

## Appendix 2.

Table A2.1

Organised knowledge and organised power				
Nr.	Author(s)	Level of governance	Empirical or theoretical focus	Knowledge and power interplay conceptualized
1	(Mills 2005)	National	Empirical	Organized power (regulators and regulation) and organized knowledge (damage models) in CCAG are diagnosed and conceptualized as static but problematic in relation to a changing climate. Both are approached as separate dimensions in CCAG which in the specific case interplay in a non-preferable way with a changing climate. Models and regulation should change.
2	(Challinor et al. 2007)	National	Theoretical	Organized power (institutions) and organized knowledge (climate models, crop yield models) are diagnosed and show an un-preferable picture in combination with a changing climate. Institutions should change to overcome this problematic picture.
3	(Easterling 1996)	National	Theoretical	Organized power (political institutions) together with organized knowledge (models & techniques) are parameters in a full system analyses to predict non-preferable consequences of a changing climate. No conceptual integration is made between institutions, models or techniques.
4	(Tompkins and Adger 2005)	National	Theoretical	Organized power (institutions) and organized knowledge (techniques) are conceptualized as central to CCAG, together with social behaviour and learning. Hence, the article goes beyond organized power and knowledge alone and includes unorganized power too in its conceptualization of CCAG. In addition the paper conceptualizes the relation between institutions and social behaviour by explaining the role of institutions on behaviour and techniques as response mechanisms to CC.
5	(Belliveau et al. 2006)	Local / National	Empirical	Organized power (institutions) and organized knowledge (agricultural techniques) are assessed for influence on farmers sensitivity for climate change. The relation between institutions and techniques is not conceptualized.
6	(Tyler et al. 2007)	Local / National	Empirical	Organized power (institutions and legal constrains) and organized knowledge (models and knowledge systems) are assessed for their influence on herders vulnerability for climate change impacts. No conceptualization is made of the relation between knowledge systems and legal / institutional systems.
7	(Biesbroek et al. 2010)	National	Empirical	Among other governance issues organized power (institutions and regulation) and organized knowledge (techniques) are assessed and compared among different European nation states. A possible interplay between institutions and techniques is not conceptualized.
8	(Allman et al. 2004)	Local	Empirical	Among a wide range of aspects organized knowledge (regulation) and organized knowledge (techniques) are assessed in explaining the success of local CCAG systems. The article also covers unorganized forms of knowledge (learning) but does not conceptualize a possible interplay.
9	(Sanders and Phillipson 2003)	National	Theoretical	Organized power (insurance and building regulation & regulators) and organized knowledge (knowledge systems on climate, techniques, like buildings) are assessed in view of a changing climate. There is a dependant relation conceptualized between both. Knowledge systems consisting of decades of climate data determine regulation and will only very gradually change.
10	(Ford et al. 2010)	National	Empirical	Among a variety of CCAG aspects organized power (institutions) and organized knowledge (technology) are assessed in their role in health vulnerability of aboriginals in context of a changing climate. Both concepts are conceptually linked with unorganized forms knowledge (learning) by assessing their capacity to adapt.

Table A2.2

Unorganized knowledge and organized power				
Nr.	Author(s)	Level of CCA governance	Empirical or theoretical focus on CCAG	Knowledge and power interplay conceptualized in CCAG
1	(Pahl-Wostl 2009)	Not explicitly addressed. Implicitly the national or local level of governance is mentioned as the level of analyses.	Theoretical with empirical illustrations	Organized power (institutions) is related to unorganized knowledge (learning) through single, double and triple loop learning. CCAG institutions exist of agents which may learn from each other in networks of various complexity, the complexer the network the better the institutional learning.

2	(Pelling et al. 2008)	Not explicitly addressed, cases are at a national level	Theoretical underpinned by a single case study	Organized power in form of CCAG organizations are dealing with unorganized knowledge (learning) through individual learning and collective learning at different levels. When learning takes place at a discrete subgroup level, mutual institutions will change and ultimately the organization will learn as a whole and change accordingly.
3	(Tompkins and Adger 2005)	All levels	Theoretical	Organized power in form of institutions in CCAG is mentioned as structural to acceptability, resource availability and social change. In this context social learning is mentioned as important for response capacity to climate change.
4	(Nelson et al. 2008)	National	Empirical	Organized power in form of institutions and state organizations coproducing CCAG knowledge in cooperation with local communities is conceptualized as adaptive governance.
5	(Gupta et al. 2010)	Local / National	Theoretical	A model is developed for assessing forms of organized power (e.g. institutions) on their capacity to adapt to changing circumstances like climate change. Learning is considered one of the central capacities for adaptive capacity.
6	(Tompkins 2005)	National	Empirical	Organized forms of power (e.g.) national institutions are examined to their adaptive capacity. The willingness to learn, and learning-based institutions are conceptualized as institutional resilience. In addition the author links to more unorganized forms of power by stressing the need for prioritisation.
7	(Shackley and Deanwood 2002)	Local	Empirical	Taking an agent centred approach in which organized forms of power (institutions) are conceptualized as perceptions or 'frame of reference' The fit of the climate change framing with the existing institutional or 'system' frame of reference and other existing frames of reference like 'processes' and 'response mechanisms' determine the responsiveness of governance to climate change adaptation.
8	(Dovers and Hezri 2010)	Not relevant	Review of literature	Organized forms of power in CCAG are conceptualized as institutions and regulation after a common understanding in CCAG literature. This is done in the same way for unorganized forms of knowledge like learning and the sharing of knowledge. The lack of integration of both aspects in CCAG literature is mentioned as a challenge for CCAG science. Studying the concept of policy processes is mentioned as a possible integration of both concepts.
9	(Dougill et al. 2010)	Local	Empirical	Organized forms of power (institutions) are mentioned together with unorganized forms of knowledge (learning) as important. A conceptual link between both dimensions is not specified, although institutions are mentioned as a possible enforcement for learning.
10	(Tompkins et al. 2008)	National	Empirical	Organized forms of power (e.g. institutions) are conceptualized next to other forms of power (e.g. support by local population) and unorganized forms of knowledge (learning and sharing of knowledge) as important for response to climate change impacts. The interplay of both is conceptualized as 'learning-based institutions' but is not elaborated.

Table A2.3

<b>Organized knowledge and unorganized power</b>				
Nr.	Author(s)	Level of governance	Empirical or theoretical focus	Knowledge and power interplay conceptualized
1	(Underdal 2010)	Global / national / local	Theoretical	Organized knowledge and unorganized power are conceptualized as different governance models (centralised depending on concentrated negotiational power, or decentralised depending on decentralised, adapted knowledge systems), each functioning best in specific conditions.
2	(McGee and Taplin 2009)	Global	Empirical	Organized knowledge (models on how to combat climate change) and unorganized power (international negotiations) are conceptualized as intertwined. Through discursive analysis the authors conclude that the model underpinning the APP international agreement on adaptation and other measures combating climate change has impacts on international negotiations on the Kyoto protocol.
3	(Roncoli et al. 2009)	National	Empirical	Organized knowledge (modelling tools) and unorganized power (negotiation) are conceptualized rather separately. The interplay emerges where the authors describe how modelling tools give handles for negotiation
4	(Carey et al. 2012)	National	Empirical	Organized knowledge (climate models and technology) and unorganized power (negotiations) are conceptualized as 'mutually constitutive', where climate models and technologies shape power relations yielding the concept 'politics of technologies'
5	(Mahony and Hulme 2012)	Global / National	Empirical	Unorganized knowledge (deliberation and re-framing) in relation to the development of organized knowledge (climate models and expertise) is conceptualized as influencing unorganized power (negotiations). Knowledge hegemony at the IPCC therefore influences the power of the global south to adapt to CC. This leads to the possibility of taking a normative stance in the production of organized knowledge.
6	(Feldman 2012)	National /local	Theoretical	Both unorganized (sharing of experiences) and organized knowledge

				(models & technology) is hindered in its effect on climate impacts due to both unorganized (negotiations) and organized power (institutions). The relation between both dimensions is conceptualized in 'boundary work' which might be less or more effective due to different forms of unorganized and organized power.
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Table A2.4

Unorganized knowledge and unorganized power				
Nr.	Author(s)	Level of governance	Empirical or theoretical focus	Knowledge and power interplay conceptualized
1	(Brown et al. 2007)	Global	Theoretical, empirically illustrated	Unorganized knowledge (frames) is conceptualized in relation to unorganized power (negotiations). If climate adaptation is internationally framed as a security issue, this will change negotiational power for effected regions like Africa in relation to the international community.
2	(Roncoli et al. 2009)	National	Empirical	Unorganized knowledge (frames) is conceptualized in relation to the deliberative use of organized knowledge (models) in unorganized power (negotiations).
3	(Mahony and Hulme 2012)	Global / National	Empirical	Unorganized knowledge (deliberation and re-framing) in relation to the development of organized knowledge (climate models and expertise) is conceptualized as influencing unorganized power (negotiations). Knowledge hegemony at the IPCC therefore influences the power of the global south to adapt to CC. This leads to the possibility of taking a normative stance in the production of organized knowledge.
4	(Vink et al. 2013)	National	Empirical	Unorganized knowledge (frames) is conceptualized in relation to employed knowledge systems and the possible negotiational strategies this framing enables
5	(Feldman 2012)	National / Local	Theoretical	Both unorganized (sharing of experiences) and organized knowledge (models & technology) is hindered in its effect on climate impacts due to both unorganized (negotiations) and organized power (institutions). The relation between both dimensions is conceptualized in 'boundary work' and 'knowledge networks' which might be less or more effective due to different forms of unorganized and organized power.
6	(Herrfahrdt-Pähle and Pahl-Wostl 2012)	National	Empirical	Unorganized power (negotiation) is conceptualized in relation with unorganized knowledge (learning) via the concept of 'triple loop learning'. This type of learning is yielding changing values and ultimately changing institutions. Via changed institutions this learning is related to sustained change in the characteristics of political negotiations over long term issues like CCAG.
7	(Manuel-Navarrete 2010)	National	Theoretical	Unorganized power (negotiational power relations) are conceptualized as closely related to unorganized knowledge (ideas and theories) currently leading to asymmetric global power relations hindering climate adaptation.
8	(Rojas et al. 2009)	National	Empirical	Unorganized knowledge (learning) is conceptualized as influencing unorganized power (negotiation) by proper multi-stakeholder consultation.