"How do you want to run a laboratory, cooperate internationally, if the staff doesn't have the adequate capacities for specific non-scientific auxiliary tasks?" (PA09)

From a more strategic perspective, capacity development in countries of political interest was also pictured as an instrument of creating international ties. Interviewees argued in view of IWRM, that through capacity development measures, linkages were built and kept up between partners, which potentially led to further cooperation or to German brain gain: "We have to invest in the interconnections, such as through PhD programmes. From a German perspective, it is not tragic either if PhD students stay here after they graduate. We gain good brains. That is egoistic, but it happens." (EE17)

Next to deriving German benefits, capacities were also seen as a more *enduring* outcome of funding for the sake of sustainable development. Beyond the direct impact of a funded project, a positive outcome was seen in influencing the mindset of the people involved towards a more holistic sustainability thinking, which they would transport into future employments. The same idea was portrayed by a BMBF employee in view of the Megacities initiative:

> "The people working in the projects within the partner countries are important for the projects' legacy. That's those who convey the message, who may join the public authorities, who start a waste business etc. Those people who hopefully continue to be there when the German PhD students and professors have moved on to the next project." (PA03)

Capacity development was thus expected with different underlying motivations. While it aimed at strengthening capacities on individual and systemic level abroad, at the same time it indirectly targeted German labour market demands of capacitating people as future potential staff. The BMBF's request for capacity development also requires some scrutiny in view of the interlinkages between capacity development, as an expected *result*, and cooperation on eyelevel as expected *mode* of research partnership, which will be addressed in chapter 9.2.

9.2 Policy expectations and mode of science

The BMBF does not provide any overview depicting their *theory* of policy effects such as impact or knowledge transfer. If a theory about the impact pathways exists, the ministry doesn't make its conceptualisation explicit. Nevertheless, the implicit theory becomes evident in different statements in strategic documents, calls texts, selection criteria for project set up, etc., which hint at the underlying model.

Implicit theories of how policies influence social reality are a necessary element of any policy. The theory of a policy's mechanism, the concept of its pathway to cause effects, is not necessarily consciously reflected. In form of tacit and/or

explicit knowledge, theories are deeply engrained in policy (Hofmann 1993).[2] Theories of impact are context specific and depend on the type of policy, its content and on the type of effect it foresees. In case of the Megacities and IWRM initiative, the BMBF tried to ensure effects through prescribing a certain mode of science ex-ante (instead of assessing impact ex-post impact, ch. 10): *Transdisciplinarity* and *cooperation on eyelevel* are conceptualized as silver bullets to ensure that projects produce impacts.

While in the previous sections, I have analyzed the objectives of BMBF funding initiatives for cooperation with developing countries and emerging economies, this section elaborates which concepts the BMBF employs to *pursue* its objectives, thus, how the BMBF accordingly conceptualizes the adequate mode of science and cooperation with developing countries and emerging economies. The specific conceptions of the means and ways of reaching the objectives of funding initiatives, the *modal* concepts, are closely related to the policy goals and expectations of impact, as they provide guidance on the *how to* of intervention that in a specific discourse is considered as an adequate way of dealing with a phenomenon (Keller 2005).

There is no document that explicitly prescribes a certain mode of cooperation, such as inter- or transdisciplinarity or cooperation on eyelevel. As concepts they are informal but prevalent and crosscutting in the policy discourse on cooperation with developing countries and emerging economies in sustainability research. They are used in different policy contexts and in different funding initiatives, but with different functions, as the analysis shows.

9.2.1 The politics of transdisciplinarity

Arguing from a normative background of sustainability, scientists within the field of sustainability sciences consider transdisciplinary set-ups of knowledge production in science as most adequate to align science with the needs of society while respecting ecological boundaries, providing holistic problem analysis and solutions and thus contributing to objectives of sustainable development through research (Hirsch Hadorn et al. 2006; Pohl et al. 2010; Lang et al. 2012; Jahn et al. 2012).

The concept of transdisciplinarity entails the idea of *participatory* research, hence the coproduction of knowledge between scientists and non-scientific stakeholders, on the one hand. On the other hand, transdisciplinarity also encompasses the idea of considering all sides of a problem through *interdisciplinary* research; which enables the research team to find a holistic perspective on a real-world problem (ch. 2.4.3). Transdisciplinary projects are perceived to have a large potential

2 Interestingly, the public acceptance of a policy and its underlying theories depended on its *plausibility* – rather than on the *evidence* of results, as Hoffmann showed in view of German technology policy in the 1980s and 1990s (Hofmann 1993).

of generating systemic and strategic knowledge as well as target and transformation knowledge, which are necessary for transformations to sustainability (Schneidewind and Singer-Brodowsky 2013b; Grunwald 2013).

As pictured in chapter 8, the introduction of sustainability as a frame of funding in the Sustainability Subdepartment led to a broadened scope of topics funded; next to the traditional environmental core of research subjects, social and economic aspects of sustainability were now included as topics (Weingart 2006). The more encompassing approach of previously separate research subjects also introduced inter- and transdisciplinary approaches in the BMBF's research funding portfolio (interview with PA04). Since then, transdisciplinarity has turned into a standard element for the Sustainability Subdepartment's funding of applied research (interview with PA11).

Consequently, both the Megacities as well as the IWRM funding initiative, as most other research funding initiatives issued within FONA, requested their projects to be application-oriented and transdisciplinary. Thus, within the consortia, the cooperation between scientists of different disciplines (*interdisciplinarity*) with local stakeholders and problem owners (*transdisciplinarity*) was required in order to ensure a focus on real world problems (*application orientation*). The subsequent problem solution through technology transfer was to be ensured through the involvement of technological businesses in IWRM (*solution orientation*).

Within the Megacities funding initiative, the concept of transdisciplinarity maintained its more encompassing characteristics:

> "You consider which partners you need to ensure that you achieve a useful result from the tax money you invest. In sustainability, you rarely come across purely natural science questions. In general, the problem is complex, otherwise someone would have solved it 20 years ago. The social component of research, including the translation of results, is immanent part of the process." (PA03)

According to this definition, transdisciplinarity is not just a means of ensuring impact, but also a way of integrating different perspectives from different disciplines, a mode of science to tackle complex problems. However, I argue that the BMBF has re-interpreted transdisciplinarity in order to fit to its funding concepts in the IWRM funding initiative, where transdisciplinarity was predominantly conceptualized as a mode of science to ensure impact in form of the transfer of technologies. In this sense, a ministerial representative stated in view of the IWRM initiative:

> "Composing research projects out of science, business and practice is key to address those issues that are needed in that country, so they don't consider results as irrelevant. Therefore, it is a precondition for the projects to include local users, suppliers etc, who state what they are interested in." (PA02)

In the IWRM initiative as well as in other funding initiatives stemming from the Resources Unit, such as CLIENT, transdisciplinarity was reduced to its element of ensuring technological impact through stakeholder integration and interdisciplinarity. The involvement of social sciences within the research projects was consequently not part of a complex problem analysis but meant to detect potential barriers for implementing a predetermined technical solution. Social sciences were portrayed as an add-on to technical and natural sciences, as the head of department, Huthmacher, stated in a session of the Parliamentary Committee of Education, Science and Technology Risk assessment, that "[…] you have to acknowledge that social-ecological research, SÖF, cannot be our one-and-only approach in the future. We need to integrate SÖF into technology development." (17. Deutscher Bundestag 2012b, *own translation*)

Realizing that technologies fail if the context is not taken into account, the BMBF instrumentalized transdisciplinarity to ascertain that technology transfer worked out:

> "It is our interest to use nature more sustainably and to employ the most advanced technologies. And our goal is to enable these countries through cooperation to make that possible. It is about technologies, people, capacities to use them, about socio-economy. Therefore, the cooperation with humanities and social sciences in these countries is very important. So you know how to implement that in the countries. Because it may mean a total cultural change for the people." (PT04)

Considering its different functions in Megacities and IWRM funding, transdisciplinarity can be employed to achieve different goals and objectives. There is a layer of *politics* involved in utilizing the concept as such as well as its components. As others have argued in view of participation (Leach et al. 2010; Cooke and Kothari 2001), transdisciplinarity can be instrumentalized in manifold ways – as a means of achieving researchers' goals, as a means towards more ownership and emancipation of stakeholders; for broader problem framings as well as for business-oriented aims. By using transdisciplinary modes of science to ensure technology transfer, the BMBF is estranging the model of transdisciplinarity from its original intentions. In the discourse of sustainable development, participatory processes were traditionally not only seen as a means to an end. In its quality of enhancing collective learning and emancipation, participation was considered as a value as such (Newig et al. 2011; Kuhn and Heinrichs 2011).

While present in the Megacities initiative, aspects of stakeholder emancipation, of encompassing problem framing from non-technological, non-scientific points of view are lost in the adaptation of the concept to the BMBF's ends in funding initiatives such as IWRM. The economy-oriented twist of the concept is not new (Lundvall 1985), but stakeholder participation and integration of social sciences are derived of their encompassing potentials and utilized to merely provide a context

for a smooth technology adaptation or implementation. This fits well to the depoliticisation through a focus on technological solutions observed in case of the IWRM funding initiative described above (ch. 9.1.1).

9.2.2 Cooperation on eyelevel – replacing old cooperation patterns?

Next to transdisciplinarity, *cooperation on eyelevel* was a further principle often stated to underlie both the Megacities and the IWRM funding initiatives. At the time of research, BMBF funding for cooperation with developing countries and emerging economies in general followed the same model of cooperation as funding for cooperation with industrialized nations – both in the thematic departments' unilateral initiatives as well as in the frame of the International Department's bilateral ST&I agreements. As a standard, and in contrast to development cooperation, each partner country provided the funds for its own researchers. Interviewees standardly used the motto of cooperation on eyelevel to describe the type as well as the rules of the partnership (interviews with PA01, PT01, PA03, PA7, PA11, among others).

However, among the different interviewees, no shared definition existed of what cooperation on eyelevel meant – neither theoretically nor in practice. Apart from the different concepts of eyelevel as such, conceptualizing cooperation within BMBF-funded projects as cooperation on eyelevel was accompanied by diverging assumptions in view of *ownership* and other side effects of cooperation.

In some funding initiatives, especially in those for cooperation with emerging economies, such as in CLIENT, BMBF employees conceptualized eyelevel by referring exclusively to the expected *financial eyelevel* of the partner countries. However, it was widely accepted that contributions in kind (such as through providing scientific staff, infrastructure and/or time for the joint research project) also counted as financial contribution, but as a basic principle, each partner country provided funds for its own project participants (interview with PA06). A further interviewee equally pointed out that in CLIENT, eyelevel meant cofinancing: "The Chinese have to pay 50% themselves. They have to wisely consider if they want to invest money in something they don't manage themselves later on. If it doesn't work, who is in trouble, who bears the risk? It's the Chinese, and that's good." (PA11) In this conceptualisation, cooperation on eyelevel thus entailed equal cofunding. According to this statement, cofunding was employed to create ownership in the partner country, which in turn was believed to ensure long-lasting effects of the technological innovations stemming from the projects. Other interviewees hinted at a different underlying rationale, in searching for cooperation on eyelevel with emerging economies, however: "We search for a concrete and specific benefit for Germany. Eyelevel means we don't cooperate to strengthen partner countries or support them." (PT05)

In view of cooperation with developing countries, the conceptualisations of eyelevel cooperation included similar dimensions, such as in this statement of a head of department of one of the project management agencies in view of the African Regional Science Service Centers:

> "For me, eyelevel means that a partner defines the own interests, and these are taken as seriously as our own. And it's about how you pursue these interests. Partners have to contribute something in line with their possibilities. They shall not expect funding just because they are poor. They must contribute what they can. There will be imbalances in many cases in view of financing, that's ok. What's important is mutual appreciation, to take the interests of the other serious, and not to say: 'I pay, and therefore I decide.'" (PT04)

The idea of *ownership through cofinancing* was conceptualized as closely tied to cooperation on eyelevel in other definitions as well. An interviewee stated in view of the Megacities funding initiative that "[o]n the German side, we have to be convinced that there is a high and resilient interest in the partner countries. It's secondary if the own contribution is in kind or in cash. Then the probability is high to achieve some kind of impact. And impact is what I want." (PA03)

Accordingly, conceptualisations of eyelevel with developing countries encompassed ideas of ownership, joint decision making and financial contribution as well. Although interviewees acknowledged that the financial contribution would not have to be on equal terms to lead to a cooperation on eyelevel, but deemed in-kind contributions or lower shares sufficient, only cofinancing was an acceptable proof of interest, and thus guaranteed ownership of partner countries in the joint research cooperation.

In case of the IWRM and Megacities funding initiatives, which in contrast to newer funding initiatives as the African RSSCs still originated unilaterally in the BMBF, the insistence on eyelevel cooperation also argumentatively backed up the practice of unilateral funding. The BMBF pictured the provision of cofunding through the partner countries as a precondition of their ownership. Defining eyelevel as financial ownership provided the BMBF with a plausible legitimation of not stepping in with any support in case of insufficient funding on the partner countries' side.

As in case of transdisciplinarity, the conceptualisation of eyelevel cooperation was a political issue and employed to serve a purpose. Framing cooperation as *on eyelevel* fulfilled a legitimizing function. Eyelevel implies a balanced, fair cooperation among equal partners. The term sounds ethically and politically correct. Nevertheless, the practices of cooperation subsumed under the term rather served to maintain a German benefit and perpetuate imbalances.

Cooperation on eyelevel as a unique model of cooperation?

In fostering cooperation between researchers from Germany and from developing countries and emerging economies, science policy for international cooperation with developing countries and emerging economies takes place in a discursive context that has traditionally been shaped by ideas of colonialism and more recently, development cooperation.

In this context, conceptualizing research cooperation as a cooperation on eyelevel, as a type of cooperation specific to research cooperation funded by the BMBF, may also be interpreted as an attempt to demonstrate the ministry's uniqueness. The following quote illustrates the BMBF's idea of eyelevel cooperation as well as its wish to set research cooperation and science policies off from development cooperation and policies:

> "[T]he BMBF does not provide development aid, and it expects its partners to assume responsibility in the form of 'ownership'. The BMBF emphasizes partnerships in which both sides are on equal terms. The BMBF's activities abroad are thus always cooperation efforts 'with a country' and not efforts 'in a country'. This also applies to its cooperation with developing countries." (BMBF 2014e: 24)

It is paradox, however, that next to mutual interest and benefit, the ministry uses *ownership* as a means of differentiation from development cooperation. The BMBF here relies on an obsolete image of development cooperation. In development cooperation, the concept of ownership actually has a strong tradition, having turned into one of the international binding principles agreed upon in the Paris Declaration from 2005 and the follow up Accra agenda in 2008 (OECD 2008).

Nevertheless, the concepts attached to ownership and cooperation on eyelevel within research cooperation and in development cooperation differ. While according to the Paris Declaration, ownership means that "partners have operational development strategies" (OECD 2008: 9), hence that partners *own* ideas, strategies, and are in power to put these into practice. In the prevalent definition in development cooperation, ownership is consequently not necessarily tied to the financial resources necessary to achieve objectives.

As pictured above, in previous funding initiatives including IWRM and Megacities, the BMBF presented the contribution of own financial resources as essential for a balanced cooperation in research. In FONA3, a change of conceptualisation is evident: Here, the Sustainability Subdepartment tied the concept of *eyelevel* to common interest, joint agenda setting and instruments adjusted to each partner country's potential – without mentioning financial modalities at all (BMBF 2015e). The BMBF's definitions of ownership and eyelevel cooperation thus begin to converge with the BMZ's idealtypes of partnership with developing countries and emerging economies, rather than serving as a distinguishing mark.

Despite all attempts of science policy to demarcate itself from development cooperation, it builds upon the same, deeply engrained public discursive assumptions and perceptions of the world in view of knowledge, development, order, and roles (ch. 2.3). As such, many underlying assumptions about the role of developed countries in cooperation with less developed countries, as well as the patterns of cooperation, are used both in development as well as in science cooperation, although they operate in different political settings.

The perception of the Western, civilized, advanced expert who transfers knowledge, capacities, technologies to less advanced stakeholders is one of the world views shared in both settings. Some interviewees were aware of the difficulties that arise as an aftermath of the colonial legacies of viewing cooperation countries merely as a source of data, but argued that cooperation today follows a different logic: "The science colonialism of 50 or 20 years ago doesn't exist anymore." (PA07) In this respect, from their point of view cooperation on eyelevel could potentially provide a frame to new emancipatory practices replacing disrespectful, unbalanced forms of (exploitative) cooperation.

However, I maintain that the practice of not designing bilateral calls, as in case of the IWRM and Megacities Initiatives, still embodied the idea of viewing countries as a research *subject* instead of research *partner* (ch. 7.2). A paternalistic attitude remained among some interviewees within the BMBF. In view of cooperation with Africa, one of the interviewees stressed that access to data sources remained one of the key objectives of science funding for the German side:

> "We don't fund research for sustainability or solving problems of the Third World or of emerging economies, but knowledge-driven. That way both sides benefit. In Namibia, they get complete atlases of biodiversity, which they can use for political decision processes. That's science, basic research." (PA11)

While the statement rightly points at the mutual benefits of cooperation, in terms of knowledge creation, statements like the above convey old patterns of thinking: Knowledge is created by German partners, who derive a scientific benefit out of the access to biodiversity as a subject of research. The product is then handed over to their partners in Africa, who are merely recipients of expertise, and thus are *not* partners in cocreating knowledge on eyelevel, to use the BMBF's terminology.

Cooperation on eyelevel and capacity development

While one could argue that cooperation on eyelevel would entail the mutual exchange of knowledge in multiple directions – between partners from developing countries and emerging economies and German partners, between different stakeholders and scientists, across disciplines, etc – the BMBF does not include any concepts of *mutual learning* in its policy documents, which would imply an equal value of all different types and sources of knowledge. In a sense, the BMBF thereby reaf-

firms its hierarchical view of valid, western scientific knowledge as opposed to the knowledge of partners in developing countries and emerging economies, which need to catch up to become truly equal partners.

Without reflecting about any implications in view of the validity of different types of knowledge, the BMBF established a causal relation between capacity development and cooperation on eyelevel in more recent funding initiatives such as the African Regional Science Service Centers. Capacity development was pictured as a precondition and used as a means to enable partners abroad to cooperate on eyelevel. Capacity development efforts aimed to overcome the existing inequalities between countries in view of science as well as the larger institutional landscape of science management and funding.

While from a critical perspective, capacity development efforts don't challenge the Western epistemological hegemony and leave the superiority of western knowledge in the global science system unquestioned, from a more sympathetic perspective, incorporating capacity development aspects within the newer funding initiatives are attempts of structural change, overcoming knowledge gaps in research, and fostering the independence of the African partners from the German partners.

In case of the African Regional Science Service Centers, independent decision making was encouraged on the political level, too, as this was seen as one of the pillars of cooperation on eyelevel in the funding initiative. According to interviewees in the Sustainability Subdepartment and the corresponding project management agency, capacity development measures were included wherever inequalities became apparent – ranging from scientific to institutional capacities, such as managing research funds (interviews with PT01, PA11).

However, critical interviewees doubted that cooperation on eyelevel was possible at all as long as any asymmetries of resources existed between partners. In their view, cooperation on eyelevel was an illusion as long as one partner was able to preselect topics, types and mode of cooperation and thereby to set the agenda: "Cooperation on eyelevel begins if partners share a mutual interest and ask themselves which comparative advantages exist between them; which knowledge and capacities are brought in by which partner and how can they be combined in a structured way." (EE06) Essentially, cooperation on eyelevel thus is a question of power distributions. This is also reflected by the analysis of cooperation patterns in the practice of cooperation on the level of projects.

Cooperation on eyelevel in project practice

Fulfilling normative expectations of *partnership* seemed difficult in cooperation in practice within many projects funded in both the Megacities as well as the IWRM funding initiatives. Existing structural inequalities between partners from industrialized countries, developing countries and emerging economies, such as unequal

quality of tertiary education, lacking access to data or publication options in the partner countries, and a tendency of the international peer-review system to favour researchers from industrialized countries (Bradley 2007; Upreti et al. 2012) contributed to imbalances in the consortia. Additionally, the arrogant mindset of some German researchers complicated interaction as equals.

However, even stronger negative effects on partnership were caused by the lack of access of the partner countries' governments to decision making. As a side effect of the practice of unilateral calls for funding, researchers in the partner country were not illegible to receive matched public funding within their countries. The reason behind the lack of cofunding however, was not, as the BMBF had argued, a lack of interest within the partner countries. The case of the Megacities project in Lima illustrates a problem encountered by other projects in cooperation with teams from developing countries. At the time of the project's start, the Peruvian funding structures for research were still not well-developed. While the country had economically prospered, its research governance was still lagging behind. In an interview, a Peruvian government official stated that the available governmental research funds were scattered among different ministries and not well coordinated. A memorandum of understanding for cooperation with Germany, had not been signed yet at the time. Cofinancing a project was still not possible, as the Peruvian funding structures simply did not match the requirements of international project funding yet (interview with EE12).

In case of IWAS Brazil, as a cooperative project with an emerging economy, the problem was rooted at a different level. With a long-established Ministry for Science, Technology and Innovation, well developed funding structures on the national and regional level, endowed with substantial funds and a corresponding institutional set up to distribute those, as well as a ST&I agreement between Germany and Brazil, the lack in cofunding was not caused by inadequate institutional structures. Rather, the lack of cofunding was a direct consequence of non-cooperation on the ministerial level and subsequently of the well-defined bureaucracy in place, whose norms and rules for project funding did not permit a posterior grant of funding:

> "The CNPq cannot just jump onto an existing unilateral funding if the Brazilian partner is already selected. IWAS only approached us when Germany had started funding […]. There was no joint decision for this project between the funding institutions. In the Mata Atlantica project, it was similar. Our hands are tied, it would be contradictory. The CNPq funds projects based on competitive calls for proposals, as the BMBF does. And all researchers have to stick to that. Special projects such as in the case of IWAS would be out of the funding rules, beyond legal requirements." (EE08)

The practice of not coordinating calls with partner countries' governments on time thus led to missing funding on the Brazilian side of the IWAS Brazil consortium. Additionally, the projects in both the Megacities as well as the IWRM funding initiatives lacked political back up in the partner country as a consequence of insufficient cooperation in agenda-setting practices. Due to missing political links between the BMBF and the partner countries' governments, researchers encountered practical problems such as lacking research permits, difficulties to establish links with higher officials in partner countries, problems with importing research and lab equipment, and the like (fieldnotes LiWa, 01.08. -30.09.12, fieldnotes IWAS Brazil, 01.10.-30.11.12, interview with PP03).

More importantly, however, the unilateral mode of agenda setting as well as the discourse of cooperation on eyelevel – as a legitimation of not providing funds for partners – led to power effects in terms of the *subject positions* offered within the projects. In almost all projects of the Megacities as well as IWRM funding initiatives, partners from the partner countries supplied person power, research infrastructure, office spaces, access to data, etc, thus contributed in kind to the research projects. They unanimously stated that their workload was very big, as a consequence of lacking funding: "We don't have any additional funds for research. We often pay this ourselves." (PP15)

Partners did not receive funding comparable to the German partners, neither from the German side nor from national funding institutions. In some cases, German project coordinators partially financed project members in partner countries through sub-contracting or other gaps that the BMBF's principle of "no exchange of funds" left open (fieldnotes LiWa, 01.08. -30.09.12; interview with PP38). Nevertheless, in most projects, participants of the partner countries had to carry out the project work next to their daily routine work in universities, administration, etc, and had less time than the German partners to spend on the projects. In contrast, German partners were endowed with funds for research, and in many projects PhD students and post-docs exclusively worked for the project's objectives. A German member of the IWAS Brazil project stated that

> "[t]he partners need cofunding. The Brazilians worked for the project at the sidelines of their jobs, while we had whole working groups exclusively for the project, burning for it. But in international cooperation, you need partners. If they lack capacities and incentives, it's no wonder that work is done at a different pace. Exchange of data and discussions were difficult. Cooperation was difficult." (PP07)

Next to the financial imbalance and the inequalities in available time dedicated to the project, in many IWRM and Megacities projects a further skew consisted in the *type* of project participants: Researchers were often concentrated on the German side of the consortium, while on the partner country's side, the team was primarily made up of non-scientific partners, such as problem-owners or stakeholders. A

Peruvian project participant of LiWa noted that "[t]here were not enough Peruvian researchers in the project. There was no money, it was more of a German research. But it should be equal – one German on one Peruvian researcher" (PP02). Project participants argued that the project-internal hierarchies were not based on a typification into *Germans* and *partners of developing countries and emerging economies*, but rather on the financial back up: "The hierarchy within the project depended on the role in the project. A partner with little budget and less tasks is set up differently than one who has loads of money for workshops, travel, person months. They have more room to spread." (PP40) However, as the German partners had access to funding, while the Peruvian partners did not, the financial imbalance parallelly enforced the distinction between the German partners and the one of developing countries and emerging economies, instead of contributing to a joint identification with a common goal. Pre-existing stereotypical patterns were thereby reinforced.

The informal hierarchies stemming from the inequality of resources caused dissatisfaction among many participants from partner countries, who often felt that the German partners neglected their ideas, demands or suggestions (fieldnotes LiWa, 01.08.-30.09.12, fieldnotes IWAS Brazil, 01.10.-30.11.12). In addition, partners in many projects had to cope with a mindset of the German partners that further enhanced stereotypes of colonial inkling: "Some people felt that in the end they just had the role to provide samples. They felt they weren't really part of the project but were doing services for the project." (PP19)

Project participants within the partner countries felt degraded to data deliverers and recipients of knowledge. This practice of *knowledge extraction* was often linked to perceiving the partner country's reality as a research *subject.* In addition, the practice of unilateral analysis of data perpetuated old patterns of thinking: A superior, more knowledgeable Western experts providing people from developing countries and emerging economies with lacking knowledge. As one project participant put it, knowledge transfer was a one-way street from Germany to the partner countries. Instead of a joint knowledge creation, German partners sometimes ignored the capacities within the partner countries; and partners in developing countries and emerging economies therefore perceived them to be patronizing. The mindset among many Germans still had not adapted to balanced types of cooperation beyond knowledge transfer, as project participants noticed in different projects. This statement of a project participant from the IWRM project Isfahan illustrates the case: "There is a mental gap. Partners are not seen as equal. Although the Germans say that they are partners, they always feel like providers, never like recipients of knowledge. And if the others don't want to be the recipients of their knowledge, they are stupid." (PP10)

A partner of the Megacities project in Casablanca argued that continuous awareness raising among both sides of the consortium was essential to overcome patterns of colonial thinking: "Cooperation on eyelevel is not easily done. Transfer

thinking was the established mindset for too long on both sides. We repeated like a mantra that the Germans do not bring along ready-made knowledge for the cities of tomorrow, but that we have to generate that knowledge together." (PP38)

The concentration of resources in the hands of the German partners; the power over the project's direction, the imbalances in view of available time as well as the inequalities in view of the type of partners in many projects thereby reinforced *patterns of thinking and social typifications* reminiscent of colonial times and a model of cooperation that the BMBF's discourse of cooperation on eyelevel had originally tried to overcome, including binaries such as rich vs. poor, expert vs. lay person, master vs. servant, modern vs. to-be-developed, donors vs. recipients. Although this might not have been an intended consequence of the BMBF's policy discourse, the accompanying practices thus served to maintain a specific order of reality (Keller 2013).

Beyond these perpetuations of obsolete, disrespectful mindsets, the project practices also had consequences on the potential effects. If transdisciplinary, participatory research is key to implementation, ownership may arise not only through supplying own funds, but also through the level of involvement in the project, the feeling of being an active contributor of valuable work and knowledge. As a partner of the Megacities project in Peru stated, who was simultaneously involved in an EU-funded FP7 project that funded the Peruvian partners as well:

> "In the EU-project, we are more involved because there we do the research ourselves, and we coordinate a work package. This is more horizontal and equal. We are all investigators. The community people are investigators – all types of knowledge are considered valid. All partners have the same budget" (PP01).

In the end, enabling joint knowledge creation seems more important for ownership and cooperation on eyelevel than the source of funding. For a balanced partnership, the endowment of partners with equitable funds, whichever source these may stem from – the BMBF, third parties or the partner country's government – thus seems to be key.

9.3 High expectations, low conceptualisation

Although the ministry raised high expectations in view of creating impact through the research projects, the BMBF's level of conceptualisation of how projects cause impacts, its theory of innovation, was rather low. As chapter 9.2 shows, transdisciplinarity and cooperation on eyelevel were conceptualized as modes of research cooperation conducive to producing the outcomes desired. Next to applying these principles of cooperation, no further ex-ante criteria for creating effects were available to the projects. Mechanistic and simplistic ideas of how innovations developed