4 Research design and methodology

4.1 Scientific model and approach

Research paradigms can be defined as "the basic belief system that guides the investigator, not only in choices of method but also in ontologically and epistemologically fundamental ways" (Guba and Lincoln 1994: 105). Data collection methods, type of data generated, data analysis and the scientific paradigm that the research is based on have to be congruent: Based on different assumptions of science and reality, each paradigm employs different methodologies and thus generates distinct data (Berg 2001). In addition, data can provide information towards different research questions, depending on the researcher's theoretical and normative background. The close interrelation between data and theory is often not discussed adequately in scientific literature (Baur 2009: 12; see also: Ritchie and Spencer 1994). For this reason, I point to my understandings in this section.

My research was embedded in a constructivist perspective, which makes it necessary to consider the positionality of the researcher and the people to be researched (Yanow 2006). Grounded in the constructivist paradigm, I made use of qualitative social research methods: I was interested in the nature of science policy for cooperation with developing countries and emerging economies as my research subject. I focused on the "meanings, concepts, definitions, characteristics, metaphors, symbols, and descriptions" (Berg 2001: 3), rather than on their statistical occurrence. In an interpretative approach, I addressed my research topic by collecting data which seemed most suitable to reveal the perceptions of the interviewees and participants (Krumm 2009).

The assumption of different constructions and perspectives on reality explains why instead of an *objective* evaluation of policies or projects, based on indicators, the focus of research lies on the discursive perceptions of the actors in the field of scientific cooperation between Germany and developing countries and emerging economies. It was not the objective to quantify effects of policies or projects on *development*, but to trace the conceptualisations and assumptions of different actors in view of terms such as *development*, *innovation* or *cooperation*, and find out in which way they influence the projects in their practices of translating policy into action.

Beyond my interest in perspectives of discourse and knowledge, turning away from measuring impact is also based on a scientific rationale: It still is considered as nearly impossible to find a scientifically sound quantitative or qualitative measure of research impact. Impact is perceived as "conditional, even serendipitous; allocating resources to it thus remains highly problematic" (Brewer 2011: 256). Extending Brewer's argument, I would put forward that it is equally problematic to operationalize it: As sustainable development as such is influenced by a plenitude of external factors, it seems problem-laden to develop valid and reliable indicators for measuring impacts that take into account the manifold dimensions of development and, what's more, to establish causalities between research, the policies framing it, projects' implementation actions and the multifaceted developmental realities – which might be determined by manifold research-independent variables (Sumner et al. 2009, see ch. 2.4.1). Instead of tracing impact, the concept of impact itself as employed by the BMBF turns into an object of investigation (ch. 9, 10).

4.2 Research design

The research process was laid out in an open design, inspired by grounded theory approaches. Research did not aim at testing a pre-existing hypothesis but at finding a plausible explanation for the empirical data (Corbin and Strauss 2008). Embedded in sociological approaches to discourse and constructivism as conceptual frame (ch. 3), which guided me in developing research questions and data collection methods, my approach to the empirical phenomenon was reconstructive or interpretive. Goal of my empirical data collection and analysis was thus to construct a theory about the research subject through interpreting data through the lens of the conceptual frame (Przyborski and Wohlrab-Sahr 2014). However, as empirical data was generated, the conceptual frame was open for continuous reassessment in view of its capacity to adequately explain the subject of research as well (Eisenhardt 1989; Mikkelsen 2005; Shah and Corley 2006). In the process of data collection, indeed it showed that the conceptual frame chosen before fieldwork did not correspond entirely to the occurring phenomena. In the research proposal, focus was on the interaction of projects and the policy sphere at a science-policy interface. As empirical research showed that the interfaces between policy and other actors were far more relevant for political decision making, the conceptual frame had to be adapted, the ideas of discourse coalitions and power were integrated within the theoretical frame and applied to the analysis of the interaction of the BMBF with different actors in generating knowledge for policy (ch. 7).