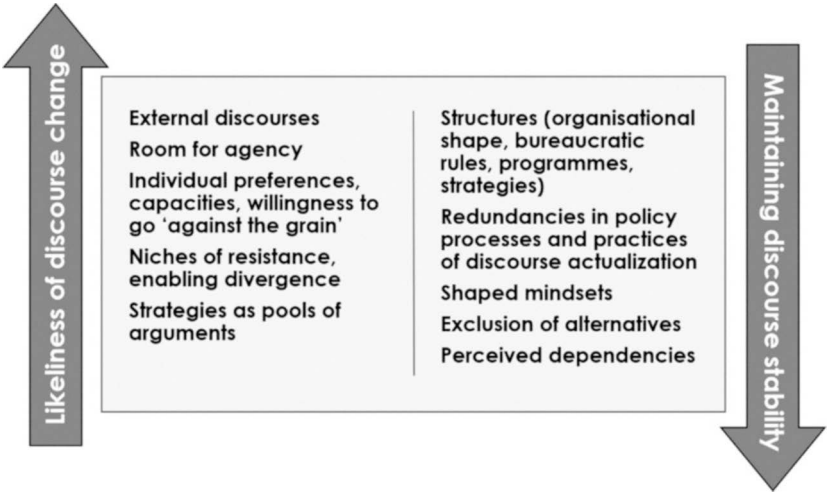
novative funding initiatives are also enabled by a property of political programmes and strategies: These functioned as a pool of arguments, enabling deviation instead of providing a narrow frame.

Figure 11- 1: Factors of stability and change in the policy discourse



Source: Own elaboration

11.2 The BMBF's sustainability concept vs. global sustainable development

The core ideas of German science policy, i.e. fostering German prosperity through science, technology, and innovation, guide the BMBF in its main discursive direction, including subdiscourses such as research cooperation in sustainability research. Congruent to the leitmotif of BMBF policy, benefits for the German partners motivate international cooperation in sustainability-oriented research. German interests and benefits are conceptualized as both economic interests, such as access to future markets, as well as research interest, such as access to partners or topics. Other argumentative strands are rarely taken up as legitimisation of international cooperation within BMBF. Research cooperation funded by the BMBF is hardly ever put into the context of conflict prevention, while the German Foreign Affairs Ministry explicitly draws on peace-building arguments in its initiative on external science policy (Auswärtiges Amt 2013). Similarly, the BMBF tries to set itself off from any rationales believed to be development-related. I have argued that

this is a strategy of demarcating boundaries for securing institutional and discursive stability.

Sustainability is not a part of the ministry's core identity and not an overall guiding frame for its thinking and action, even though subprogrammes such as SÖF[1] or funding initiatives such Megacities represent an orientation towards sustainability objectives. In adopting the concept of sustainability, the BMBF adapted it to its needs. In the BMBF's conceptualisation, sustainability, especially in its relation to international cooperation, experiences a conceptual reduction to environmental aspects on the one hand, and to problems requiring technological solutions on the other, which entails a depoliticisation of the concept of sustainability. Following, BMBF science policy and funding initiatives for cooperation with developing countries in sustainability research are not primarily dedicated to fostering sustainable development in partner countries. On the contrary, the ministry explicitly states that a primal motivation of its cooperation activities is to strengthen the German science and innovation system as well as the German economy. The dominant policy discourse hence influences the BMBF's conceptualisation of sustainability and its policies in the field. Even if policy initiatives are framed as research for sustainable development, such as in case of the IWRM initiative or the Megacities Initiative, *global* sustainable development, which encompasses aspects of global justice or social equality, are not always targeted.

11.2.1 Rationales of the IWRM and Megacities funding initiatives

In its funding initiatives for sustainability-oriented research, the BMBF commonly couples a rationale of sustainability with further funding rationales. Sustainable development is not the exclusive motivation for funding in neither funding initiative examined here. In view the concept of sustainable development employed in each funding initiative, Megacities funding and IWRM funding can be contrasted: The funding initiatives are motivated by different rationales, use different sets of

1 SÖF is often referred to as evidence for the BMBF's encompassing and inclusive orientation of sustainability research. However, I argue that SÖF funding, even though it plays an important role in fostering transdisciplinary sustainability-oriented research in Germany, remains a niche and does not reflect the BMBF's core discourse. This is mirrored by the amount of funding for social-ecological research. Between the years 2000 and 2015, SÖF received a total budget of EUR 120 Mio, less than 10 Mio per year (BMBF 2015h). Even though annual funding for SÖF increased from EUR 13,3 million in 2012 to a planned EUR 20 million budget for 2019 (BMF 2014; 2019), the overall budget remains only a small part of the overall budget for FONA – which amounted to almost EUR 2 billion from 2010-2014 (BMBF 2019a). Furthermore, SÖF as a funding priority is not aimed at international research cooperation as such. While in some SÖF related funding, such as the junior research groups, international cooperation is possible, it is not a crucial element of SÖF. The main funding for international cooperation in FONA takes place in the subareas of Global Change and Resources and Sustainability (BMBF 2009a).

arguments, aim at different objectives, envisage differing types of impact and propose different potential solutions (ch. 9). In the IWRM initiative, the BMBF set the stage for technological solutions in water management, based on the underlying rationale of contributing to German economic prosperity through technology exports, next to the further rationale of contributing to IWRM abroad. In doing so, with IWRM the BMBF followed a tradition of eco-modernism – concentrating on technical solutions of environmental problems, on cost of a holistic concept of sustainability.

In contrast to the IWRM initiative, the BMBF took a more open-ended approach in the Megacities initiative. The primary objective was to contribute to sustainable urban development and to jointly solve problems in the city chosen as site of research. Even though in the Megacities initiatives, the participation of German business partners was encouraged as well, the BMBF insisted less on their inclusion; and the overall objective was *not* chosen based on German technologies as pre-existing instruments to prescribe a type of solution – the rationale of contributing to German economic welfare was less prominently transmitted in this funding initiative. The BMBF enabled the funded projects to carry out a systematic analysis of the problem context in their first stages to search for adequate types of solutions at different entry points of the urban landscape.

In both funding initiatives, the BMBF rather focused on concrete problem-solving through the research projects funded rather than addressing systemic issues of sustainable development in partner countries or on a global scale. Solutions on a smaller scale – even if potentially transferable to other contexts – were in the focus of both funding initiatives, not sustainable development in the bigger picture. However, the focus of the IWRM initiative on economically viable solutions and German benefit was perceived as difficult and even counteracting local sustainable development processes. Project participants pointed at the difficulties of projects to fulfil the demands for technology implementation in a meaningful way, adapted to and adequate for the context of the partner countries. Here, the room of agency for researchers to modify the funding initiatives' objectives in putting them into practice was seized to adapt the policy expectations towards more sustainable pathways.

The analysis of the Megacities initiative and the IWRM initiative illustrates how the BMBF adopts the concept of sustainability and reinterprets it according to its own discursive needs – to prevent conflicts with the BMBF's core rationale of economic prosperity. While the original concept of sustainable development as well as most discursive reinterpretations of the concept include social and economic aspects such as global solidarity, social responsibility or global equity, these are not conceptually integrated into any BMBF funding initiative for cooperation with developing countries and emerging economies analyzed. Most funding initiatives of the Sustainability Subdepartment address ecological problems and consequently

frame research cooperation as a provider of (often technical) solutions to these. Social or economic sustainable development at a systemic level in partner countries was not primal objective of research cooperation. Targeting German technology exports instead of an open-ended search process for the best potential solution in the IWRM initiative even may have *reinforced* pre-existing global financial power structures, instead of redistributing economic benefits. Systemic dependencies and inequalities, part of the sustainability concept as global inner-generational justice, were not addressed neither as research topic nor as an effect of research in any of the funding initiatives. Similarly, no discursive storylines evolved around contributing to an own view on problems in partner countries, to decolonisation or emancipation of developing countries and emerging economies.

11.2.2 Consequences for the German science system

In contrast to the BMBF's conception, many scholars challenge the idea that sustainability in all its dimensions is achievable without systemic changes and perceive the combination of sustainability and economic growth as a paradox, a conflict of goals (Robinson 2004; Hopwood et al. 2005; Redclift 2005; Wright and Kurian 2010; Hugé et al. 2013; Jessop 2012; Göpel 2016). Enabled through the ambiguity of the term, the BMBF reinterprets sustainability to continue established practices. Through its reinterpretation of sustainability to a depoliticized issue, tackled best through economy-driven, technical solutions, the ministry is able to evade questions of profound institutional or systemic change in order to reconcile economic growth and objectives of sustainability. Table 11-1 gives an overview about the main differences between the narrow concept of sustainability in the BMBF's conception and a more encompassing concept of global sustainable development.

In the IWRM funding initiative very prominently, in the Megacities funding initiative much less so, the BMBF turned sustainability research into an instrument of fulfilling German interests, often reduced further to economic interest (ch. 8). From a critical point of view, acknowledging the natural boundaries of the planet, as well as the global social and economic interdependencies, however, German interest should be extended to adequately cover global sustainable development. Reducing sustainable development issues to German interest is problematic on this normative basis. Tackling grand challenges requires joint problem solving and a more holistic conception of sustainability as a common global project. I argue that taking sustainable development seriously as an objective of research funding requires abandoning the current duality of goals – thus of aiming at sustainable development through/while exporting or adapting German technologies. From the perspective of development research, the practice of technology export through re-

search cooperation might be classified as *informal tied aid*[2], which scholars perceive as potentially harmful and as a *hinderance* to sustainable development in developing countries (Carbone 2014). From the perspective of sustainable development, global interests should be as prominent as German interests in policy, or, put differently, global sustainability – as a collective benefit – should be a genuinely German interest.

Table 11- 1: Narrow vs. encompassing understanding of sustainable development

	The BMBF's narrow concept of sustainable development	*Encompassing concept of global sustainable development*
Geographic focus	Place-specific, local interventions in the partner countries (developing countries/emerging economies); possibly transferable to other contexts	Universal agenda for *all* countries, interconnected issues, common responsibility; global scale
Conceptualisation of sustainable development	As a predominantly environmental concept	As a social, economic, environmental concept
Getting there through	Modernisation, green growth; no substantial system change	Systemic transformation, shift of dominant paradigm
Research	Understanding issues of environmental change; developing solutions	Understanding issues of environmental change; understanding necessary processes of social transformation; developing solutions
Solutions	Visible, technical solutions	All entry points for solutions

Source: Adapted and further developed from Horner and Hulme 2017: 40

I put forward that interpreting research for sustainable development as a means for providing mainly technological, economically viable solutions to environmental problems has negative consequences for the German science system's ability to cope with global challenges. Adaptation and mitigation of climate change, as well as solving other complex problems of larger scale do not only require technological approaches, but they also require critical reflection. Focusing on technologies may provide solutions to specific problems, but for coping with complex problems, considering the social and essentially political aspects of sustainable development is crucial. Denying the socio-political side of sustainable

2 Informal tied aid occurs "when, for example, donors choose to fund only projects in sectors for which their firms have a competitive advantage" (Carbone 2014: 104).

development, and not adequately fostering the critical sciences necessary to investigate the conflicts of goals and interests, the trade-offs between different dimensions of sustainability, decreases not only the capacities of the German science system to cope with global change, but also puts at risk finding suitable coping strategies for humankind as a whole. Continuing with the eco-modernist, technocratic solution orientation of German science policy may thus compromise the German contribution to protecting our world, which would require assuming responsibility for safeguarding the planetary carrying capacities. At the moment, the BMBF's policies for sustainability research do not adequately foster this role of science in its funding practice, even if global responsibility surges as a buzz word in its political strategies.

The depoliticisation of sustainability and its interpretation as mainly technological problem influence the science system in the long run, if instead of multiple disciplines only capacities in those disciplines are fostered that are economically conducive. However, future-proofing Germany entails society as a whole. *Not* respecting planetary boundaries in the end would negatively affect any efforts for economic prosperity, as well. Turning an encompassing concept of sustainable development into the core discourse of science policy instead of economy-oriented innovation would therefore be advisable.

11.3 Global development as opportunity for German science policy

Perceiving sustainable development as *global* development shifts the focus of the concept from sustainable development on the local level towards the global interrelations and responsibilities. Additionally, the previous emphasis on necessary change in so-called developing countries shifts towards an emphasis on the needs of transformation in *all* countries (Horner and Hulme 2017). This discursive reinterpretation of sustainable development is already reflected in the Agenda 2030 and the SDGs and, I argue, should turn into a discursive framing of BMBF policies for research cooperation with developing countries and emerging economies as well.

Considering all nations as developing countries in certain aspects of social, economic, or ecological development, also may be pictured as a *potential* of research cooperation on eyelevel between different international partners that lives up to its name. Specific topics of sustainable development which affect partners on both sides could present starting points for comparative research in international teams. Issues such as social inequality on different scales, carbon-neutral development, sustainable urban development or sustainable production and consumption present challenges in most countries (WBGU 2011; 2016; Horner and Hulme 2017).