink and Schreiterer 2009).

Among the public donors, the Federal Foreign Office (AA) seeks to promote cooperation in order to advance general foreign policy goals and to promote Germany as a research and business location with activities and funding in the frame of its *Außenwissenschaftspolitik* or Research and Academic Relations Policy. Between 2011 and 2015, the AA spent around EUR 600 million on different activities in the field of research cooperation with developing countries and emerging economies in research (18. Deutscher Bundestag 2017: 12).

Emerging economies play a central role: In a joint effort with the BMBF, the AA funds so-called German Science and Innovation Houses in Russia, Brazil, India, Egypt and the US, which shall increase the visibility of German ST&I abroad (Auswärtiges Amt 2013). In addition, the AA also funds the internationalisation of research through granting research scholarships and research awards for Germans abroad or foreigners in Germany. The AA does not handle the administration of these scholarships itself but works with the German Academic Exchange Service (DAAD) and the Alexander von Humboldt Foundation (AvH) as intermediary organisations.

Alongside other funders such as the BMBF and *Bundesländer*, the AA also supports the internationalisation of research through the DFG's international schemes. Mainly oriented at strengthening German research based on competition and excellence, the DFG grants individual research scholarships and professorships for foreign scientists in Germany and German scientists abroad. Although its standard programme of project funding is not primarily aimed at international cooperation, researchers may do so within the scheme, normally without receiving funds for project participants outside of Germany. In case of cooperation with developing countries, however, researchers may apply for additional funds for partners abroad. In addition, the DFG also cofunds international cooperation with funding institutions from other countries. Bilateral calls with developing countries are rare, but joint programmes or calls for cooperation with BRICS countries have been funded repeatedly (DFG 2012, interview with EE14).

Table 5- 1: German donors and funding bodies of international research cooperation and their main approaches

Donor/Funding body	Type of activity funded
AA	Research (and study-) scholarships via AvH and DAAD; German Science and Innovation Houses
AvH	Research scholarships and research awards for foreign scientists in Germany and German scientists abroad (financed through AA, BMBF, BMZ); specific programmes for researchers from developing countries
BMEL	Project funding and staff exchange schemes via the Federal Office for Agriculture and Nutrition (BLE)
BMZ	Individual scholarships via AvH and DAAD; Institutional funding of CGIAR centres (via GIZ); Project funding for agricultural research for development (via GIZ); Funding for higher education initiatives via GIZ, DAAD
DAAD	Different research (and study) scholarships for foreign students and scientists in Germany/German scientists abroad (financed through BMZ, BMBF, AA); specific programmes for researchers from developing countries; Programmes targeting higher education, such as the Exceed programme on cooperation and excellence in higher education, or the Pan-African University (with GIZ); Research components in the scope of large partnership programmes between Germany and developing countries/emerging economies; To a lesser extend: Programmes for project funding, such as NoPa (joint initiative with GIZ and CAPES)
DFG	Individual research scholarships and professorships for foreign scientists in Germany and German scientists abroad, no specific programmes for developing countries (financed through *Bundesländer*, BMBF, AA); Project funding: international cooperation possible in normal programme, partners outside of Germany usually not funded, but in case of cooperation with developing countries additional funds may be granted
GIZ	Institutional funding for CGIAR centres on behalf of BMZ; Project funding for agricultural research for development; Research components in development cooperation projects; Initiatives targeting higher education, such as the the Pan-African University (with DAAD); To a lesser extend programmes for research project funding, such as NoPa (with DAAD and CAPES)

Source: own elaboration based on Auswärtiges Amt 2013; Alexander von Humboldt-Foundation 2014; DAAD 2015; DFG 2012 and interviews with PA16, EE05, EE15, EE14.

The BMZ funds activities within higher education and research, including individual scholarships and university partnerships for science management with app. EUR 50 million per year (18. Deutscher Bundestag 2017: 12). Next to policy relevant research carried out on the BMZ's behalf at the DIE, the BMZ commissions research on concrete, applied topics through bilateral Funds for studies and specialists, so-called *Studien- und Fachkräftefonds*, in order to back up its development cooperation projects (interviews with PA16 and PA17). In addition, the BMZ funds research cooperation to a smaller extent. This is strategically endorsed through its 2012 *Education Strategy*, which includes research and tertiary education (BMZ 2012). However, compared to other sources of research cooperation funding – and also compared to BMZ expenditures on other activities – the BMZ funds for research activities are small (BMBF 2014a). BMZ programmes rather target infrastructural measures, capacity development in the higher education sector, which are not always easily separated from research activities. However, according to the interviewee, the BMZ's focus is rather on

> "the creation of suitable framework conditions, capacitation in tertiary education, the formation of competent researchers and research capacities, as a side product of the measures. The BMBF then builds up on this. Its calls for proposals are directed towards research capacities that already exist." (PA17)

The BMZ does not have own research funding programmes, but finances research through intermediary organisations. Both DAAD and AvH receive BMZ funds in order to grant scholarships to students and scholars from developing countries and emerging economies. An example is the BMZ-funded Georg Forster Programme of the AvH, which is exclusively aimed at providing scholarships to researchers from developing countries on topics relevant to development policy (Alexander von Humboldt-Foundation 2014).

As largest public funder of international academic exchange, the DAAD received a total operative budget of EUR 441 million in 2014, with the AA supplying 40%, the BMBF 23%, the BMZ 9% and the EU contributing 15% of the budget. However, being aimed at academic exchange on all levels of higher education, the DAAD does not primarily fund research projects as such (DAAD 2016a). Similar to the AvH, the DAAD grants individual scholarships to foster international exchange and mobility. In addition, it implements large partnership programmes between Germany and developing countries or emerging economies, including network initiatives on higher education management such as the Dialogue on Innovative Higher Education Strategies, or so-called "subject-related academic partnerships with developing countries" (DAAD 2016b). While many DAAD programmes are primarily aimed at institution building, curricula development, higher education management and strengthening research systems, some programmes have research components, such as the joint Mexican-German Master's programme on Natural Re-

sources Management and Development at the Cologne University for Applied Sciences and the Universidad Autónoma de San Luis Potosí (interview with EE15). The exceed-programme, funded by BMZ, fosters cooperation between universities and research institutions in Germany and developing countries in view of excellence in research and higher education in order to reach the MDGs or SDGs (DAAD 2017). Similarly, other programmes, such as the Ghanaian-German Centre for Development Studies and Health Research, which is implemented through the University of Ghana and the Center for Development Research (ZEF) and funded in the scope of the DAAD/AA initiative "African Excellence – Fachzentren zur Eliteförderung", are aimed at improving higher education, research capacities and enhancing future research cooperation (ZEF 2014b).

A further German institution involved in funding collaborative research activities is the Gesellschaft für Internationale Zusammenarbeit (GIZ), the BMZ's implementation agency. Through GIZ, the BMZ grants institutional funding to the international research centres of the Consultative Group on International Agricultural Research (CGIAR). In addition, the ministry funds development-oriented agricultural research projects through the Advisory Service on Agricultural Research for Development based at GIZ. Research components are also integrated in other GIZ projects of technical cooperation, but the competence centre for education within GIZ also has a specific unit on higher education and research (interviews with EE04, EE05; PA16, PA17). Whereas the GIZ rather carries out institution building projects in order to strengthen developing countries' educational and science systems, some GIZ programmes also resemble applied science projects, such as the NoPa programme. NoPa – according to its name aimed at creating "New Partnerships: Linking Academic and Technical Cooperation between Brazil and Germany" – was co-organized as a funding initiative between Germany (GIZ and DAAD) and Brazil (CAPES) between 2010 and 2018 (GIZ 2013, interviews with EE5, EE15). Funded through BMZ, the DAAD and GIZ also cooperate with the Commission of the African Union to set up the Pan African University's Institute of Water and Energy Sciences. Aiming at fostering higher education, science and technological development across Africa, the Pan African University establishes new institutes at existing research centres, aimed at educating post-graduates as well as PhD-candidates and to conducting applied research (DAAD 2016c; GIZ 2016a).

Last but not least, the Federal Ministry of Food and Agriculture (BMEL) funds a small number of international research projects and staff exchange in the area of global food security. The BMEL commissions the Federal Office for Agriculture and Nutrition with project funding (Federal Office for Agriculture and Nutrition 2015).

Among the German ministries engaged in funding international cooperation in research – without counting spending on higher education or mobility measures through intermediaries such as the DAAD – the highest amounts of funding are granted through the BMBF. Although no overall numbers of BMBF expen-

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).