

## Towards the governmentality of risks and disasters? Urban floods and their mitigation in Mumbai

Theresa Zimmermann

Keywords: Governmentality, regimes of praxis, flood risk management, Mumbai

### Introduction

Several large Indian cities faced severe floods in recent years, such as Mumbai in 2005, 2017 and 2019, Surat in 2006, Kolkata in 2007, Srinagar in 2014, Chennai in 2015 and Kolhapur in 2019. Floods are reported to be the most destructive type of disaster event in India and account for 77% of the overall economic losses (Chatterjee 2010: 38). More than 2000 Indian cities and towns are located in districts which experienced floods in the past two decades (SEEDS & CRED 2018). Urban floods are not a recent phenomenon in India, as the severe floods in Hyderabad in the year 1908 demonstrate. However, due to the growth of cities, more people are affected, and more attention is drawn towards urban floods (Gupta & Nair 2011, Rafiq et al. 2016). Urban growth and changes in land use as well as climate-induced changing patterns of monsoonal rainfalls can lead to an increasing number, scale and impacts of urban floods (NDMA 2010, Zope et al. 2015, Nithila Devi et al. 2019). Research on urban floods reveals how population, assets and potentials to cope with flood risks and impacts are unevenly distributed spatially and socially. Studies from Mumbai show that people forced to live in environmentally fragile locations have been most severely affected by the 2005 floods (Parthasarathy 2009, Chatterjee 2010, Samaddar et al. 2011). Hence, urban floods are entangled with a city's socio-economic and physical development and can disclose existing patterns of vulnerability. Correspondently, strategies, mechanisms and practices to mitigate and cope with flood risks are linked to urban socio-cultural fabrics and power relations. This contribution draws on approaches of Foucauldian governmentality studies (Foucault 2007) and more specifically regimes of practice (Dean 2009) to analyze how floods are problematized and made governable in Mumbai. From a socio-constructivist perspective, it reveals how urban flood disasters, the risks of future floods and practices that have evolved to prevent them and mitigate impacts can be studied. Thereby, the contribution explores the potential of governmentality as an analytical approach for geographical research on risks and risk reduction in the Indian context.

### Theory and methodology

From a sociological constructivist understanding, risks and disasters are socio-cultural constructions

(Quarentelli 1985, Douglas & Wildavsky 1985, Dombrowsky 1989, Tierney 2015, Voss & Dittmer 2016, Oliver-Smith 2017). What is considered as risk or disaster depends on the perceived stabilized order; a disaster is then the deviation of normality. Actors construct disaster risks and their causes, consequences and remediation strategies differently according to their social position, experiences and interests (Tierney 2015, Voss & Dittmer 2016). Risk management strategies are considered as expressions of dominant risk constructions.

Governmentality studies, the analytics of a Foucauldian understanding of government, help to assess the way the specific form of urban disaster risk reduction has historically evolved, to identify the elements that constitute it and to investigate the processes and relations by which these elements are assembled into practices and forms of organizations (Dean 2009: 31). Foucault's notion of governmentality has often been described as "conduct of conduct" (Foucault 2007, Dean 2009: 17) of individuals or groups, either by others or by processes of self-governance. Individuals or collectives conform to, produce, resist or negotiate rules in order to achieve a joint objective, such as reduced flood risks. Whereas a variety of different conceptual approaches exist, this contribution understands governmentality as the entirety of institutions, practices and technologies that enable the exercise of power (Dean 2009: 18, Bohle 2018: 127). Considering all persons to govern and to be governed, the focus does not solely rest on political institutions. It enables the systematic analysis of relationships between power techniques and forms of knowledge across different scales and their interconnections. This allows to research the historic development and the specific characteristics of, as well as changes and transformations within, a regime of practice. Such a regime of practice, e.g. a risk management regime, is understood as a historically grown „assemblage of policies, strategies, and regulations that collectively define a dominant paradigmatic management approach" – a specific type of risk governance (Dean 2009, Solecki et al. 2017). Mitchell Dean (2009: 41-43) suggests the analysis of such regimes along four dimensions (see Fig. 1): the fields of visibility (Who and what is to be governed?); the technical aspects of government (How is authority and rule accomplished?); the

episteme or rationality (How do thoughts and knowledge enable to render the issues and problems governable?); and the formation of subjects and identities (What forms of person, self and identity are presupposed and elicited by practices of government?). An analysis along these lines can disclose the enmeshed power relations and negotiations in the respective field as well as contradictions, contestations, and conflict potentials.

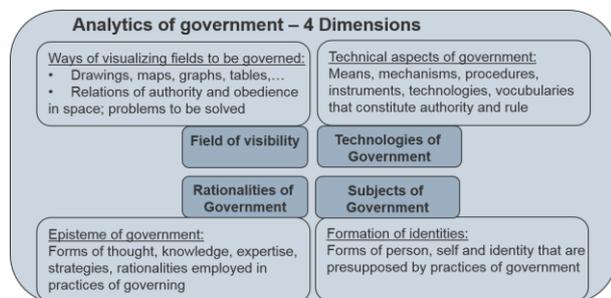


Fig. 1: Four dimensions for the analysis of regimes of praxis based on Dean (2009: 41–43)

Drawing on Mitchell Dean's analytics of government, this study focuses on the governmentality of flood risks and assesses the formation of the specific urban risk governance regime, the elements that it consists of and their origin, and the processes and relationships through which these elements are assembled into relatively stable organizational forms and institutional practices. The research work draws on literature review, the analysis of national-, state-, city- and ward-level policy and planning documents, as well as semi-structured interviews with government officials, researchers, journalists and NGO workers. Furthermore, a case study in the northwestern suburb Dahisar was conducted, including field visits with observations, transect walks, ad-hoc focus groups and informal discussions. Field work was conducted between October 2015 and January 2016 and between January and May 2019.

### Urban floods and their mitigation in Mumbai

Mumbai is an interesting case study as the city has a history of both, annual floods and water logging as well as disastrous floods. Especially the floods triggered by intensive rainfall in the end of July 2005 had devastating impacts. More than 100 low-lying areas and up to 60% of Mumbai's surface were severely inundated through waterlogging or river overflow. Hundreds of people lost their lives by drowning, electrocution, landslides or flood-related illnesses and hundreds of thousands suffered from water-borne diseases (Gupta 2007). Both authorities and affected people considered the floods as *disastrous* due to the unimaginable amounts of rainfall, the unprecedented and exceptional scale and the devastating impacts of the floods (Zimmermann 2019). Affecting the financial capital of India with a very high population density, heterogeneous communities and scarce space, the 2005 floods revealed Mumbai's vulnerabilities. After 2005, the

Municipal Corporation and the State of Maharashtra have augmented and constantly enhanced the city's disaster management system. Flood governance has become a component of Mumbai's pluralized urban governance structures (Parthasarathy 2015). Mumbai has a large number of poor and marginalized inhabitants as well as informal settlements and workforce, and faces socio-spatial fragmentation, a shortage of (public) space, water and housing and intense development pressure, especially in the core city. In addition to these conditions, flooding has become a factor that constantly needs to be negotiated in the city and amongst its residents. As a complete governmentality study on urban flood risk management in Mumbai would exceed the scope of this contribution, it focusses on questions on Mumbai's dominant flood risk management regime through Dean's four dimensions (see Fig. 1) and exemplarily reveal contestations.

**Visibility:** Visualizations depict and construct risk in a certain manner. Dominant forms of visualization can highlight specific understandings of risk and support respective techniques of governing this risk while neglecting or downplaying others. Main questions to study the field of visibility include how urban floods and flood risk reduction are constructed as problems and how they are represented and visualized. In Mumbai, both authorities and residents portray the 2005 floods as "wake up call" and "focusing event". Thereafter, perceptions of flood risks, discourses and practices surrounding floods and risk reduction have considerably changed. The evolving flood risk management regime draws on existing statistics and produces new data regarding flood risks, such as rainfall projections and mappings of flood prone spots. Media coverage surrounding the monsoon season – including the status of monsoon preparedness measures – has considerably increased. Individuals and communities use further practices like the observation of the heights of the river to visualize the risk of floods in the neighborhood, as this quote by a resident of the field study location demonstrates: *"The color from the pillars was washed away by the water. This helps us to see now the danger level of the water. When it passes the point where color was washed away, we know that it is getting dangerous."* (Resident\_14 2019)

**Technologies of government:** A study of the techniques to cope with flood risks include forms of action that have been or are newly established and procedures, instruments, technologies and vocabularies that constitute authority and rule with regard to floods, both on institutional and individual levels. In Mumbai, individual measures include the upgradation of buildings and property, the seasonal safe storage of goods and belongings, the use of messengers and other communication channels for warnings. Institutional measures comprise the compilation of disaster management plans and annual flood management guidelines, but also hazard-focused

measures (Texier-Teixeira & Edelblutte 2017), including the installation of rainfall gauges or surveillance cameras, the establishment of disaster control rooms, management practices like the dredging of rivers before monsoon and education and training of residents, volunteers and professionals. Furthermore, authorities initiated structural measures like constructing flood retention walls along rivers and evicted or resettled several settlements close to water bodies (Fig. 2). These government techniques are contentious as they do not benefit all communities equally and have been challenged, e.g. by environmentalists who oppose the channeling of rivers.



Fig. 2: Flood retention wall in Mumbai's northwestern suburb Dahisar (Photo: T. Zimmermann 2019)

**Rationalities:** Discourses and practices of governing flood risks are drawing on certain forms of knowledge and expertise. Central questions are: How is the need for action and the types of actions justified and augmented for? How are risks conceptualized? Why and how are floods considered *disastrous*? In Mumbai, flood risks are often debated in the context of vulnerabilities (of individuals or certain societal groups, areas and localities or the city as a whole) and resilience (of both communities and of "Mumbaikars" more generally). In recent years, climate change and changing monsoonal patterns have emerged as discursive framings of urban floods. Government agencies like the Disaster Management Unit of the Municipal Corporation use these discourses to rationalize the installation of e.g. rainfall gauges. In contrast, representatives of NGOs and academia highlight the role of mangrove destruction, larger development and infrastructure projects. All these arguments draw on expertise of global players and inter-scale interactions.

**Subjects and formation of identities:** A flood risk management regime builds on, presupposes, elicits and forms subjects and identities: specific practices presuppose certain forms of person, self and identity. Certain forms of conduct are expected from those who govern and those who are governed. Who is considered responsible for both risks and measures to prevent new risks or reduce existing risks? How do individuals perceive their own role? In the case of Mumbai, (informal) settlements and their residents close to riverbanks are often considered as aggravating flood risks and official plans foresee their

eviction or resettlement. Additionally, individuals are held responsible for increasing flood risk, e.g. by throwing solid waste into rivers or the drainage system. Citizens even blame each other, as the following quote demonstrates: *"People in the vicinity – in slum areas – are main cause of the flood. They don't allow the passage of water; they throw garbage in the river."* (Resident\_7 2019)

These four dimensions overlap and substantiate each other. For example, the eviction and resettlement of settlers close to rivers is part of plans and procedures to mitigate flood risks both for themselves and other nearby settlements. Local and state level authorities as well as some NGOs justify this procedure with arguments that consider (informal) settlements as responsible for clogging the water bodies – both by buildings and by waste. Academicians, NGOs, civil society groups and affected residents contest the construction of walls and evictions both discursively, e.g. in media reports, and through their practices, e.g. by moving back after being evicted. While government agencies and engineers highlight the potential benefits of the retention walls, ecologists protest the channelization of rivers and others see their lives and livelihoods affected: *"The removal takes place because of the flood. We have nothing against the widening, all we want is to get a house. It should be here or nearby. We were offered land (...), but people there did not want us to come."* (Resident\_3 2015) and *"People were living close to the river; they have been resettled to various places, [...]. But some have come back on rental basis because they have their jobs here."* (Resident\_6 2019)

## Conclusion

Mumbai's flood risk management regime has evolved over decades and has seen considerable modifications after the devastating floods of 2005. As increased heavy rainfall events and subsequent floods are projected for the future, it is important to understand how its risk management regime is embedded in societal power-knowledge structures. The visualization and problematization of flood risks and techniques to govern floods are backed by sets of thoughts, rationalities and knowledge that presuppose and form subjects and identities.

In sum, drawing on Foucault's governmentality and Dean's four analytical dimensions complements the existing body of research on risk management by expanding the understanding of risks, by acknowledging the socio-political, historical, spatial and scalar embeddedness of a certain regime and by identifying contestations surrounding a dominant regime. It furthermore enables the analysis of changes and transformations of risk management regimes. For example, the Covid-19 crisis and the weeks-long lockdown in spring and summer 2020 might significantly change the way risks are perceived and approached upon in Mumbai.

## References

- Bohle, J. (2018): Hurricane-riskscape and governmentality. In: *Erdkunde* 72(2): 125–134.
- Chatterjee, M. (2010): Slum dwellers response to flooding events in the megacities of India. In: *Mitigation and Adaptation Strategies for Global Change* 15(4): 337–353.
- Dean, M. (2009): *Governmentality. Power and rule in modern society*. 2. ed., reprint. Los Angeles.
- Dombrowsky, W. R. (1989): *Katastrophe und Katastrophenschutz. Eine soziologische Analyse*. Wiesbaden.
- Douglas, M. & Wildavsky, A. (1985): *Risk and Culture. An Essay on the Selection of Technological and Environmental Dangers*. Berkeley and Los Angeles.
- Foucault, M. (2007): *Security, Territory, Population. Lectures at the Collège de France 1977-1978*. Houndmills.
- Gupta, A. K. & Nair, S. S. (2011): Urban floods in Bangalore and Chennai: risk management challenges and lessons for sustainable urban ecology. In: *Current Science* 100(11): 1638–1645.
- Gupta, K. (2007): Urban flood resilience planning and management and lessons for the future. A case study of Mumbai, India. In *Urban Water Journal* 4(3): 183–194.
- NDMA (2010): *National Disaster Management Guidelines. Management of Urban Flooding*. Government of India. New Delhi.
- Nithila Devi, N., Sridharan, B. & Kuiry, S. N. (2019): Impact of urban sprawl on future flooding in Chennai city, India. In: *Journal of Hydrology* 574: 486–496.
- Oliver-Smith, A. (2017): The social construction of disaster risk: Seeking root causes. Editorial. In: *International Journal of Disaster Risk Reduction* 22: 469–474.
- Parthasarathy, D. (2009): Social and environmental insecurities in Mumbai. Towards a sociological perspective on vulnerability. In: *South African Review of Sociology* 40(1): 109–126.
- Parthasarathy, D. (2015): Decentralization, pluralization, balkanization? Challenges for disaster mitigation and governance in Mumbai. In: *Habitat International* 52: 1–9.
- Quarentelli, E. L. (1985): *What is disaster? The need for Clarification in Definition and Conceptualization in Research*. Article #177, Delaware.
- Rafiq, F., Ahmed, S., Ahmad, S. & Khan, A. A. (2016): Urban Floods in India. In: *International Journal of Scientific & Engineering Research* 7(1): 721–734.
- Samaddar, S., Misra, B. A., Chatterjee, R., Tatano, H. (2011): Identifying Vulnerability Pattern in a Flood Prone Micro-Hotspot of Mumbai, India. In: 2nd International Conference on Environmental Science and Development 4: 104–109.
- SEEDS & CRED (2018): *Decoding the Monsoon Floods in Bangladesh, India, Myanmar and Nepal*. New Delhi.
- Solecki, W., Pelling, M., Garschagen, M. (2017): Transitions between risk management regimes in cities. In: *Ecology and Society* 22(2):38.
- Texier-Teixeira, P., Edelblutte, E. (2017): Jakarta: Mumbai—Two Megacities Facing Floods Engaged in a Marginalization Process of Slum Areas.' In: Sudmeier-Rieux, K., Fernández, M., I. Penna, M. Jaboyedoff, J. Gaillard (Eds.): *Identifying Emerging Issues in Disaster Risk Reduction, Migration, Climate Change and Sustainable Development*. Basel, 81–99.
- Tierney, K. (2015): Foreword. In Egner, H., Schorch, M., Voss, M. (ed): *Learning and Calamities: Practices, Interpretations, Patterns*. New York.
- Voss, M., Dittmer, C. (2016): Resilienz aus katastrophensoziologischer Perspektive. In: Wink, R. (ed) *Multidisziplinäre Perspektiven der Resilienzforschung*. Wiesbaden, 179–197.
- Zimmermann, T. (2019): Exceeding the imaginable - changing perspectives on monsoon in Mumbai. In: Bremner, L. (Ed.): *Monsoon [+ other] waters*. London, 235–244.
- Zope, P. E., Eldho, T. I., Jothiprakash, V. (2015): Impacts of urbanization on flooding of a coastal urban catchment: a case study of Mumbai City, India. In: *Natural Hazards* 75(1): 887–908

## Contact

Theresa Zimmermann  
 Katastrophenforschungsstelle  
 Freie Universität Berlin  
 Carl-Heinrich-Becker-Weg 6-10  
 12065 Berlin  
 Theresa.zimmermann@fu-berlin.de