universität wien

DIPLOMARBEIT

Titel der Diplomarbeit

„Waste Disputes – Contested Waste-Society Relations. Patterns and Dynamics of Waste-related Environmental Conflicts in Bangalore“

Verfasser

Nicolas Schlitz, BA

angestrebter akademischer Grad

Magister (Mag.)

Wien, 2014

Studienkennzahl lt. Studienblatt:	A 057 390
Studienrichtung lt. Studienblatt:	Individuelles Diplomstudium Internationale Entwicklung
Betreuer:	Univ.-Prof. Dipl.-Bw. Dr. Ulrich Brand

Table of Contents

Acknowledgements

> [Bodies] … can only persist and act when they are supported, by environments, by nutrition, by work, by modes of sociality and belonging. And when these supports fall away, they are mobilized in another way, seizing upon the support that exists in order to make a claim that there can be no embodied life without social and institutional support, without ongoing employment, without networks of interdependencies and care. (Butler 2011)

With this diploma thesis I would like to express my appreciation of the supportive structures that enable us to exist, persist and act – on a collective level as much as on a personal level. On a collective level, I would like to cherish the #ie as political project, that – as I hope – will continue to produce significance also after its approved-in-practice form as IDS has vanished.

On a personal level, I really hope that this diploma thesis is understood as acknowledgement of the supportive structures that enabled me to exist, persist and, thus, produce this fragmented array of 'scientific knowledge' in the first place. Against the backdrop of austerity measures that increasingly render a certain kind of higher education a privilege of wealthy and already educated groups, as well as with respect to the intensified precariousness of general but tangible working- and living-conditions in Austria, it would have been impossible for me to complete this diploma thesis without the financial support of close friends and family members; without the care, social backup and encouragement of a dynamic but coherent circle of families and friends; without the collectively organized and shared living conditions of a new 'home'. Scientific contributions are never the produce of single authorship and there have been more people involved in this process of 'knowledge production' than I could possibly invoke at this place. Yet, there are some people who really deserve special acknowledgement at this place, for the indispensible support they bestowed on me.

Zu allererst möchte ich jenen Menschen danken, die mich und meinen 'Diplomarbeits-Prozess' auf so vielen verschiedenen Ebenen und auf so vielfältige Art und Weise unterstützt haben, dass ich mir die letzten drei Jahre meines Lebens nicht ohne sie vorstellen könnte: Katharina, für 'verschiedene Perspektiven, gemeinsame Wege' und geteilte Bewegungen, die die Grenzen zwischen 'eigenem' und 'anderem' soweit verschwimmen ließen, dass es möglich wurde sich 'selbst' neu zu finden; Samuel, für die Gleichheit in Differenz, die vielen Spiegel und persistenten Träume vom schönen Leben; Lena, für geteilte Kämpfe und Herausforderungen – kollektive und persönliche –, die wir immer wieder gemeinsam beschreiten, aber doch eigenständig durchleben konnten, ohne dabei allein zu sein.

So sehr mir meine ‘neue’ Familien neue Wege ermöglicht hat, so sehr konnte ich auf diesen neuen Wegen auf die fortgesetzte Unterstützung meiner ‘alten’ Familie zählen, die an mich glaubte ohne immer nachvollziehen zu können, wohin ich eigentlich gehe – dafür möchte ich mich bedanken: bei Elke, für die Ermächtigung das zu tun, was ich für richtig halte, so, wie ich es für richtig halte; bei Michael und Renate, für die Unterstützung, die ihr mir kontinuierlich zukommen habt lassen ohne nachvollziehen zu können, was ich eigentlich mache; bei Karin und Sebastian, dafür, dass ihr an mich glauben konntet ohne immer verstehen zu müssen, woran ich glaube, und dafür, dass ihr trotzdem nicht aufgehört habt es zu versuchen. Und bei Veronica, Alex, Julia, Anna... für die unendlich vielen Übergänge zwischen ‘alten’ und ‘neuen’ Familien.

Neben diesen ‘neuen’ und ‘alten’ Familien konnte ich insbesondere während meiner intensiven Schreibphase auf ein Netzwerk zurückgreifen, dass mir eine wissenschaftliche Betreuung und Unterstützung ermöglicht hat, wie sie inzwischen eher unüblich ist – auch dafür möchte ich danken: Christina, für die Ein- und Rückbindung in ein wissenschaftliches Zuhause das ich zuvor vergessen hatte, aus Angst darin verloren zu gehen; Bettina, dafür, dass du mir zeigst wie es auch gehen kann, und für deine scharfsinnige aber stets wohlmeinende Kritik; Ulrich, für deine bewussten Bemühungen und die Rettung in der Not; Markus, dafür, dass du mir einen Zugang zu einer Welt eröffnet hast, die zuvor getrennte Welten zu verbinden vermochte; Ewa, for irreducibly combined perspectives and the courage to embark on their practical political trajectories; Mario und Matthias für sehr bereicherndes Feedback und interessante Diskussionen zu spezifischen Themenbereichen dieser Diplomarbeit.

Moreover, I got the opportunity to return to India for the purpose of empirical research in Bangalore and Delhi – generously enabled by funds from the University of Vienna and by academic contacts provided by Simron. A number of people have made this research stay a unique experience. I would like to thank: Siddhartha and Aunty, for giving me a home; all my research participants and Manisha for sharing your motivations, insights and networks; Deepak, for your attentive academic supervision and general support in Bangalore; Brandusha, Pragna and Jyothi, as well as the Bengali-Gang, for some reviving times of leisure in the middle of a lot of work.

1. Introduction – 'Waste Matters'

In the last years, the involvement with waste as an inter- and trans-disciplinary field of research at the interstices between natural-, cultural- and social sciences has gained significance. Against the backdrop of renewed debates on materialism, this recent focus of research found its expression in research projects[1] with explicit politico-ecological aspirations, especially in the (sub)fields of critical geography, anthropology and sociology (Evans 2011: 708ff; Gille 2010: 1049ff; Gregson/Crang 2010; Moore 2012). This research interest represents – at least implicitly – a critical resumption and analytically enriched renewal of politically engaged traditions of knowledge production by *environmental justice groups*, who have initially been pointing out the tight entanglement of the societal handling of waste with power relations and inequalities related to 'race' and ethnicity, sex and gender, as well as class and social status (Armiero 2008: 60f, 67). Furthermore, this renewed research interest also reflects the political relevance and conflictual character of the way societies deal with their waste – on a global scale, in north-south relations, and particularly in countries of the global South.

On a global scale, and from the perspective of international environmental politics, this political relevance of waste is illustrated by the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal*[2] and its recent focus on electronic waste and the dismantling of ships, by the inclusion of '*Waste to Energy'* (WTE) technologies into the *Clean Development Mechanisms* (CDM) promoted by the *United Nations Framework Convention on Climate Change* (UNFCCC), as well as by the *World Bank's* increased attention on the economic importance of the informalized recycling-sector (Medina 2008). The conflictuality of this political relevance resonates with the socially and spatially unevenly distributed effects of wastes' materiality, like in the case of 'transboundary movements' of electronic waste or ship wreckages along the beaten paths of unequal north-south relations (Demaria 2010; Gregson et al. 2010; Crang 2010). It is revealed, moreover, by the growing mountains of waste, municipal authorities of *Mega-Cities* in countries of the global South are struggling to cope with, as well as the promotion of capital- and technology-intensive waste-treatment and incineration facilities, which are promising immediate relief and profitable fields of investment, but are difficult to implement without contentions and resistance (Forsyth 2006). Global alliances against

[1] Including research project like the ESRC 'The Waste of the World' program research blogs like the one of 'Discard Studies' (http://discardstudies.wordpress.com)

[2] See the *Basel Convention* (http://www.basel.int/)

incineration-technologies[3] and equally global organizing attempts of informalized recycling-agents[4] manifest the contradictions inscribed into the 'waste problem' with increasing vehemence – "waste matters" (Evans 2001; see also Moore 2012).

These incidents and issues are but a few facets of the various manifestations of the global ecological crisis, which are forcing us to map the links between societal relations and environmental conflicts across different scales, from global inequalities in the north-south relations to local imbalances in power. Nevertheless, waste plays an important role within the analysis of environmental conflicts – described by Joan Martinez-Alier (2002) as ecological distribution conflicts –, as it reflects the 'output' side of socio-metabolic systems (Martinz-Alier et.al. 2010:154) and thus, serves to examine "the potential environmental burden of material outflows" (Matthews et.al. 2000:6) that come along with urbanization, industrialization and economic growth. Historically, waste disposal conflicts fought by environmental justice groups have revealed "that the distribution of power among social groups affects not only their social relations, but also the ecology of urban/rural environments and, ultimately, of the human bodies inhabiting them", pointing towards the manifold ways of how "the natural and the social merge" (Armiero 2008:60).

Aware of the increasing significance of waste as a resource, the analysis of waste flows – the generation, circulation, distribution, transformation, recycling and disposal of waste – offers a distinct perspective on the social inequalities inscribed into environmental conflicts as well as on the underlying imbalances in enhanced material and energy flows of 'newly industrializing' countries of the Global South, like India. Thus, waste-related environmental conflicts can serve as indicators for social conflicts and societal contradictions entangled in the unevenly increasing social metabolism of societies and its contentious political regulation. The latter come along with unrestricted economic growth and coupled industrialization- and urbanization-processes – thereby also entailing potentials for the experimentation with more sustainable ways of societies' handling of waste.

With this diploma thesis, I am intending to trace the contours of a political ecology of waste in urban India, through the analysis of waste-related conflicts and entangled societal power relations in Bangalore. The uneven and combined development of capitalist modes of production and the coupled unfolding of a bourgeois state in India constitute the broader politico-economic context of this analysis. As I will try to show, on the one hand, this structural frame and its dynamic impetus shape the societal handling of waste in India. On

[3] See *Global Alliance for Incinerators Alternatives* (www.no-burn.org)
[4] See *Global Alliance of Waste Pickers* (http://globalrec.org)

the other, the societal handling of waste is itself part of these structures and dynamics and impinges back upon them. Thus, and as one potential pivot of a socially and spatially condensed perspective on 'the urban', 'waste' is providing a privileged point of departure for the analysis of trajectories of social, political, economic and ecological change in urban India. In order to untangle the multiple power relations entangled in the societal handling of waste, a special focus will be put on the relative societal positions of civil-society organizations – in their contradictory role between agents of far-reaching change and advocates of bourgeois statehood – and marginalized actors of the informalized recycling sector. Considering their points of view, the following research questions will guide the documentation and analysis of the origins, patterns and dynamics of conflicts around Bangalore's '*garbage crisis*' arising in 2012, thereby taking account of modes of distribution, circulation an transformation of waste, and the power relations inscribed in them.

- *How, and in which ways are waste flows and their societal handling – their circulation, distribution, treatment, recovery and disposal – determinants of environmental conflicts?*
- *What are the social inequalities and societal contradictions inscribed in waste-related environmental conflicts?*

This diploma thesis is divided into eight chapters. Following this introduction (1), the second chapter (2) will introduce the field of urban political ecology from an environmental conflict perspective. This will provide the general theoretical framework for the establishment of a waste-specific adaptation of the concept of societal relations with nature – alongside notions of social metabolism – as theoretical approach towards the analysis of waste-society relations. Chapter three (3) will present the methodology of this explorative case study delineating the operationalization of its theoretical approach in form of the development of analytical categories and dimensions. Further, a triangulation of qualitative methods for the empirical research conducted in Bangalore between October and November 2012 will be outlined. Chapter four (4) will establish the politico-economic backdrop and the contours of waste-society relations in urban India, in order to historically situate and contextualize the societal handling of waste Bangalore. Chapter five (5) will introduce Bangalore and its societal handling of waste by tracing the historical evolvement of the city's public waste management system and its marginalized 'other' – the

informalized recycling-sector – throughout the last two decades and an intricately fragmented process of privatization. The historical process of qualitatively and quantitatively changing urban waste flows will be tracked backwards, from disposability to the retrieval of resources, against the backdrop of the unfolding agency of a distinct scene of waste-related civil-society organizations. In chapter six (6), the temporally dense culmination of waste-related environmental conflicts during Bangalore's 'garbage crisis' in 2012 will serve to explicate the displacements and cleavages between the 'ground realities' in the city's handling of waste and the conceptually informed governance of waste. Chapter seven (7) will attend to a two-step analysis, by first identifying four overlapping but conflicting strategic approaches to waste, pitted against distinct but unequal positionalities of the involved actors in order to subsequently identify the major lines of waste-disputes along the three central conflict dimensions of waste economics, space for waste as well as public and private waste. Finally, chapter eight (8) will summarize the findings, coherencies and insights gained from the appraisal of waste-related environmental conflicts and entangled waste-society relations in Bangalore and give some outlook on the continued politics of waste in the city and the potential future trajectories of politically engaged research this implies.

2. Theoretical Approach: Urban Political Ecology of Waste

In a controversial 2008 documentary called "Examined Life" (Taylor 2008), Slavoj Zizek[5] is taking the viewers on a rather irritating walk through a waste management facility in order to substantiate his argument, that "ecology (…) is maybe the crucial field of ideology today" (ibid.). With ideology, he refers to an implicit "notion of nature, nature as harmonious, organic, balanced, reproducing, almost living organism which is then disturbed, perturbed, derailed through human hubris, technology, exploitation and so on" (ibid.). Because, from his point of view, in this sense "there is no nature. Nature is not a balanced totality, which then we humans disturb. Nature is a big series of unimaginable catastrophes" (ibid). In order to end his deliberations in the debris, and pointing towards the heaps of waste behind him, he states that a "true ecologist loves all this" (ibid.); in a way persuading us, that there is nothing 'unnatural' about dumpsites and dirty heaps of waste.

Why is he referring to ecology as ideology? What is the sense of such a seemingly constructivist stance towards waste as something every true ecologist should love? And how should we understand his comment, that 'there is no nature'? These are initial question I have asked myself at the beginning of the research process presented here. The following chapter is set out to provide some perspectives, figures of thought and theoretical concepts to address these questions, many others, and maybe also some answers.

2.1. Urban Political Ecology of Environmental Conflicts

The theoretical approach used to study waste in Bangalore is situated in the field of political ecology, as a field of research and practice. In his introductory book, Paul Robbins (2004) refers to political ecology as wide and dispersed field without any common definition (ibid. xvii, xviii, 1-5). Still, according to him, there are some common concerns that unite the field. The first is, that "the human and the non-human" (ibid. xvii) cannot be understood separately, because 'natural' environments are hardly ever functioning independently from human actions. And the second is, that because ecologies can only be understood in terms "human-environment interactions" (ibid. xix), there is always something political about these interactions, calling for "greater social and ecological justice"(ibid.). Subsequently, Robbins' initial characterization of the field is a negative on, demarcating it from what he calls "apolitical" (ibid. 5) ecology. Such an 'apolitical'

[5] The section with Slavoj Zizek is online available at: http://www.youtube.com/watch?v=iGCfiv1xtoU

ecology dominates global environmental politics in terms of a distinct emphasis on the conservation of 'natural' environments. It either explains environmental degradation in terms of 'populations pressure' that challenge 'natural limits'. Or, it claims that environmental problems are merely a question of technical solutions and proper management of exploitation and conservation. Both rely on a crude juxtaposition of nature and society as two separate systems (ibid. 7ff). Thereby, they reify the politics inscribed in 'natural' environments, as much as the politics involved in the way societies deal with their environments. Political ecology, then, "seeks to unravel the political forces at work in environmental access, management and transformation, … [in order to] demonstrate the way that politics are inevitable ecological and that ecologies are inherently political" (ibid. xvi).

One often-used example to illustrate these points is the case of 'natural reserves', geared to preserve and conserve 'wild' environments against the expansion of human habitats. Robbins draws on the *Yellowstone National Park* in order to show that the landscape and eco-system of the area was shaped by the activities of Native Americans for thousands of years and was strongly affected by their eviction, which "helped to *produce* the very conditions later Americans would covet as 'natural' – was an essential first step towards producing a wilderness" (ibid. xv; emphasis in original). Subsequently, the conflicting political perspectives regarding the environmental management of the park "create the ecology of Yellowstone, but not the Yellowstone of their own choosing" (ibid. xvi), because there are always unintended consequences involved in ecological-interactions. Moreover, narrations about the 'unbound land' and 'wilderness' reveal "the politics in how environmental explanations are made" (Forsyth 2008: 756): Such narrations of 'empty' lands have been constitutional for the formation of the United States, as they simultaneously made invisible the long history of Native Americans inhabiting this land and legitimized it's colonial occupation.

But, with respect to the diversity of approaches to political ecology, the question remains – to put it with *Tim Forsyth* (2008: 760) – what is the 'political' and what is the 'ecological' in political ecology? As a starting point, we have to note that 'natural' environments – the way we deal with them, the way we think of them and the way we work on them – always have histories and are intertwined with multiple power relations. Both, environmental histories and entangled power relations are unraveled when we turn our attention to environmental conflicts.

2.1.1. Environmental Conflict Framework

> A conflict-based approach can reveal the structure of power embodied in nature as well as the socially diversified contents of humans' agency. (Armiero 2008:59)

A historically informed conflict-based approach opens way for a more pronounced understanding of what is 'human' and what is 'environment' in human-environment interactions. Thus, the focus on environmental conflicts represents an appropriate framework for the engagement with waste and the '*garbage crisis*' in Bangalore.

The friction that becomes sensible, when 'the human' and 'the environment' are put in motion, provokes questions about our understanding of 'human' society and the 'natural' environment, exposing the naturalization of human societies as well the idealization of 'nature'. Differences, contradictions and contingencies appear in both, society and nature. A historically informed perspective on environmental conflicts reveals different and conflicting groups in society as well as different and conflicting ecologies in 'nature'. First, this opens way for an analysis of the social actors involved in conflicts around the access to, control over and distribution of certain 'natures'; their multiple ways of dealing with, thinking of and working on their environment. Moreover, the multiple positions of these actors appear also as expressions of power relations and unequal "capabilities" (Drèze/Sen 2008: 3, 34ff) to deal with conflict situations and to influence their outcome. Second, such conflicts and their outcomes also affect the involved 'natures' and change the contours and characteristics of the environments inhabited by human societies. This, again, bears strong but varying consequences for different social groups, affects the power relations that structure society and alters the 'capabilities' of multiple social actors involved in the conflict in the first place. So, the transformed ecologies act back, but in ways that are often unexpected and hard to predict:

> Hence, environmental conflicts work as a litmus test; they uncover what is normally hidden in the landscape. However, exposing power in nature, conflicts are not only passive recording devices. They also produce nature and 'natural discourses'. These conflicts create new landscapes and new socio-ecological relationships. (Armiero 2008:67)

But conflicts are not the only societal mode of interaction. Other modes of interaction between social groups include cooperation, consensus, compromise and, as Ulrich Brand (2010: 250) notes, competition. These could be further assembled by oppression, resistance, opposition, non-cooperation and denial in relation with conflict, or by manipulation, exploitation and domination in relation with competition, or also compromise, integration, incorporation and cooptation in relation with cooperation and

consensus. While the row suggests a cumulative relationship between these societal modes of interaction, I would suggest them to be more collocated, overlapping and interrelated, although not in a straight-forward way. Such modes of interaction have to be distinguished from the structural dynamics of society-nature relations unfolding around waste in Bangalore and India (as this is what I am finally interested in). These structural dynamics include all of the mentioned modes of interaction – they enable, restrict and situate them along multiple intertwined power relations, related social norms and orders as well as the institutional forms they give rise to. In Bangalore, the notion of 'crisis' in connection with 'garbage' or 'waste' was used to signify the state of waste-society relations and the conflicts it involves. Thus, and for analytical purposes, it seems necessary to distinguish notions of 'conflict' and 'crisis' from each other. I understand 'crisis' as densification of contradictions and conflicts between different social groups and diverse environments, that have the potential to seriously threaten established societal formations (combining multiple power relations, related social norms and orders, and the institutional forms they take), and do also affect social groups that previously had no clear and direct stakes regarding the matter of concern – in this case 'waste'.

The far-reaching disclosure of the inter-relation between society and 'nature' stems to large parts from insights into 'natural' agency: Different ecological environments are not indifferent to what is happening in society and work in enabling and disabling ways on different social groups. Whilst this 'socio-ecological relationships' most often crystallize around the access to, control over and distribution of all kinds of 'nature', the at times simplifying notion of ecological amenities and burdens renders a privileged vantage point regarding the inter-action between the 'human' and the 'non-human', especially with respect to the latter's agency. From a natural science enriched perspective, these amenities and burdens are expressions of the exchange of materials and energy between societies and their environments. Certain patterns and changes in the flows of materials and energy – also referred to as biophysical economy, or social metabolism – inhere certain changes of social relations, and therefore, could also indicate an increased conflict potential. In the following, the concept of 'social metabolism' is introduced and discussed as preliminary theoretical approach for an environmental-conflict framed understanding of the societal handling of waste in India and Bangalore. Even though it is not fully situated in the field of political ecology – if we follow Robbins delimitations of the field outlined above –, it still delivers important insights into the global and macro-political scales of society-nature

interactions as well as on the terms of ecological sustainability of such interactions, mainly from a natural science enriched perspective.

2.1.2. Social Metabolism

The theoretical approach of social ecology takes the biophysical economy as starting point for the analysis of society-nature interactions. Drawing on system theory and systemic interaction models, Marina Fischer-Kowalski and Helga Weisz (1999), among others, propose social metabolism together with the notion of the "colonization of nature" (ibid. 234) as "epistemological framework accessible for both natural and social sciences" (ibid. 215). They consider such a common framework necessary in order to get hold of the "mutual dependencies" (ibid.) of society and nature.

'Social Metabolism' refers to "the entire flows of materials and energy [between society and nature] that are required to sustain all human economic activities" (Haberl et.al. 2011:3). The notion of metabolism originates from biology and was subsequently used to analyze the historical development of society-nature interactions. It gave rise to a number of quantitative analytical instruments, such as the *material and energy flow accounting* (MEFA), the *human appropriation of an ecosystems net primary production of biomass* (HANPP) or the *energy return on investment* (EROI). These instruments enabled the (historical) identification of a "sequence of relatively stable configurations" (ibid.) with "*characteristic metabolic profile[s]*" (Fischer-Kowalski/Weisz 1999:230) called "socio-metabolic regimes" (Haberl et al. 2011:1). "Transitions between these regimes fundamentally change socio-ecological interactions, whereas changes and variations within each regime are gradual" (ibid.). The 'neolithic revolution' has been described as the first radical transition from "hunter and gatherer societies" to "agrarian societies" (Fischer-Kowalski/Weisz 1999:230ff; Haberl et al. 2011: 2ff), which gave way to "a new kind of society-nature interaction, the 'colonization of nature'" (Haberl et al. 2011: 2), referring "to the intended and sustained transformation of natural processes, by means of organized social interventions, for the purpose of improving their utility for society" (Fischer-Kowalski/Weisz 1999: 234). Yet, the intended change of nature has to be maintained and "implies taking on a prospective responsibility for the reproduction of biological resources" (ibid. 235), in a permanent effort to stabilize "the preferred features of the colonized systems" (ibid. 236), that also brings about dependencies on the involved natural processes. This reverberates on the social organization of societies, their culturally mediated and institutionally materialized societal relations, and involves "a process of

mutual conditionality" (ibid.) between "societies and their natural environments" (ibid.). The next 'metabolic transition' "from agrarian to industrial societies" (ibid.) marks the rupture from a solar based to a fossil fuel based energy system and is a much more "rapid transition that continues today and has enabled humankind for the first time to trigger processes of environmental change on a global scale" (Haberl et al. 2011: 4). The changing patterns in material use (ibid.) this 'metabolic transition' towards 'industrial societies' involves, are especially momentous for an understanding of 'waste' and directly coupled with the historical development of capitalist modes of production.

Yet, while Fischer-Kowalski and Weisz initially draw on Marx's notion of metabolism between society and nature (Fischer-Kowalski/Weisz 1999: 224) to introduce their concept of social metabolism, they reject its conjunct, "almost ontological, description of the labor process" (ibid.) and the conversion of the figure of metabolism for the analysis of capitalist societies without coupling its inherent development dynamics with the metabolism between society and nature – what, to be sure, has also spurred fierce debates with eco-marxism for a very long time (Castree 2000: 6ff; Dietz/Wissen 2009). Thus, instead of acknowledging how much Marx's notion of metabolism could also be interpreted as already anticipating the mediatedness of society and nature, they draw on system theory, systemic interaction models and their inhered intentional structure (ibid. 221, 235, 239ff) to conceptualize societies within society-nature interactions. Therefore, the concept of social metabolism offers only a highly reduced perspective on societies, which is incapable of fully comprehending social power relations and societal contradictions inscribed in socio-ecological conflicts – revealed when we consider society as an amalgam of power relations.

Departing from the ecologically destructive tendencies of capitalism in the light of the global ecological crisis, eco-marxist contributions to political ecology, for their part, "seek to read Marx as an actual or potential critic of capitalism's environmental consequences" (Castree 2000: 18). In doing so, eco-marxist contributions are informed by the strong wish to map out potential common ground of "red" and "green" movements and struggles in order to combine forces (ibid. 10, 32; Martinez-Alier 2007: 285; Horton 1997: 139). Yet, unsurprisingly, eco-marxist approaches are by no means homogeneous. Rather, "there is still much disagreement over the meaning and ecological significance of even core categories (like value)" (Castree 2000: 6). The respective disputes have often taken the shape of dichotomies between naturalistic positions emphasizing 'natural limits' because

of capitalisms' ecological destructiveness and social-constructivist positions questioning the relevance of this limits for capitalist development (ibid.11ff). Neil Smiths idea of "the production of nature" (2008 [1984/1990]: 368] and its use of the notion of 'second nature', according to Noel Castree (2008), provided an important step "to undermine the nature-society dualism as it appeared in both academic and everyday thought" (ibid. 24). Nonetheless, I will next turn to an approach, which has been equally concerned with the integral mediatedness of society and nature, although largely within a German speaking contexts.

2.1.3. Societal Relations with Nature and their Regulation

The concept of '*societal relations with nature*'[6] ("Gesellschaftliche Naturverhältnisse") (Görg 2003; Brand/Görg 2003; Brand et al. 2008; Wissen 2011) has been "strongly influenced by Marx and the early critical theory of the Frankfurt School" (Brand/Wissen 2012a: 3) and is "[c]onceptualising nature and society as simultaneously different *and* mutually constituted" (ibid. 4). It aspires to grasp the integral mediatedness of society and nature along three assertions (Köhler/Wissen 2010: 219):

First, the insights that nature is physically and materially produced and that every perception and idea we have of nature is mediated through our symbolic and linguistic meaning systems, substantiates the inevitable interrelatedness of nature and society: The *physical-material production* – drawing directly on Marx – refers to the appropriation and transformation of nature as basic premise of human existence, while according to the *cultural-symbolic production* 'nature' and the 'environment' – or also 'waste' – only obtain social meaning through (historically) specific interpretations, explanations, concepts and discourses (Köhler/Wissen 2010: 220). The physical-material and cultural-symbolic production of nature is strongly interrelated and distinguishable only on an analytical level: What we understand as 'waste', 'natural resource' or 'ecological crisis', has been evolving out of concrete historical developments and with respect to particular societal constellations, interests and requirements. Subsequently, according to Bettina Köhler and Markus Wissen, we have to assume the existence of many different and distinct societal relations with nature (ibid. 221).

Second, there is a fundamental difference between nature and society – "[n]ature cannot be produced at will, but has a certain autonomy, and its reproductive capacities can be

[6] The recently emerging contributions to this concept in English generally use the term '*relationship*' ("*societal relationships with nature*" (Görg 2011: 44; italics in original) or "society-nature relationships" (Brand/Wissen 2012: 3)), while I prefer the term '*relation*' for reasons of stylistic convenience.

undermined both locally and translocally" (Brand/Wissen 2012a: 5). Yet, nature's materiality, and the subsequent experience of its autonomy, is perpetually neglected in capitalist societies. This is a basic feature of societal relations with nature under capitalism. In as far as the creation of use values within capitalist production processes is only geared towards the production and realization of surplus value, the capitalist mode of production is constantly abstracting from the specific qualities of nature, on which its production process depends on in the first place (Köhler/Wissen 2010: 222):

> Put differently, capitalist production as a *labour* process is premised upon precisely those socio-ecological conditions which it continuously undermines as a *valorization* (*Inwertsetzung*) process. The immanent limits of the capitalist mode of production do not lie in the reproductive necessities of human and non-human nature, but in the crises of the valorization process. (Brand/Wissen 2012a: 6; italics in original)

This specific form of the appropriation of nature under capitalism has been delineated by Christoph Görg as the "*mastery of nature*" (Görg 2011: 48; italics in original), which aims at the "*total subsumption* of nature" (Görg 2011: 49; italics in original) irrespective of its specific self-reliant and autonomous dynamics, or its "*non-identity*" (ibid.) – as is it has been termed with reference to the similar notion of Theodor W. Adorno –, and provides the concept of societal relations with nature with a stronger emphasis on the materiality of nature, compared to Neil Smith's notion of the 'production of nature' (Brand/Wissen 2012a: 5).

Third, the difference between nature and society, as well as the various forms of the societal relations with nature, are historically constituted, contingent and malleable. Moreover, the configuration of historically specific societal relations with nature is always a question of power relations along categories such as class, sexuality and gender, 'race' and ethnicity. Such relations of power are always inscribed in and reinforced by specific and concrete societal relations with nature. As they differ a lot through space and time, there are varying manifestations of capitalisms' ecological destructiveness and subsequent environmental conflicts around the reconfiguration of societal relations with nature:

> Society-nature relationships, after all, are an integral part of all other social relationships. The relationship between the individual, society and nature then becomes understandable as a relationship with material and cultural (cognitive, normative and symbolic) aspects, which is hegemonically constituted by social conflicts. (Brand/Wissen 2012a: 5)

The resulting "fundamental contradiction can be managed institutionally by way of societal processes of normalization" (Brand/Wissen 2012a: 6), what has been addressed through an extension of the concept of societal relations with nature by the *regulation approach* (Aglietta 1979; Görg 2003; Brand/Wissen 2012a: 6) – which focused initially on the

social, cultural and political regulation of the wage-relation and the corresponding societal formation of the fordist mode of production:

> The regulation of society-nature relationships, or the ways in which structures of domination organise and shape the management of the ecological destructiveness that is inherent to the capitalist mode of production, has to be understood as closely related to patterns of social reproduction that are macroeconomic, institutional and deeply embedded in subjects. (Brand/Wissen 2012a: 6)

Such a regulation of crisis-ridden societal relations with nature involves, on the one hand, the "temporally- and spatially-varied" (ibid.) adaptation of valorization strategies, as indicated by the emergence of 'green economy' (Brand/Wissen 2012a: 6f, 15). On the other hand,

> … the regulation of society-nature relationships takes place via institutions, norms, values, processes of subjectivation, and normalised practices that often bring to the fore new strategies of capital valorization. (…) Regulation may prevent destructive forms of appropriating nature from becoming a politically relevant problem. In this case, the destructive character of society-nature relationships remains latent and is seen as manageable and, therefore, acceptable and/or it remains limited to socially marginalised groups. Most of all, its costs are both spatially and temporally externalized. (Brand/Wissen 2012a: 7)

Based on regulation approach's insights into the historical conjunction "of a mode of production and distribution, on the one hand, and a mode of consumption on the other (…), which is safeguarded by a range of institutional forms that together constitute a mode of regulation" (Brand/Wissen 2012b: 548), Brand and Wissen develop their notion of an "*imperial mode of living*" (ibid.; italics in original; Brand/Wissen 2012a:11). This refers to the dominant fossil-fuel based "patterns of production, distribution, and consumption that are deeply rooted in the everyday practices of the upper and middle classes of the global North and increasingly in the emerging countries of the global South" (Brand/Wissen 2012b: 548). Such a refined and historically situated notion of the integral mediatedness of societal formations and their socio-natures, founded in everyday practices and common sense, provides the basic theoretical premise for the political ecology of waste in Bangalore. Yet, since this study is concerned with the specifically urban constellations of waste-society relations, there is a need for a specifically urban perspective on political ecology.

2.1.4. Urban Political Ecology

The resent "critical academic and political project" (Heynen/Kaika/Swyngedouw 2006: 2) of *urban political ecology* (ibid.; Swyngedouw/Heynen 2003) departs from the neglect of ecological considerations in urban social theory as well as of urbanization processes as origin of environmental problems and conflicts in environmental theory – including much of the contributions to political ecology. It offers a historical-materialist perspective on

urban environments, which considers urban space as procedural condensation and sedimentation of tightly intertwined material and societal metabolisms along social, political and economic power relations and throughout uneven geographic space. Urban political ecology inhabits and inheres many of the insights into society-nature relations, which have been indicated for eco-marxist approaches and outlined in greater detail for the concept of societal relations with nature. Yet, it crystallizes these insights from the angle of a distinct urban perspective towards…

> … a framework through which to systematically approach issues of uneven urban socio-ecological change, related explicitly to the inherent spatial patterns the distribution of environmental amenities take under urban capitalism. Such a framework is an important step towards beginning to disentangle the interwoven knots of *social process*, *material metabolism* and *spatial form* that go into the formation of contemporary urban socionatural landscapes. (Heynen/Kaika/Swyngedouw 2006: 8; italics in original)

Thus, urban political ecology combines the focus on socio-ecological processes of circulation and transformation with a distinct notion of socio-material metabolism and attentiveness to the spatial forms of urbanization, including a complex understanding of the scalar articulations urban space inhabits. First, the focus on *socio-ecological processes* reaffirms the elaborated rejection of a crude and dichotomic juxtaposition of 'society' and 'nature' on base of the tangible discernment on…

> … how cities are dense networks of interwoven sociospatial processes that are simultaneously local and global, human and physical, cultural and organic. The myriad transformations and metabolisms that support and maintain urban life (…) always combine physical and social processes as infinitely interconnected. (Swyngedouw/Heynen 2003: 899)

This reassurance of the interrelatedness of 'society' and 'nature' serves as starting point for the clarification of how socio-ecological processes are deeply entrenched in the historically specific politics of urbanization, revealing different and conflicting groups in society as well as different and conflicting ecologies in 'urban nature':

> To the extend that cities are produced through socio-ecological processes, attention has to be paid to the political processes through which particular socio-environmental urban conditions are made and remade. From a progressive or emancipatory position, then, urban political ecology asks questions about who produces what kind of socio-ecological configurations for whom. In other words, urban political ecology is about formulating political projects that are radically democratic in terms of the organization of the processes through which the environments that we (humans and non-humans) inhabit become produced. (Heynen/Kaika/ Swyngedouw 2006: 2)

Such a reaffirmation of urban political ecology as 'political project' necessitates scrutiny not only towards the constant and continuing socio-ecological processes of circulation that support and maintain urban life, but especially also towards the historical-geographical analysis of how these urban-life-maintaining processes have came up and have been molded in the first place. This emphasis gives way to an investigation of the specific features of urbanization processes spurred by the uneven and combined development of

capitalist modes of production. Moreover, it urges the examination of the socio-ecological relations enshrined in capitalist urbanization processes.

> In capitalist cities, 'nature' takes primarily the social form of commodities. Whether we consider a glass of water, an orange, or the steel and concrete embedded in buildings, they are all constituted through the social mobilization of metabolic processes under capitalist and market-driven social relations. This commodity relation veils and hides the multiple socio-ecological processes of domination / subordination and exploitation / repression that feed the capitalist urbanization process and turn the city into a metabolic socio-environmental process that stretches from the immediate environment to the remotest corners of the globe. (Heynen/Kaika/Swyngedouw 2006: 5)

Second, and as a distinct intermediate dimension, the patterns of production of nature entangled in these socio-ecological relations addresses the concrete historical-geographic situatedness of socio-ecological processes through the lens of 'the urban' on a more abstract level. Urban political ecology takes up the concept of *socio-material metabolism* from a perspective much more critical of societal power relations – compared to the socio-metabolic accounts within socio-ecology –, deriving it directly from Marx's conceptualization of human-nature interactions:

> The notion of 'metabolism' is the central metaphor for Marx's approach to analyzing the dynamic internal relationships between human and nature that produce socio-natural entanglements (…). In the most general sense, 'labouring' is seen exactly as the specific human form through which the metabolic process is mobilized and organized (…). This socio-natural metabolism is for Marx the foundation of, and possibility for, history, a socio-environmental history through which both the nature of humans and of non-humans is transformed. To the extend that labour constitutes the universal premise for human metabolic interaction with nature, the particular social relations through which this metabolism of nature is enacted shape the form this metabolic relations takes. (…) Under capitalist social relations, then, the metabolic production of use values operates in and through specific social relations of control, ownership, and appropriation, and in the context of the mobilization of both (sometimes already metabolized) nature and labour to produce commodities (as forms of metabolized socio-natures) with an eye towards the realization of the embodied exchange value. The circulation of capital as value in motion, then, is the combined metabolic transformations of socio-natures in and through the circulation of money as capital under social relations that combine the mobilization of capital and labour power. (Heynen/Kaika/Swyngedouw 2006: 7f)

It is this abstract historical-materialist understanding of the power-laden mobilization of socio-material metabolisms – like waste streams –, that encourages a sensitivity towards the consolidation and densification of different forms of exploitation, oppression and domination along lines of *sex* and *gender*, *class* and *cast*, as well as *'race'* and *community* in urban space:

> In fact, it is exactly those 'natural' metabolisms and transformations that become discursively, politically and economically mobilized and socially appropriated to produce environments that embody and reflect positions of social power. Put simply, gravity or photosynthesis is not socially produced. However, their powers are socially mobilized in particular bio-chemical and physical metabolic arrangements to serve particular purposes; and the latter are invariably associated with strategies of achieving or maintaining particular positionalities and express shifting geometries and networks of social power. (Heynen/Kaika/Swyngedouw 2006: 6)

In addition to a more critical notion of 'socio-material metabolisms', this introduces two more colligated components of socio-ecological agency that gain analytical significance in the following appraisal of the societal handling of waste in Bangalore: strategies and positionalities. Third, pitted against the uneven geographies inhered in the *spatial forms of urbanization*, the distinct strategies to mobilize socio-material metabolisms from the point of different and conflicting positionalities give rise to urban space as an amalgam of power relations.

> Perpetual change and an ever shifting mosaic of environmentally and socio-culturally distinct urban ecologies – varying from the manufactured and manicured landscaped gardens of gated communities and high-technology campuses to the ecological warzones of depressed neighbourhoods with lead-painted walls and asbestos covered ceilings, waste dumps and pollutant-infested areas – still shape the choreography of a capitalist urbanization process. (ibid. 9)

On aspect of this spatial form, which gained particular importance in the struggles around the reconfiguration of Bangalore's societal handling of waste, is the notion multiple scales and the "mechanisms of scale transformation through social conflict and political struggles" (Swyngedouw/Heynen 2003: 913):

> In other words, a complex scalar articulation arises from the molecular processes and dynamics associated with the circulation of capital and its associated socioecological, metabolic transformation processes, on the one hand, and the levels of scales of regulation and governance in which these are embedded, on the other. These territorial and networked spatial scales are never set, but are perpetually disputed, redefined, reconstituted and reconstructed in terms of their extend, content, relative importance and interrelations. The continuous reorganization of spatial scales is an integral part of social strategies to combat and defend control over limited resources and/or a struggle for empowerment. (ibid.)

Situated in the field of *urban political ecology* and framed by a perspective on *environmental conflicts*, the introduced theoretical approach combines a waste-specific adaptation of the concept of *societal relations with nature* with notions of *social metabolism* in order to conceptualize waste as a material – its production, circulation, distribution, transformation, (re)valorization and disposal –, and its function in capitalist societies. This leads over to the following part, concerned with a conceptualization of waste within political ecology.

2.2. Political Ecology of Waste

What is Waste? An etymological endeavor to trace the historically evolving meaning of the term 'waste' provides a promising starting point to answer this question. According to Vinay Gidwani and Rajyashree N. Reedy (2011), our understanding of 'waste' is deeply entrenched in the early history of capitalist development and associated processes of 'primitive accumulation' and the 'enclosure of the commons'. They show how "'waste'

became indexical of the necessity for an ordering rule of property" (ibid. 1626), drawing on John Locke's 'treaties', where "the figure of 'waste' comes to designate the unenclosed common, the external frontier, and the ethical horizon of civil society" (ibid.). Situated already before that, "[i]ts enrollment as a political-juridical concept dates back to late-thirteenth-century England, when it is invoked as a curb on the usufruct rights of tenants" (ibid. 1627) in order to make them utilize their property 'rationally' (ibid.). Considering this close entanglement of our contemporary understanding of 'waste' with the historical expansion of capitalist modes of production, it appears appropriate to engage in a preliminary definition of waste with recourse to the body of knowledge concerned with exactly the socio-ecological relations enshrined in this history. Eco-marxist approaches offer some first abstract conceptualization of waste in capitalist societies as effect of "the priority of exchange value over use-value" (Horton 1997: 132), like Stephen Horton's characterization of waste as "historically unique form of the discard of human use-value. (…) Consumption leaches a commodity of its use and exchange value. The residuals of consumption are thus discarded as waste" (Horton 1997: 128).

A very different conceptualization of waste has been provided by social-constructivist and cultural-anthropologic approaches, following Mary Douglas's pioneering work on *Purity and Danger* (1970 [1966]) – which focused on the socio-cultural function of 'waste' in societies of the colonial 'other', characterized exactly by the prevalence of non-capitalist modes of production. Premised we render the colonial and racist legacy of Douglas's work a matter of explicit consideration, her examinations offer another preliminary definition of 'waste' as "matter out of place" (ibid. 48).

More recently, biopolitical approaches (Giroux 2006; Gidwani/Reedy 2011; but also Bauman 2004) have combined both, Marxist and social-constructivist notions of 'waste' to come to the conclusion that the intense production of waste materials is met by the equally enormous production of 'human waste' (Bauman 2004:21) in what Henry Giroux has termed "biopolitics of disposability" (2006) of late twentieth-century / early twenty-first-century neoliberal capitalism.

2.2.1. Conceptualizing Waste

As these marxist, social-constructivist and cultural-anthropologic, and biopolitical accounts suggest, and against the backdrop of a profoundly capitalist history of waste, the notion of 'waste' can take many forms; it can be analyzed from a number of different angles and, subsequently, can take manifold meanings. Therefore, Sarah A. Moore (2012)

suggests to ascribe these different approaches to waste along a double axis, with the first axis ("positivity-negativity" (ibid. 781)) denoting "the degree to which a given approach argues for a specific nature of character of waste" (ibid.), and the second axis ("dualist-relations" (ibid. 782)) describing "the degree to which waste is defined as separate from society" (ibid.). In the case of positivity "waste is imbued with meaning that may or may not be pre-given, but is largely located within the object itself" (ibid. 781), while in the case of negativity "meaning and value of waste are largely indeterminable and escape or exceed easy categorization" (ibid. 782). Further on, dualist denotes "conceptualizations that explicitly or implicitly define waste and society as separate spheres" (ibid.), while relational "concepts focus on mutually constitutive, immanent, and emergent encounters between people and things" (ibid. 782f).

Almost all of the approaches congregated by Moore could prove, although to varying degrees, relevant to understand and analyze waste and its societal handling in Bangalore. For the purpose of this study, however, it is sufficient to conceptualize waste as oscillating mainly between a weak positive-dualist understanding of waste and a strong negative-relational characterization of waste. Positive-dualistic in the sense of waste as 'resource' – with respect to a use-value stemming from more or less definite physical-material properties – and/or as "a negative use value that can harm nature and human health" (Gille 2007: 25), thus allowing to "demonstrate the material and social consequences of one type of waste material metamorphosing into another, as it traverses the circuits of production, distribution, consumption, reclamation, and 'annihilation'" (Gille in Moore 2012: 785). And, negative-relational in the sense of waste as 'abject' ("waste as something that is expelled from the social body in order to shore up the boundaries that divide that which belongs from that which does not (…) created not through identification, but rather through its always incomplete exclusion" (ibid. 792)), 'actant' (accounting for the materiality and material agency of waste "while eschewing, at least in part, the ontological stability of waste" (ibid. 791)), and 'governable object' ("focusing more on the creation of waste as a governable object, as part of a complex of things and people through which the state operates" (ibid. 790)). Yet, this is not to fall back to a dualistic understanding of waste and society, but rather to understand waste as simultaneously interconnected with and inextricably distinct from society. Such a conceptualization of waste is, according to Sarah A. Moore (2012: 785, 792), much in line with the one elaborated by Zsuzsa Gille (2007; 2010), who's work has inspired much of the theoretical understanding of a political-

ecology of waste, on which the analysis of the societal handling of waste in Bangalore and related waste disputes is based on – outlined in the following.

2.2.2. Waste-Society Relations

All of these different angles to perceive waste – arranged by Moore – are important to understand waste, but they are not equally important to a "social theory of waste" (Gille 2007: 34) – which is what sociologist *Zsuzsa Gille* is heading for, in her analysis of *The Politics of Waste in Socialist and Postsocialist Hungary* (2007; cf. 2010). In doing so, she is departing on the one hand from a critique of the crude operationalism involved in mainstream conceptualizations of waste – focusing solely on the management of different categories of waste and presenting the 'waste problem' "as not only being manageable but already being managed" (Gille 2007: 18). On the other hand, she is skeptical of the abstract conceptualization of waste through mere reference to the theory of value in marxist approaches. Both serve to reify waste. Therefore, she embarks on a first operative definition of waste as "any material we have failed to use" (Gille 2010: 1050; cf. Gille 2007: 18), in order to point towards and scrutinize on the manifold social and material processes through which materials are transformed into waste; focusing on "the act of wasting" (Gille 2007: 18). Practices and processes of 'wasting' are linked to the utility we ascribe to certain things, which always involves classification. Interested in "theorizing the relationship between micro-level or individual acts of wasting and macro-level wasting" (ibid. 19), Gille is eager to point out "that classification is a fundamentally social activity" (ibid. 21) which varies considerably through space and time and between different socio-cultural contexts and social orders. This emphasis on the process of 'wasting' and the societal practices of classification it involves, serves as starting point for Gille's conceptualization of waste as a "hybrid entity" traversing through (figurative and physical) space and metamorphosing through time, which is delineated along the spatiality of waste, its materiality and its temporality.

The spatiality of waste denotes not only the located motion of waste materials through geographic space. Moreover, it links up with social-constructivist and cultural-anthropologic accounts of waste, usually interpreting it as "opposite of some concept or quality" (ibid. 20), value or order, or as negative facet of key dichotomies. Processes of 'wasting', accordingly, not only involve classifications – which amounts to some kind of "figurative spatiality" (ibid. 21) in terms of "a different category of things" (ibid.) – but also displacements in the realm of "physical spatiality" (ibid.), as 'wasted' materials are

usually transferred to physically different and distinct places. This account of the figurative and physical spatiality of waste takes up Mary Douglas definition of waste as "matter out of place" (Douglas 1970 [1966]: 48), just to ascertain that there is always also a "correct place for waste" (Gille 2007: 22), although "places for waste are usually marginal spaces – marginal to whatever mainstream activity is taking place in a particular location" (ibid.), which, of course, varies considerably between different socio-cultural contexts and social orders. Moreover, such classifications and displacements represent highly contentious issues and can involve fierce social struggles, as they demarcate boundaries considered constitutive of social orders. Thus waste is not only a 'matter out of place', but also a "concept out of order" (ibid. 23) that marks a "transitional position from the perspective of value, and (…) a boundary object between inside and outside and between past and present" (ibid.). According to Gill, therefore, the spatiality of waste gives rise to the notion of its "liminality" (ibid.), which demarcates "a 'no-man's-land' between several dichotomies" (ibid.) and "involve[s] the guarding or the breaking down of certain boundaries, that is, moral discourses will always play an important role in social struggles and policy decisions involving waste" (ibid.).

Yet, a mere focus on the socio-cultural significance of waste for the maintenance of social order – reverberating in its spatiality – would fail to recognize the materiality of waste as much as its material agency (ibid. 24). The same holds true for mainstream economist, when they pretend "that waste is produced from nothing or less than nothing" (ibid. 25), in order to keep the input-output calculations of accounting running:

> This negative attitude towards waste gives rise to a practical impulse to 'eliminate' it […through] the imperative and the techniques of disposal (…). Waste, as any form of matter, however, cannot be made disappear, leaving as the next best thing getting it out of sight – that is, lifting it out from the actual milieu in which it was generated. In the process of displacement, however, waste proliferates. Waste in landfills turns the soil into wastes (…) That is, the waste disposed of comes back to haunt us in newer forms and ever-greater quantities. (ibid. 25)

This is exactly what Nicky Gregson and Mike Crang describe in their guest editorial on "materiality and waste" (Gregson and Crang 2010: 1026), when they point towards the de-materializing effects of the governance of waste in terms of its management, framed by disposal mentalities and translated into disposal technologies – "principally the established ones of incineration and landfill" (ibid.), although recently more and more "reconfigured as resource recovery" (ibid.). This imperative of disposability is deeply entrenched in the "systemic causes of waste in capitalism" (Gille 2007: 31), which Gille re-establishes with reference to Paul Baran and Paul Sweezy in capitalism's tendency to overproduction. Thus,

> … on form of waste, that of surplus materializing as unnecessary and unproductive goods, will turn into actual waste, thus immensely increasing the burden ion nature. The chief waste circulation pattern of capitalism is thus the metamorphosis of waste as unutilized excess into waste as pollution. (ibid. 32)

Yet, while marxist economists recognize the existence of waste as "systemic problem (…), or a wasted resource (a wasted positive use value)" (ibid. 25), they are, according to Gille, also not able grasp "that waste is also a negative use value that can harm nature and human health" (ibid.) – without "reducing the materiality of waste to pollution" (ibid. 26) or focusing merely "on the distribution of waste and ignoring its production" (ibid.), as environmental sociologists and the environmental justice literature do. Thus, in order to cope with the increasing complexity of waste's materiality and material agency as a consequence of the synthetic materials involved, the metamorphoses undergone and the different scales traversed, she defines waste as "a hybrid entity" (ibid. 27): "Hybridity is the acknowledgement that the material and the social do not exist apart from one another; rather, they constantly create and reconstitute each other" (ibid. 28). To be exact,

> [f]irst, different societies tend to rely on a particular set of materials and thus tend to produce a certain range of wastes. Second, the materiality of waste places a limit on how it may be classified or, as referred to above, spatialized [and dealt with. …] Third, different societies ignore or misunderstand the nature of their material foundations and thus 'mis-spatialize' [and mistreat] waste in unique ways. (…) Fourth, such misrecognition and 'malpractice' cause things to 'bite back', and the unintended consequences then limit and modify 'purely social' relations and institutions. Fifth, all these manifestations of waste's materiality influence human and social intention, resulting in a constant 'back-and-forth' between society and waste (…). Sixth, and finally, the processes by which waste metamorphoses from one form to another are also hybrid (…). (Gille 2007: 27f)

These processes of metamorphosis are pointing towards the temporality of waste. Waste's temporality involves the changing characteristic of waste materials throughout its circulation in the bio-physical economy of societies as much as the historical 'co-constitution' of waste and society throughout the peculiar interplay of the societal production and handling of waste with waste as a material and a social concept. To start with:

> [T]he circulation of waste doesn't simply mean the transformation of one waste material into another (for example, when waste incineration generates toxic ashes). It also, and even more fundamentally, implies that different forms of waste are continually transformed into each other. Waste as excess turns into waste as material, as in the environmental consequences of overconsumption. (ibid. 29)

Respectively, certain modes of production unfold certain material patterns, which are also discernable through their approach towards time. According to Gille, the tendency towards overproduction in capitalist societies leads to the "necessity of absorbing surplus through planned obsolescence and accelerated need creation" (ibid. 32), which amounts to the acceleration of the consumption of materials. "Waste thus results from manipulating materials' and nature's temporality" (ibid. 33). To summarize:

> What appears to be unique in different time periods and different societies are the types of waste produced (their material composition); the key sources of waste production (for example, unutilized surplus or insufficient inputs) and the dominant mode of waste circulation and metamorphosis; the socially and culturally determined ways of misperceiving waste's materiality; the ways in which, as a result, waste tends to 'bite back'; the cultural, political, and moral inclination to resolve waste's liminality (inscribed negativity or positivity); and, finally, key struggles around waste (in the sphere of production and in the sphere of distribution) (ibid. 34).

These aspects of waste as a 'hybrid entity' traversing through (figurative and physical) space and metamorphosing through time, constitute the foundations for Gille's notion of "waste regimes" (Gille 2010: 1056) as a "macro level concept (…) concerned with the production, circulation, and transformation of waste as a concrete material" (ibid.). Such 'waste regimes' are comprised of the production of waste (the social relations and material compositions of waste production), the representations of waste (the key dichotomies and bodies of knowledge involved in comprehending and misunderstanding waste and its materiality), and the politics of waste (the actors, public discourses and policy tools mobilized to deal with waste issues) (Gille 2007: 34; Gille 2010: 1056). Even though this conceptualization of waste-society relations through the notion of waste regimes offers critical understanding of the interplay of the physical-material and cultural-symbolic production of waste, I would object to its regime-theoretical approach and its subsequent functionalist simplification as well as its insufficient historization and theoretization of political economy and the (bourgeois) state. Ulrich Brand and Markus Wissen criticize that a regime-theoretical approach "because of its focus on steering and governance, (…) the state and the intergovernmental system are understood as more or less effective – and maybe even legitimate – steering institutions" (Brand/Wissen 2012a: 3). Even though Gille's concept of waste regimes does also pay attention to implicit forms waste politics (Gille 2007: 34) and the 'mis-spatialization' of waste due to 'culturally clouded' and insufficient understandings of its materiality (ibid. 27), the strong emphasis on 'mis-perception' still suggests an intentional structure in politics, that is inattentive to the conflicting interests and historically constituted power relations at work and condensed in state politics. Thus, while sharing much of Gille's critique of existing theoretizations of waste, I will retain her definition of waste as 'hybrid entity' and her notion of 'waste-society relations' without taking over her conceptualization of 'waste regimes', in order to signify a stronger recourse on the concept of societal relations with nature and its emphasis on the historically contingent interplay of capitalist modes of production and societal modes of regulation with the multiple power relations condensed in state politics. This understanding of waste-society relations constitutes part and parcel of the theoretical framework used to conceptualized waste and its societal handling in Bangalore.

2.3. Waste in the City – Urban Political Ecology of Waste in India

To summarize, an environmental conflicts approach situated in the field of urban political ecology frames the introduced theoretical approach, which combines a waste-specific adaptation of the concept of societal relations with nature with notions of social metabolism in order to conceptualize waste as a material – its production, circulation, distribution, transformation, (re)valorization and disposal –, and its function in capitalist societies. The concept of societal relations with nature provides a comprehensive understanding of the constitutive mediatedness of 'nature' and 'society', by way of looking at the historical 'co-constitution' of both, the integral coherence between 'society' and 'nature' as well as their simultaneous irresolvable disparity. A historical-materialist perspective on urban political ecology, furthermore, considers urban space – ensuing from the resolution of a binary opposition between 'nature' and 'society' – as procedural condensation and historical sedimentation of tightly intertwined material and societal metabolisms along social, political and economic power relations, with a strong emphasis on the entanglement, interplay and transformation of multiple scales. As showcase for a "*hybrid entity*" (Gille 2007: 27f; italics added) of urban *socio-nature* – traversing through (figurative and physical) space and metamorphosing through time –, waste is offering a suitable perspective for the analysis of historically specific contours of societal relations with nature in urban India, the power relations inscribed therein, and the resulting socio-ecological urban environments. Integral part of urban nature, its flows not only connect the 'urban' and the 'rural' in changing ways, but it circulates also through highly uneven social geographies – as such, it matters profoundly to urban and rural ecologies as well as to the people inhabiting them. Sensitive to the simultaneous changes and overlappings of different capitalist (and non-capitalist) modes of production, their political and socio-cultural regulation and corresponding societal formations, an extension of the concept of societal relations with nature by the regulation approach constitutes the theoretical base for the historically situated comprehension of waste-society relations in India's postcolonial urban political ecology.

Constrained by the limited scope of this diploma thesis and its decisive orientation towards concrete and down-scaled waste-related environmental conflicts in Bangalore, the following analysis will not exhaust the full analytical potential of the notion of waste-society relations, especially not with respects to the up-scaled and abstract conceptualization of their regulation. Moreover, well aware about the enormous difficulties

and intensely political pitfalls involved in the analysis of the political ecology of urbanization processes against the backdrop of primarily capitalist development tendencies in India – due to its post-colonial legacy and the undaunted pervasiveness of distinct and manifold pre-capitalist societal formations and social modes to organize production –, there is, still, an intense debate about urban citizenship and democracy in relation to especially the spatial dynamics of capitalist urbanization (Desai/Sanyal 2012; Anjaria/McFarlane 2011; Coelho/Kamath/Vijayabaskar 2013; Roy/Ong 2011) and the elitist and 'anti-poor' inclination of bourgeois middle-class environmentalism – in short, revolving around contentious and contested efforts to establish modes of political regulation of neoliberalism in urban India. I would ascribe these disputes to the contingent (re-)negotiation and (re-)configuration of public-private divides within an unfolding bourgeois state, thereby providing a deduced lens on the social and political regulation of uneven neoliberal political ecologies in urban India, as René Véron has proposed it for an urban *political ecology of air pollution in Delhi* (2006). According to him,

> … environmental governmentalities define the boundaries of public space or environment and shape particular urban socioenvironments. Whereas in the current period of neoliberalism and globalization many natural resources and environmental services are commoditized and privatized, air quality seems to become defined as a public good. These processes of privatization and 'public-ization' are best seen as part and parcel of the same trend in postcolonial societies of separating the private from the public. (Véron 2006: 2097)

I would, furthermore, emphasize public private divides in two distinct but strongly interrelated ways. On the one hand, there are concrete and above all explicit public private divides which are echoed in politics and public discourses around privatization, public-private partnerships and 'private participation'. On the other hand, dichotomic public private divisions unfold around the constitutive entanglement of an evolving bourgeois state with multiple but historically specific power relations in more subtle ways (Fritsch/Schlitz 2012) – but with serious consequences for those groups already lacking the 'capabilities' to participate in 'modern India' due to intersecting forms of exploitation, disenfranchisement, deprivation, discrimination, suppression and domination. Such constitutive forms of public private divisions, subsequently, already relate to the relative position of different groups within India's society, thereby leading over to the next chapter concerned with research methodologies and the operationalization of the theoretical approach.

3. Methodology

In this chapter, the selected methodology is presented along subsequent steps of the circular research process instructing the empirical research, starting with the description of the analytical categories and dimensions chosen to guide the operationalization of the outlined theoretical approach. In the following, the chosen methods will be introduced and further delineated along the description of successive steps of empirical research and data generation and analysis.

This diploma-thesis project is set out as an explorative case study. It focuses on waste-related environmental conflicts and entangled 'waste-society relations' on a downscaled level of Bangalore's urban political ecology and socio-metabolic systems. Thus, the case study aims to document and analyze the origins, patterns and dynamics of conflicts around Bangalore's '*garbage crisis*', taking account of waste flows and the power relations enshrined in them. While this involves detailed accounts of Bangalore's waste-related history and evolving waste management system, a strong temporal emphasis is put on the initial and contentious phase of the city's '*garbage crisis*' with respect to the time span included in the empirically grounded analysis – covering the time from July to November 2012. While the evolving societal handling of waste in Bangalore is traced back to the 1990s, in order to historically situate and contextualize the waste disputes culminating in 2012, the continuing negotiations of and reconfigurations in Bangalore's handling of urban waste since then can only be partly considered in the conclusion.

Designed as circular research process, the case study consists of a close interplay of the theoretical approach and the empirical approach. While a strong emphasis has been put on preliminary theoretical concepts and insights – *urban political ecology*, a waste-related adaptation of the concept of *societal relations with nature*, and *socio-material metabolism* – in an initial and conceptual phase of research, the (early) analytical and empirical approach itself, according to the explorative character of the research, was nonetheless designed to enable a great degree of openness and sensitivity towards the societal handling of waste in Bangalore, the everyday practices and 'ground realities' it involves, as well as the abstract concepts structuring its perception and configuration. Thus, the theoretical approach was meant to only provide the analytical and heuristic framework in an initial phase of the research. The empirical approach was designed to generate new theoretical knowledge from the 'field experiences' as well as from the analysis of secondary data and documents collected. In a second and third (major) analytical step, this theoretical

knowledge was crosschecked, synthesized and enriched with the initial theoretical approach.

Moreover, following the concept of triangulation introduced by Uwe Flick (2009: 225), different theoretical perspectives and methodological vantage points have been chosen to enhance the validity of this examination of waste-related environmental conflicts and entangled 'waste-society relations'. The combination of a waste-related adaptation of the concept of societal relations with nature with socio-metabolic approaches to social ecology represents at least a rudimentary triangulation of theoretical perspectives. Beyond that, and as the basic premise of the concept of triangulation can be considered the combination of methodological approaches, the research approach provided for the triangulation "between-methods" (ibid.) as well as "within-methods" (ibid.). Yet, this did not include a thorough engagement with the triangulation of qualitative and quantitative methods (ibid. 227), although the appraisal of secondary quantitative data on waste-flows in Bangalore and India did play an important role in the (interpretative) analysis of waste-society relations, as outline beneath. Thus, the cross-fertilization of qualitative social research and (material) waste flow analysis – in a sense – did provide a certain basis for and understanding of the interrelation of waste as a material and as carrier of social meaning in terms of waste-society relations.

3.1. Operationalization

The following outline describes the operationalization of the theoretical approach towards its exposure to the empirical reality and is structured along the analytical categories and analytical dimensions elaborated for that purpose. The sets of analytical categories amount to different variables derived from analytical concepts, while the analytical dimensions are needed to sufficiently situate these sets of analytical categories in the midst of the complex and ambiguous empirical reality engaged in Bangalore.

3.1.1. Analytical Categories

Two basic analytical concepts – an environmental conflict analysis framed by the concept of societal relations with nature (Görg 2003; Brand/Wissen 2012a) and a limited material flow analysis (waste-flow analysis) framed by approaches to social ecology (Fischer-Kowalski/Weisz 1999) – gave rise to three groups of analytical categories. While these sets of analytical categories have been further distilled and partly reconfigured in the process of

analysis, they still provided the initial cornerstones for the operationalization of the theoretical approach and guided the research process.

Waste-related Environmental Conflict Analysis

Environmental conflicts have to be differentiated into ***latent*** and ***manifest*** conflict situations. This differentiation is instructive, because it implies the need for two different but interrelated analytical trajectories: one that is concerned with the direct and pronounced relations between the involved actors in conflict situations and another, that is tracing the '*situatedness'* and *relative positions* (Brah 1996: 182f) of the involved actors in the society at large and the implications this has for the ability to deal with conflict situations.

The ***first set of analytical categories*** includes different modes of social interaction like ***cooperation***, ***consensus***, ***compromise***, ***competition*** and ***confrontation*** (Brand 2010: 239) in order to map the relations between actors in conflict situations. Enriched by the distinct properties of waste-materials and their different conceptualizations by various concerned actors, and against the backdrop of pronounced politico-economic and -ecological power structures involved in the societal handling of waste in Bangalore, the outlined modes of social interaction corresponded with the supplementary differentiation of *recognition*-, *access*-, *distribution*- and *appropriation*-conflicts – derived from delineations of Ulrich Brand for the case of biodiversity conflicts in international environmental politics (Brand 2010: 250). This supplemented set of analytical categories was distilled and reformulated towards the identification of ***different strategic approaches towards waste*** during the process of analysis. Therefore, a major emphasis has been put on the involved actors and their arrangements, their different strategic approaches and modes of conflict resolution as well as the conflict-dimensions reflected therein. Moreover, to sufficiently pronounce this strategic approaches with respect to the distinct materialities and different meanings of waste, the theoretical conceptualization of waste has been simplified towards its tangible double-character between negative and positive attributions – which, to be sure, is not straightforward in line with Sarah A. Moore's (2012) 'positivity' and 'negativity' of waste: The positive attribution of waste points as much towards its positive 'use value' as to the (re-)conceptualization of waste as 'resource', that lies at heart of a 'green recycling economy'. The negative attribution of waste refers to "a negative use value" (Gille 2007: 25) in order to reach further than the mere distributional logic of 'pollution', but does also include negative (cultural-symbolic) representations of waste to account for its "liminality"

(ibid. 23), which is especially important in a situation where "the social marginalization of informal waste pickers and garbage collectors reflects the cast-based association made between their activities and dirt and waste" (Kabeer 2008: 303f).

The ***second set of analytical categories*** is concerned with societal power relations in a different way and bears additional meaning with respect to the latent character of conflicts. Societal inequalities lead to significant power differentials of the involved actors and actor constellations. These power differentials have important implications for the latent or manifest character of environmental conflicts, as marginalized and disenfranchised groups have to struggle much harder for the articulation and pursuit of their interests. The initial consideration of respective societal power relations takes place along the analytical categories of ***sex and gender***, ***class and cast***, ***'race' and community***. During the process of analysis, this set of intersectional categories (Klinger/Knapp 2007) gave rise to the notion of ***positionalities***, as "the manner in which a group comes to be ‚situated' in and through a wide variety of discourses, economic processes, state policies and institutional practices (...). This ‚situatedness' is central to how different groups come to be relationally positioned in a given context" (Brah 1996: 182f). Correspondingly, and following a conflict analysis framework, the identification of the actors involved in waste-related environmental conflicts as well as their arrangements was in itself one of the major aims of the research process. Furthermore, following political ecologists interest in the generation of environmental knowledge for social and ecological justice, which demands an epistemologically sensitive stance towards the different societal positionalities of actors and respective environmental explanations (Forsyth 2008: 756, 759ff), a special focus has been put on the expertise and perceptions of practitioners and activist from civil society and environmental justice organizations. This reflects the attention paid to civil-society activist and marginalized actors of the informalized recycling sector, based on a conscious decision regarding standpoint-theoretical considerations and the fact that the voices of other and more powerful (state and private-corporate) actors are already overrepresented.

Waste-related Material Flow Analysis (Waste Flow Analysis)

An understanding of the physical matter of waste, including its generation and its subsequent trajectories within the bio-physical economy of societies – in terms of waste flows –, appears preliminary for an examination of the societal handling of waste. However, the analytical concept of waste-related material flow analysis has been restricted in this study towards only a limited incorporation of a waste flow analysis, mainly based

on the interpretation of secondary data. This limitedness is founded in the research interest of this diploma thesis, emphasizing on the interpretation of socio-ecological relations over quantitative account typically pursued by scientific contributions focusing on waste management in cities of the Global South. Moreover, it is a consequence of the general lack of comprehensive data and the incoherency of existing secondary data – discussed in detail further down – as well as the incapacity to engage in comprehensive quantitative data-collection within the framework of this research approach and diploma thesis. Irrespective of the restricted incorporation of quantitative empirical research and waste-related material flows analysis, this concept gave rise to the ***third set of analytical categories*** including ***waste quantities*** generated and handled (referring to the weight of waste streams), ***waste qualities*** (the composition of waste streams in terms of different waste fractions, their biophysical properties and the way they interact), ***waste trajectories*** (the way the materials considered as waste move through space and time, building stocks and interacting with their environment, from waste generation to circulation, transformation, recovery or recycling, to processing, storage and disposal), and the ***socio-spatial distribution and dispersion of waste*** (referring to the question which parts of society are generating which quantities and qualities and interact with waste at which stages of waste's trajectories). Correspondingly, socio-metabolic accounts gained analytical significance throughout this research project and the presented analysis, in much the same way as Heynen, Kaika and Swyngedouw have outlined it in their edited volume on urban political ecology: "Socio-ecological 'metabolism' will therefore be one of the central material and metaphorical tropes that will guide the case-studies" (Heynen/Kaika/Swyngedouw 2006: 8).

<u>Limited availability and inconsistency of secondary waste-flow data</u>

Irrespective of the prevalence of disposabilities' management imperatives, and as the 'garbage crisis' of 2012 is going to exemplify, the actual management of waste has been as much incomplete as the collection of waste-related data indispensible for such efforts. Regarding the availability of such data, Wilson et al. state that, "[u]nfortunately, all quantitative data on waste management in developing country cities has until recently been both scarce and unreliable, perhaps even more so for data on recycling rates. The informal sector, almost by definition, does not routinely measure its performance" (2009: 631). If it is not possible to engage in extensive data collection in order to produce the waste-flow data needed, one has to cope with the data that is available. In the case of Bangalore,

although there has been a lot of waste-related data collected due to longstanding and engaged research efforts, the existing data does not cover regular time spans, and is often highly inconsistent and contradictory. To explain why, the basic question in need for answers is: What is measured in the first place? Waste is not waste – and even the municipal solid waste of interest here is not always denoting the same kind of matter. Often, only the official primary collection of waste is measured, and if not, there is still the question how the remaining waste accounted for, especially with respect to the predominance of the informalized recycling-sector? In the data available, it is also not always made clear what has actually been measured, but the deep irregularities and inconsistencies in the comparison of different data-sets suggest that it can not always be the same what has been measured. To keep it with Zsuzsa Gille (2007):

> This insufficiency and chaos in waste data collection is not accidental. To some extend, it is the result of (…) the invisibility of waste. However, this invisibility is not simply cultural. (…) [W]astes are impervious to being consistently classified, registered, and measured, which also has something to do with the fact that the complexity of materials we produce intentionally or unintentionally increase faster than the capability of our classificatory system. (ibid. 17)

3.1.2. Analytical Dimensions

Finally, three analytical dimensions have been developed within the process of operationalization of the theoretical framework, which also reverberated on the analytical categories outlined above. These three analytical dimensions are: ***political and ecological-economic scales***, ***urban space*** and ***temporality*** (in terms of historical changes, contingencies and ruptures).

Political and ecological-economic scales: Regarding political and administrative structures, these scales include the federal level of the Indian nation-state, the level of Karnataka state, the city level of Bangalore – which itself has been subject to considerable changes in recent times –, and further downscaled levels like the eight administrative zones Bangalore is divided into, the ward-level – the smallest units of the Indian administrative system –, and even smaller scales like health-wards and localities like neighborhoods, which are both relevant for the organization of formal and informal waste collection, segregation and recycling efforts. The way in which waste-society relations are structured also changes a lot depending on the scale, because of different scales following different logics and dynamics and involving different actors. Especially the downscaled levels are important to understand the implications of scale-jumps in the societal handling of urban waste in Bangalore, like it will be outlined for the case of *Dry Waste Collection Centers* as new scale enacted in-between the local and city level, and lead over to a strongly

interconnected set of scales: The scales of the recycling market partly follow very different patterns. On the one hand, these are characterized by the *informalization*[7] and its subsequent social organization, especially on downscaled levels of the retrieval of resources from public waste-streams, waste picking and small trade in recycling materials.

Urban space: Urban geographies are not indifferent to societal relations, power structures and ecological inequalities, but inhabit and inhere them in their landscapes and built environments. The spatial distribution of urban ecological burdens and amenities is hard to catch in its totality. Thus, the problem of the random snapshot-character of the conducted field research has been addressed through the identification of problem areas and conflict foci determining the selection of spatial samples as well as through the identification of one exemplary area in order to understand the interplay of different actors, socio-ecological scales and conflict foci. *Waste walks* (as a method and as explained below) have further bridged the gap between the diversity of urban spaces and localities on the one hand and the selected spatial samples on the other hand.

Temporality: The temporal dimension of societal relations with nature is particularly indicating in the case of waste in urban centers, as synthetic materials have given rise to unprecedented waste flows in the course of recent historical changes. The following trajectories of different waste streams and their management involve an intricate interplay of ruptures and contingencies that need to be understood in order to reconstruct waste-society relations.

3.2. Methods

Following the concept of triangulation introduced by Uwe Flick, two modes of qualitative analysis have been combined in the triangulation "between-methods" (2009: 226), respectively *qualitative interviews* and *participant observations*. A linkage of semi-structured expert interviews with problem-centered interviews proofed to be most suitable to capture the understanding, explanation and conceptualization of waste and waste-related environmental conflicts by engaged experts and activists of the related civil-society scene in Bangalore. Participant observations provided the possibility to experience the 'ground realities' in Bangalore's societal handling of waste and get an impression beyond interview-situations, e.g. to get involved with the waste pickers and experience the livelihood situations of the involved actors and stakeholders. Moreover, the triangulation "within-methods" (ibid. 226f) has been deployed through the use of additional methodical

[7] The use of the term ‚*informalization*' instead of ‚*informality*' is delineated in the chapter 4.

variations of participant observations in the form of *waste walks* and *ero-epic dialogues*, focusing on different aspects of data generation (Schwartz-Shea/Yanow 2012: 78-80) within this methodical frame, respectively observations and conversations. Also, the linkage of semi-structured expert interviews with problem-centered interviews amounted to some sort of triangulation 'within-methods', as it involves data related to concrete questions as well as to narrative accounts by the interviewees (Flick 2009: 227).

3.2.1. Waste Walks and Ero-Epic Dialogues

Both, *waste walks* and *ero-epic dialogues* have been used to open up the 'research field', give an initial overview over Bangalore's '*waste scapes*'[8], provide first insights into the city's societal handling of waste and build up research contacts. Both are additional method varieties, which can be subsumed under the umbrella of participant observation methods, although they focus on certain peculiarities of this methodical approach. For one, I have amplified *waste walks* as semi-random strolls through the city in order to experience the visibility, dispersion and motions of waste in and trough urban space, as well as the way different people deal with it differently in various urban environments and neighborhoods. In addition to minor rambles before and after participant observations and interviews, three extensive waste walks have been conducted in order to provide an initial glimpse on Bangalore's waste scapes. For the other, *ero-epic dialogues* (Novy et al. 2008: 20f) have been coined by Roland Girtler (ibid.) in order to distinguish this mode of conversation from traditional modes of interviews in interpretative social sciences and the hierarchical distribution of roles – referring to the objectification of interviewees, additionally enforced by the use of recording technologies (Hammersley/Atkinson 2007: 147f) – as well as the inclination towards the reconfirmation of existing and the circumvention of 'new' knowledge, they involve (Novy et al. 2008: 20). It aims at the generation of an equitable climate of conversation, which creates mutual confidence (reaffirmed through narrative accounts from both sides) and encourages the interviewed person to informally talk from an expert position (ibid.). Both methodical varieties are very open, suitable for the exposure to unacquainted life worlds and their documentation through unstructured notes.

3.2.2. Participant Observations

[8] Departing from and inspired by terms like 'landscapes', 'townscapes' or 'city scapes', the term '*waste scapes*' aims to reenact the contours of urban geographies of waste in terms of the entanglement of distinct waste-streams, waste-related practices and waste-specific (infra-)structures (and their lack) with uneven and unequal social geographies in urban space.

The method of *participant observations* – developed as methodical approach of *ethnography* in the field of anthropology (Hammersley/Atkinson 2007; Charmaz 2006), but increasingly also adapted for other fields of social science (Lüders 2003: 384ff; Flick 2009: 123ff), including political science (Schöne 2005) – has been used in a subsequent methodical phase to experience 'ground realities' in Bangalore's societal handling of urban waste, beyond its conveyance through language and abstract concepts. Six participant observations have been openly conducted in the 'natural field' (except for the first, which constituted an 'artificial' setting for parts of the involved actors) – which refers mainly to waste management facilities in operation and their surroundings. The thematic emphasis of these participant observations was evolving from comprehensive descriptive accounts to more specific foci during the research process. I myself became repeatedly object of observation, not least because of the conscious decision to openly taking notes as base for detailed protocols (Brüsemeister 2000: 83ff; Schöne 2005: 171).

3.2.3. Problem-centered Expert Interviews

A method-variety of semi-structured theory-generating expert interviews – the "problem-centered interview" (Witzel 2000; cf. Hopf 2003: 353-355) – proofed to be most suitable to capture the understandings, explanations and conceptualizations of waste and waste-related environmental conflicts by engaged experts and activists of the related civil-society scene in Bangalore. The problem-centered interview is, according to Andreas Witzel (2000), "a theory-generating method that tries to neutralize the alleged contradiction between being directed by theory or being open-minded so that the interplay of inductive und deductive thinking contributes to increasing the user's knowledge" (ibid.). Moreover, it has become obvious that the term 'expert' needs to be understood as relational term, depending on the research question and the research field, illustrating the need to situate expert interviews within an ethnographic research design (Pfadenhauer 2005: 113). Building on the distinction of expert knowledge(s) on the one hand, and the relevance of the social context in constituting 'experts' on the other, Alexander Bogner and Wolfgang Menz (2005) differentiate between three types of expert interviews – the explorative, systematising and theory generating one – all going along with different modes of knowledge. The third, theory generating expert interviews, aim to reconstruct interpretative knowledge consisting of subjective perspectives and interpretations of specific contexts, phenomena and problem areas (ibid. 45), and thus, suits the best into the chosen research design.

3.3. Empirical Research Process – Generation of Data

The empirical research process in Bangalore covered a period of seven weeks[9] in October and November 2012. As indicated by the methods presented above, three extensive waste walks through the South of Bangalore provided a first glimpse on the city's *waste scapes* and, together with an ero-epic dialogue and a participant observation in the waste-related civil-society scene, completed the initial phase of the empirical research. This phase was accompanied by extensive investigations aiming at a comprehensive collection of newspaper articles and media contributions related to Bangalore's '*garbage crisis*', of web-links and online materials related to waste in Bangalore, of waste-related documents produced by state and parastatal institutions as well as by civil-society organizations, and of secondary data on waste flows. While document search activities continued throughout the period of empirical research in Bangalore (and the months of analysis to follow), the second phase of empirical research was characterized mainly by intensive exposure to the 'ground realities' of the city's everyday formal and informalized handling of urban waste and its understanding, explanation and conceptualization by senior figures of the related civil-society scene – with the majority of interviews and participant observations conducted during this period of time. This second phase of empirical research involved a modest geographical focus on the area of Ejupura, towards the Southeast of Bangalore's city center, and one more ero-epic dialogue (necessitated by the encountered situation). The third and concluding phase of empirical research was accompanied by considerable reflections on the preceding research process and subsequently focused on the filling of thematic and socio-spatial gabs as well as the completion of the 'sample' – including one more waste walk, two interviews and one participant observation.

Research memos served to record and document evolving analytical and theoretical notes throughout the research process. Furthermore, throughout this period, personal experiences, reflections on my role as 'researcher', methodical notes and reflections on the evolving research design have been documented in a research diary. Moreover, the templates for the protocols of the participant observations and interviews guided the comprehensive collection of situative and introspective remarks throughout the research process and allowed for a detailed documentation of the encountered research context (settings, scenes and participants), social and group dynamics, communicative structures

[9] The empirical research has been conducted in the course of a three months research stay in Delhi and Bangalore, which was enabled by research funds for '*Kurze Wissenschaftliche Arbeiten*' (KWA) provided by the *University of Vienna*. While the *Indian Institute of Management Bangalore* (IIMB) has been the hosting academic institution, the initial research design also included research visits in Delhi before and after the research period in Bangalore.

and of my role as researcher – in order to enable a conscious reenactment and appraisal (Brüsemeister 2000: 86f; Charmaz 2006:70).

The assembly of methods – especially of the participant observations and interviews conducted – has been unsystematically evolving and was systematized only 'ex-post', in the course of the research process and with reference to methodical notes taken throughout the process (Brüsemeister 2000: 92f). Additionally, the selection – or 'sampling' – of empirical 'cases' was randomly tested with one interview totally dropping out of the principle of 'snowball sampling' – by incidence –, while still strongly confirming the selection that has been evolving throughout the research process, especially with regard to informants of the waste-related scene of civil-society organizations and activists. Figure 1 illustrates the respective 'sampling' along different politico-administrative scales and the societal acknowledgement of the involved positions, indicated by the range from formal to informal with 'civil society' as intermediate – which is, of course, a highly simplified depiction and only one possible way to sketch the 'sample'.

Table 1: Bangalore Sampling

	Formal	**Civil Society**	**Informalized**
State	- Interview with Lok Adalat Chairman (in a related case)		
City	- Participant observation at Mandur dumping site - Interview with an e-waste recycling entrepreneur [not systematically analyzed]	- Four semi-structured interviews and one ero-epic talk with senior figures of the waste-related civil society in Bangalore, all related to SWMRT	- Participant observations at two Hasirudala meetings (one with scrap dealers, one with waste pickers)
District / Zone / Ward	- Participant observation at Saahas's Kasa Rasa dry waste collection and composting centers in Ejipura and Koramangala	- Semi-structured interview with the initiator of a community based (residents welfare association) zero waste management project - Two participant observations and one ero-epic talk at community based and civil-society initiated waste management centers and projects in Ejipura and Domlur	- Participant observation at a Hasirudala students-talk with waste pickers

3.3.1. Limitations of the Empirical Research Process

As outlined above, the lack of a detailed quantitative analysis of waste flows in Bangalore – especially with respect to the composition of recyclable fractions against the backdrop of different patterns of waste generation on a downscaled level of uneven urban social-geographies and the spatially dispersed 'performance' of the informalized recycling-sector – represents one limitation of the empirical research conducted. While this is a deficiency necessitated by the predetermined scope of this scientific contribution, it has been addressed through the analysis of secondary data wherever possible.

More importantly, the empirical research has been conducted in English. Although English is the second official language in India – established as academic language and widespread in research efforts situated in the global north, including the field of political ecology (Karlson 2011: 20) –, this bears considerable implications for the scope and depth of the conducted research and especially for the societal positions represented therein. While this major limitation of the presented research efforts did not so much affect the quality of the conducted (semi-structured and problem centered) expert interviews itself, it did seriously impinge on the possible selection of interview partners and had adverse repercussions on the voices possibly reflected in the varieties of participant observations undertaken – despite various interpersonal efforts to overcome this language barriers. Language, and with respect to class especially the 'capability' to communicate in English, continues to be a crucial line of politico-economic and socio-cultural differentiation and associated discrimination – and a sorely gendered one. Regarding marginalized agents of the informalized recycling-sector and waste workers in general, it was noticeable throughout the research process that men are more capable to communicate in English compared to women. Thus, I have to be clear about the fact, that the presented empirical research contains unequal gender representations due to language barriers and my inability to communicate in *Kannada*, *Tamil* or *Telugu* (to name a few of the spoken languages). This inability was further impaired by my situatedness as white, male researcher from Europe. To sum up, even though this diploma thesis takes an explicit stance towards the claims of marginalized agents and waste workers of the recycling-sector, the considered voices are predominately – although not exclusively – situated in an educated middle class context.

3.4. Process of Data-Analysis

An arrangement of grounded theory coding (Charmaz 2006: 42ff; Hammersley/Atkinson 2007: 158ff) and of qualitative content analysis (Lamnek 2005: 478ff; Gläser/Laudel 2006: 191ff; Flick 2009: 144ff) has been assembled in order to guide the process of analysis. In grounded theory coding, a strong emphasis is put on the development of an analytical framework and set of codes and categories out of the collected empirical data itself, thereby providing for the openness towards the tangible empirical reality – in line with the chosen explorative research design: "Coding is the pivotal link between collecting data and developing an emergent theory to explain these data. Through coding, you define what is happening in the data and begin to grapple with what it means" (Charmaz 2006: 46). Subsequently, grounded theory coding usually involves an initial phase of coding, entailing

the detailed study of small fragments of text – comparing "data with data" (ibid. 42) –, and a following phase of focused selective coding, "that uses the most significant or frequent initial codes to sort, synthesize, integrate, and organize large amounts of data" (ibid. 46). The process of "[t]heoretical integration begins with focused coding and proceeds through all your subsequent analytical steps" (ibid.). Grounded theories' principle of openness towards the generated data – while acknowledging ones own situatedness (ibid. 46f, 51, 67) –, demands awareness about ones own preconceptions and prior perspectives (ibid. 54). Whilst recently re-worked grounded theoretical approaches like, the one developed by Kathy Charmaz (ibid. 47, 63), put forward the role of theoretical frameworks in guiding the coding processes, qualitative content analytical approaches have also been drawn on especially during the last analytical step in order to emphasize the theoretical framing of the process of analysis.

The method of qualitative content analysis has been developed out of quantitative approaches to the analysis of text, but is focusing on the selective extraction and analysis of information and structures of meaning contained in text through a systematic procedure, which is guided by a relatively closed system of categories derived from prior theoretical considerations – instead of the measurement of the frequency of elements of text, as it was the case with early quantitative approaches (Gläser/Laudel 2006: 192ff; Lamnek 2005: 483; Flick 2009: 144). According to *Jochen Gläser* and *Grit Laudel*, qualitative content analysis is marked by the early and thorough departure from the original text, in order to systematically reduce the abundance of information contained therein and subsequently structure it according to the research interest (Gläser/Laudel 2006: 194). In order to overcome the associated seclusiveness of the theoretically derived system of categories against the richness and structures of meaning in the analyzed empirical data and original text, *Gläser* and *Laudel* propose to modify and adjust the system of categories to the peculiarities of the analyzed material during the process of extraction and evaluation (ibid. 195). Extending beyond this adaptation, I decided to stick to the richness of the collected data and develop my categories and codes close to the thickness of text for a longer period (first and second analytical step), while still departing from the original text at a later stage (third analytical step) in order to follow the interpretative procedure of qualitative content analysis. With respect to my empirical material, I thus adjusted the coding process using the following analytical steps.

The first analytical step came close to an initial coding phase and consisted of the rough "incident to incident" (Charmaz 2006: 53) coding[10] of the protocols and transcriptions as well as the research-memos. Incident by incident coding appeared to be the most appropriate and expedient way of coding with respect to the type of data collected – especially the high proportion of participatory-observation protocols –, the involved level of abstraction and the purpose and stage of the research process (ibid.): "Incident coding aids you in discovering patterns and contrasts" (ibid. 55). The second analytical step consisted of the analytical and theoretical notes documented in the research memos, which continuously reflected the emergent research process and provided for the simultaneity of data collection and analysis necessary for an in-depth and successive circular research process (ibid. 48). The extensive amount of newspaper articles and media contributions on Bangalore's waste management and the 'garbage crisis', as well as related documents by involved actors, have not been analyzed systematically. They have been incorporated into corpus of appraisal, although their analysis was structured by the categories and codes developed during the main analysis.

The third analytical step contained the main analysis and marked the transition with respect to analytical methods, from grounded theory coding to qualitative content analysis. Bringing the codes of the first and second analytical steps together with the analytical categories and dimensions developed within the operationalization of the theoretical framework, the main analysis of the third analytical step gave rise to a double-axis of interrelated concrete and abstract or up-scaled categories: Concrete descriptions of changing waste flows and patterns of waste generation have been matched by abstract accounts of 'metabolic transitions' and the selective dissemination of 'imperial modes of living' (assembling codes like 'consumerism' or 'western lifestyles'); Concrete descriptions of the historically evolving public waste management in Bangalore have been connected to abstract accounts of waste governance; Concrete impressions and accounts of the informalized recycling-sector and -market have been matched by abstract delineations of waste economics. This double-axis of interrelated categories was infused by transcending categories like social modes of interaction, intersecting power relations, involved actors and their constellations, interwoven cases (like the KCDC or Mavallipura), and visions for the sustainable handling of waste. And, more importantly, the analytical accounts of major waste-related socio-ecological conflict dimensions like the economics of

[10] This included "codes of participants' special terms as *in-vivo* codes" (Charmaz 2006: 55) in order to "preserve participants' meanings of their views and actions in the coding itself" (ibid.).

waste, the spatial dispersion of waste, and especially the dimension of public private divides have been crucially shaped and developed during this process.

Last but not least, it is important to note neither the analytical approach nor this process of analysis were geared towards a comprehensive and exact elaboration of waste-society relations and the modes of their political regulation in Bangalore and India. Such an endeavor would exceed the scope of this format, requires further engagement in critical research, and thus, above all, would also necessitate a collective effort in situated knowledge production that is more accountable towards the positionalities of especially also marginalized actors. Rather, framed as analysis of waste-related environmental conflicts, this diploma thesis concentrates on the societal handling of waste in terms of a "dominant mode of waste circulation and metamorphosis" (Gille 2007: 34) in the "sphere of distribution" (ibid.), in an effort to produce findings, coherencies and insights that reverberate in the concept of waste-society relations as abstract research heuristic. Therefore, the following analysis should provide for at least the delineation of some patterns, dynamics and contours that possibly shape waste-society relations in India, thereby guiding potential future research projects.

4. Waste in India

The period of the political and economic liberalization of the 1980s, as well as the structural adjustment programs of the 1990s represent a significant cut in the post-colonial history of India, and thus, constitute an adequate timeframe in order to delineate the contours of waste-society relations against the backdrop of India's urban political ecology (Gill 2009: 4). Starting from the mid 1970s, India's developmental state – and with it, the hegemony of the Congress Party – plunged into a serious crisis, which was answered on one side with the increasingly authoritarian government of Indira Gandhi[11], and with economic reforms and liberalizations on the other (Ahuja 2013). The political crisis gave way to an opening of the political landscape shaped by identity politics (Ahmed 2011: 41f) and to a number of new legal mechanisms of political participation – especially in the form of *Public Interest Litigations* (PILs) at the High Courts on a state level and at the Supreme Court on a national level – aimed at the emergent middle-classes (Véron 2006: 2103ff). The turn in economic policies, the liberalization and the following period of economic growth have been prepared, initiated and subsequently accompanied by these political ruptures.

4.1. India's Uneven Development and its Waste

While India's consumption of resources (per capita) has been slightly lagging behind its population growth and was characterized mainly by biomass (2/3 of the total consumption of resources) until the 1980s, it has been rising by 60% during the last three decades (Singh et al. 2012: 62). This increase has been marked by the accelerating consumption of fossil fuels, of minerals for construction and of metals and minerals for industrial production and has amounted already to 60% of the total resource consumption by 2008 (ibid. 65ff). These changing patterns in the use of resources has been interpreted by scholars of *social ecology* as characteristic features of industrialization processes (ibid.; Fischer-Kowalski/Weisz 1999; Haberl et.al. 2011) and illustrates the accelerated displacement of pre-capitalist and enforcement of capitalist modes of production – under neoliberal conditions.

But, the effects of the corresponding period of economic growth have been distributed very unequally in social and spatial terms, and continue to be so today. In urban India, one of the most visible consequences of new lifestyles and the far-flung introduction of mass consumer goods – based on the enhanced purchasing power of new urban middle-classes – has been the drastic increase of synthetic package materials and non-biodegradable

[11] Backed by a state of emergency between 1975 and 1977, Indira Gandhi ruled by degree.

fractions in the urban waste-stream (Gill, 2009: 9ff). This changing patterns of waste generation posed significant challenges to widespread traditions in the recycling of organic wastes, which were part of a peculiar set rural-urban relations and included natural composting of organic wastes (Int5) as much as and their use for soil enrichment (Int3; Int6; Furedy 1994: 97; Beukering et al. 1999: 22). Nevertheless, these "frugal habits" (Furedy 1994: 97) were also crucial for the mitigation of the effects of the enormous increase non-organic waste fractions. For instance, the plastic-proportion of the total *Municipal Solid Waste* (MSW)[12] generation in India has been increasing from 0,7% up to 4% between 1971 and 1995 (Mutha et.al 2006: 223). And, the average per capita plastic consumption has been rising further from 0,8 kg in 1990/91 to 3,2 kg in 2000/01 (ibid.), while the total annual urban waste generation in India has been increasing from 23,86 Million tons to 39 Million tones in the same period of time (Sharholy et.al. 2008: 460). Despite the high and steadily increasing public budgets earmarked for Municipal Solid Waste Management, the concerned municipal corporations haven't been able to adequately address the changing quantity and materiality of waste, even if it were only in the sense of thorough waste-collection and –disposal service (Rosario 1994, Furedy 1994: 98). The insufficient public regulation of this 'waste problem' of so far unknown scope has been targeted from the 1990s onwards by middle- and upper-class environmentalism initially directed towards the efficient collection and disposal of urban waste, although often with a strong '*anti-poor*' inclination towards cleanliness and hygienic (Gill 2009: 191ff; Baviskar 2002). After a successful PIL at the *Supreme Court of India* – filed partly by civil-society activists from around Bangalore –, a committee was nominated in 1998 in order to map out proposals for the improvement of the public handling of waste in India. Based on the report of this committee, which was presented in 1999 before the *Supreme Court of India*, the Indian *Municipal Solid Waste (Management and Handling) Rules* got passed in September 2000. An interesting detail of this legally binding framework is the differentiation of two big non-hazardous fractions of MSW and their stipulated segregation-at-source: '*wet waste*', including all biodegradable materials, and '*dry waste*', including all recycling-materials. The background of this differentiation is the principle of the earliest possible separation of wet and organic waste fractions from the rest of the waste-stream in order to reduce moisture and the overall reactivity of the remaining waste-materials. While the '*dry waste*' fractions have already been destined for the collection by

[12] While production wastes constitutes a considerable proportion if the increasing overall waste generation in India, the focus of this thesis is put on *municipal solid wastes*.

the informalized recycling-sector in the report of the committee (Supreme Court 1999: 31f, 99), there hasn't been any provision for a separately collected fraction of residual waste.

The clientilistic climate, under which the period of liberalization set in, has also marked the evolving public waste collection-, treatment- and disposal systems in urban India. Correspondingly, the establishment of public waste management systems was configured in many cases along the imperative of 'private participation' and the instrument of outsourcing of public waste collection services to private service companies, thus effectively leading already to the de facto privatization of *Municipal Solid Waste Management* (MSWM) in a number Indian cities – like Bangalore (Beukering et al. 1999: 21). This imperative of 'private participation', under which evolving public waste management systems were framed, was strongly influenced by and did neatly fit the development industries' and international financial institutions' preference for capital- and technology intensive 'solutions'. Furthermore, the coupled tendering of public service contracts in MSWM was inclined to the intransparent entanglements of elected representatives and government officials with private service providers. Commonly, such entanglements have been rather directed towards the clientelistic enrichment through the embezzlement, misappropriation and misuse of public means than the (re)valorization of waste as resource by way of recycling and resource recovery. To summarize Christina Furedy's (1994) words, writing in the mid 1990s:

> [S]olid waste management (SWM) is a bastion of inappropriate technology. Solid waste departments purchase, or request as international aid, machines and equipment that are expansive to operate and inappropriate to serve the needs of various segments of the cities. (…) Factors that perpetuated poor technological and management decisions included pressures from Northern firms and aid departments, local corruption, [and] ignorance of alternative ways to deal with waste … (ibid. 87)

4.2. Informalized Recycling in India

This situation enabled the flourishing of an enormous niche economy: a highly differentiated and complex *informalized*[13] recycling-market occupied with the collection of as well as recovery of resources and retrieval of recycling-materials from urban waste-streams, respectively, with the (re)valorization of waste-materials. This informalized recycling-sector compensated for the inadequate and inefficient public handling of urban waste by municipal authorities and their private service contractors, thereby in a way also conditioning the practices of clientelistic enrichment through the embezzlement,

[13] As the '*informality*' of recycling activities in India has to be (re)considered as result of an active and longstanding process of social, political and economic [Ausgrenzung] and marginalization, I am going to use the term '*informalized*' instead of '*informal*' in the following.

misappropriation and misuse of public means designated for public waste management, or at least delaying the disclosure of the consequences of such practices. More importantly, this informalized recycling-sector contributed substantially to the mitigation of the unequally distributed effects and societal costs of the market liberalization and the subsequent economic 'boom' (Gill 2009: 10, 14), by way of building on longstanding recycling traditions in India (Int3, Int5). A variety of actors are involved in this informalized recycling-sector, reaching from *waste pickers*, who retrieve recycling-materials in public space and at dumping sites, to *itinerant waste buyers* (IWBs, also refered to as *raddi wallas*), who buy recycling materials directly from households and shops in order to resell them, further to small and medium *scrap dealers* and their waste workers, who buy, process and store recycling-materials in order to sell them afterwards in big quantities to wholesalers and the recycling industries (Gill 2009: 11).

This informalized recycling-sector is mainly composed of people who migrated from rural areas into the cities because of all kinds of different reasons, but first and foremost because of economic deprivation and lack of perspectives. There, they constitute a considerable proportion of the '*urban poor*'[14] and are often confronted with social exclusion, discrimination and political disenfranchisement (ibid. 14f). Respectively, the retrieval and recovery of recycling-materials from urban waste-streams represents – if considered in terms of 'scavenging' – an easily accessible, low-threshold and self-organized kind of income generating activity to meet at least the basic needs for survival in urban India. On the other hand, it constitutes a highly specialized and skillful profession. The resolution of this ambivalence is founded in the social organization of the informalized recycling sector. It involves a complex societal coherency, which is spatially delineated across various cityscapes, furthermore shaped by differences and hierarchies related to sex and gender, caste and class, communal belonging and religion, and in addition highly specialized with respect to different waste-fractions and their value-added chains (ibid. 83ff, 154ff).

Therefore, the societal power relations molding the structures and dynamics of the informalized recycling-sector will be – for analytical purposes – partially differentiated from the more (politico-)economic structures and dynamics of the informalized recycling-market in the following. The latter are, on the one hand, determined by the physical properties of different recycling materials and their respective exchange value in dependence on the availability of appropriate recycling-technologies and the proximity of recycling-facilities. On the other hand, this market is shaped by a high number of

[14] For a critical discussion of this term against the backdrop of bourgeois environmentalism see Kaveri Gill (2009: 191ff) as well as René Véron (2006: 2100).

intermediaries on different scales, whose value-margins are largely depending on *economics of scale*. Hence, their margins are increasing with the amount of waste-materials traded, what is resulting in highly unequal terms of trade for the biggest and most marginalized proportion of actors involved in the informalized recycling-market. Moreover, starting from the 2000s onwards, big and politically influential private companies became increasingly interested in the valorization of waste, and thus, added to the already distorted conditions and highly competitive environment – especially in terms of increased competition for the high-valuable recyclables rendering the biggest profit margins – on the informalized recycling market (ibid. 105ff).

5. Bangalore and its Waste

Bangalore is the capital of Karnataka State in the south of India and one of the fastest growing metropolis in South Asia – with respect to the urban population as well as regarding the spatial extension of the city – inhabiting around 8,4 billion people in 2011. Starting as a "modest-sized state capital" (Nair 2008: 17) with 410,967 inhabitants Bangalore evolved to a metropolis with 4.13 million inhabitants between 1941 and 1991 and further doubled its population in the following two decades. Within the same time span the spatial extensions of the city grew from 69 km^2 to 226 km^2 and further up to 741 km^2 in 2007 (Sudhira et al. 2007: 383f; Nair 2008: 79; see also Demographic Survey of India 2011).

While Bangalore became famous as '*silicon valley of India*' and '*technopole*' (Heitzman 2004) in recent years and is gathering around 30% of the IT-workers of the country (Sudhira et al. 2007: 384), at times this fame masks the much more diversified economic fabric as well as science and technology landscape of the city, on which the whole information-, communication- (IT) and bio-technology (BT) boom was based on in the first place (ibid. 384f). In her in-depth historical study of Bangalore's 20th century urban development, Janaki Nair identifies three major phases of economic development, of which each left its characteristic imprint on the city's landscape. In the first phase, Bangalore evolved as a center of textile industry, amongst others, during the first half of the 20th century. These industries gave rise to the oldest industrial landscapes of Bangalore, located in its western parts close to the old city (Nair 2008: 81). During the 1940s and 50s, but especially with the 1970s the city advanced to the hub of Indian public sector industries, including machine-tool, electronics, automobile, defense and aerospace industries. Furthermore, the internal research and development wings of this public sector units as well as a number of huge state-run laboratories established in the 1970s, together with a few of India's most renewed science and technology institutions, justified the claim of being a "science city" (Nair 2008: 81f; Sudhira et al. 2007: 384). While these "public sector units leapfrogged the boundaries of the city to occupy sites along highways [and railways] to the north and east" (Nair 2008: 86), Bangalore still provided wide open areas until the late 1950s and was home to a considerable agricultural (horticulture) production within its limits and along its periphery, largely producing for the cities own demand (ibid. 82f). "[B]ut the demand for housing sites was even greater" (ibid.), encroaching the gardens, green spaces and agricultural land. "Before long, a process of residential in-filling made it a contiguous tract of the city and its industrial suburbs" (ibid. 86).

With the crisis of the development state and the economic reforms and liberalization of the 1980s, the third phase of Bangalore's economic development set in and heralded the slow but steady decline of the previously predominant public sector. In the face of emergent private sector industries, the public sector lost its importance as prevailing economic power of the city, which has turned into a metropolis by that time (ibid. 85). While the public sector has depended already heavily on the informalized labor of ancillary industries, the growth of the informalized sector accelerated drastically during the 1980s and contributed up to 69,16% of the total workforce in 1991 (ibid.). Initially propelled by the private garment industry and production of electronic consumer goods, this third phase of industrialization gave rise to the IT- and IT-based service-industry and later also the BT-industry as "*new economy*" (ibid. 19; italics added) of the city:

> With the arrival of Texas Instruments in the city in the early 1980s, the cities attraction as a center for computer software and hardware development dramatically increased, and the concentration of skilled labor on the public sector units and laboratories, as well as the graduates of various engineering collages in the region made Bangalore an attractive destination for Indian and multinational firms engaged in software development. (ibid. 85)

Still, the 'IT-Boom' only took full shape in the mid 1990s, with a number of IT-companies like *Infosys* – the 'flagship' of Bangalore's IT-industries – fully taking off. This *new economy* developed especially in the South of Bangalore along Honsur Road, where the '*Electronic City*' is located, and towards its East, where '*Whitefield*' is located, as well as along a small corridor connecting these two hubs of the IT- and BT-industry. But, this '*IT corridor*' "was matched by the far more tenuous existence of the small scale sector" (ibid. 86f):

> The new economy shows scant regard for zoning laws, with software firms spilling out of the 'IT corridor' and garment units sprouting in nearly all residential areas of the city, while the small scale informal economy (…) thrives in informal and perhaps even illegal land regimes in numerous parts of the city. (ibid. 87)

Sticking to the long bygone image of Bangalore as '*garden city*' and reluctant to acknowledge its metropolitan existence, the city's government officials, development authorities, bureaucracy and planning apparatus turned out to be either incapable or unwilling to react to the challenges posed by metropolitan urban development, in what Nair calls "nostalgia as a structure of feeling" (ibid. 79). As a consequence, Bangalore was "literally dragged (…) into a metropolitan existence" (ibid. 118) by the civic and legal activism of its middle-class residents in the 1990s. Pursuant, in contradiction with it's nevertheless distinctively industrial economic base and coupled informalized sector stands the bourgeois middle-class profile of the metropolis, which Janaki Nair describes as "internationally recognized gateway to styles of globalized consumption" (Nair 2008: 81).

She explains this "absence of proletarian culture (…), invisibility of work, and indeed the worker" (ibid. 87) mainly through the ideological definition and identification of privileged public sector workers with "the lifestyles and aspirations of the middle class" (ibid.). Furthermore, "[the] work culture of the *new economy* has strengthened the middle-class link, to foster a self image that is far removed from any concept of labouring self, emphasizing work as a lifestyle whose goal is enhanced consumption" (ibid.; italics added).

These patterns of urban development have to be taken into account when analyzing Bangalore's 'waste problem'. Against this background, I trace the evolvement of Bangalore's waste management system and societal handing of waste throughout the last two decades. Starting with an appraisal of urban waste flows and their handling in the 1990s, the chapter proceeds along three "significant institutional shifts" (Goldman 2011: 239) with respect to urban governance and development, and their implications for the management of waste in the first decade of the millennium. The chapter will closes with a detailed delineation of Bangalore's waste management system and the changing societal relations inscribed therein, before it culminated in the 'garbage crisis' of 2012.

5.1. Bangalore and its upcoming 'waste problem' in the 1990s

The pronounced scene of civil-society activism in Bangalore, especially with respect to ecological issues such as the protection and conservation of the cities lakes and green spaces, appears to be linked "to the transformations in public life that have been enabled by the city's rise to metropolitan status" (Nair 2008: 112) and to the corresponding bourgeois middle-class profile of the city. A number of activists and organizations – some of them for more then twenty years – are also working on waste and related issues. Already in the early 1990s, they engaged with the 'waste problem' stemming from new consumption patterns that went along with increasing incomes and rapid urbanization (Rosario 1994). Accordingly, while Bangalore was producing already 1,982 tons of waste per day (t/day) in 1995 (World Bank 1999), the city's waste generation increased to 2,214 t/day, and amounted to a total of 3,613 t/day if industrial waste was included in 1998, as a comparably detailed study[15] by Pieter van Beukering et al. revealed (1999:17). Back then, municipal solid waste management (MSWM) was already consuming 40% - 50% of the municipal budgets, which in fact didn't alleviate the inadequacy of the provided public service (Rosario 1994; Furedy 1994: 98). While 245 t/day of the total waste generated got

[15] Although the authors themselves point out the limitedness of their sample survey (Beukering et al. 1999: 15f), their study includes one of the most complete data-sets regarding waste-flows available for Bangalore.

either indiscriminately dumped or burned before it even reached the municipal authorities, further 939 t/day of the 1,451 t/day collected by them through 14,000 public dustbins got dumped on open land or at roadsides along the city's periphery, as all nine sites leased by the municipality for the purpose of sanitary land-filling couldn't be used due to local opposition (Beukering et al. 1999: 20f). Provided the inadequacy of the public waste management service, approximately 312 t/day of recycling materials got recovered from public dustbins by an estimated number of 25.000 waste pickers (mostly women and children) in addition to 1,861 t/day of recycling materials separately collected through itinerant waste buyers (IWBs, est. 3,000-4,000), scrap dealers (est. 800) and wholesalers (est. 100) of the informalized recycling-sector in 1998, amounting to the recycling of approximately 40% of the total waste generated. This informalized sector served the demand of Bangalore's own glass-, paper-, plastic and metal-recycling industry (ibid. 34; Furedy 1994: 93).

Table 2: Physical MSW Composition 1998/1999

Waste Fractions	**1998[a]**	**1999[b]**
Paper	16,5 %	11,6 %
Plastic	6,7 %	6,2 %
Glass	2,9 %	1,4 %
Metal	1,5 %	0,2 %
Recyclable in total	**27,6 %**	**19,4 %**
Putrescible (organic)	**42,6 %**	**72,0 %**
Dust & Ash	-	6,5 %
Cloth, Rags & Rubber	9,9 %	1 %
Hazardous	2 %	0,9 %
Other	17,9 %	-

a) Beukering et al. (1999) / b) (Lakshmikantha, 2006)

If the organic and biodegradable materials collected for composting by the municipality (200 t/day), private enterprises and community-based organizations (CBOs) (56 t/day) are as much included into the accounts as the organic waste delivered to local farmers for the enrichment of their soils – a traditional practice still in place back then – and the waste collected and traded by the informalized recycling-sector for direct reuse (722 t/day), then the share of waste recovered from Bangalore's waste stream in 1990s would amount to an enormous 66% - 80% of the total waste generated[16] (Beukering et al. 1999: 20, 22f, 34; Furedy 1994: 92f). Thus, Christine Furedy (1994) appraised that:

> Waste pickers, itinerant waste buyers (IWBs), small waste trading shops, large dealers, wholesalers and recycling enterprises are features of all Indian cities, where most recyclables are recovered and traded through 'informal' trading system. (ibid. 90) [… But,] not all Indian cities have the capacity to recover and recycle as thoroughly as Bangalore. (ibid. 98)

[16] Although, *Beukering et al.* consider this high share "rather deceiving" (1999: 22), as only 17 % of the total organic / biodegradable waste was really 'composted' in the strong sense of the approach.

These figures and appraisals pave the way for the delineation of some characteristic features of Bangalore's waste-society relations in the 1990s: An enormous informalized recycling sector as well as a vibrant scene of small-scale projects and initiatives and a number of civil-society organizations were directly involved in the handling of urban waste in Bangalore, beyond and beneath the formal waste management efforts by the municipality, which would mainly address the 'waste problem' by tendering public contracts for private service providers on the assumption of increased efficiency (RoyChoudhury 2002; Beukering et al. 1999: 21). With the subcontracting of public waste collection and transportation as well as street sweeping service to private companies in the early 1990s, Bangalore's municipal corporation – the *Bangalore Mahanagara Palike* (BMP), or *Bangalore City Corporation* (BCC) – was one of the first in India to engage in the privatization of public waste management services. This was also the origin of the local *contractor*-system described as "Mafia" (Int2; Int3; Int4; Int6; Ramani 2012; Ranganna/ Ramani 2013) by civil-society activists because of its reported misuse, misappropriation and embezzlement of public money along the trajectories of waste-collection services. Examples for these "corrupt" (ibid.) practices and to some extend also the entanglements of local politicians range from intransparent bidding-processes and the subsequent concentration of contracts among a few big service providers related by kinship, to faked gas bills, the cutting of transport costs through close-by indiscriminate disposal – especially along arterial roads –, further to the cutting of labor costs and subsequent labor intensification through serious violations of labor-rights and the employment of less waste workers than stipulated (ibid.; Afshan 2005; RoyChoudhury 2002; Times of India, 20.10.2012). Above all, the latter affected the municipal workers engaged in waste collection and street sweeping – called *Pourakarmikas* (PKs) – and might explain why according to Beukering et al. (1999) a number of the 6,671 posts sanctioned by the BMP in 1998 for that purpose have been vacant (ibid. 21).

While some of the decentralized small-scale projects and initiatives run by CBOs and NGOs[17] on a local level tried to "avoid competing with the formal waste disposal work of the municipalities", but rather "complement it instead" (Rosario 1994), others engaged in political activism directed at the local government with respect to the proper organization of waste-collection schemes, and to some extend also regarding the availability of land for sanitary landfills and save disposal of urban waste (Int2; Int6). A lot of the waste-related

[17] In the following, I differentiate between community-based organizations (CBOs) and non-governmental organizations (NGOs) because of the formers '*self-help*' character, while I consider both to be civil-society organizations (CSOs).

civil-society activism of the 1990s was based on the middle-class residential neighborhood as upcoming spatial and ideological frame for political participation and corresponding reconfigurations of 'urban citizenship' (Nair 2008: 114). With "*Swabhimana*, 'a citizen-Local Government initiative for a cleaner, greener and safer Bangalore'" (ibid. 114; italics added) launched in 1995, "several neighborhood associations were set up to monitor garbage collection, maintain parks, and supervise the installation of electric lights. They were hailed as proof of a new and vibrant form of citizenship organized against the failures of local government" (ibid.), and they numbered about 150 at the end of the 1990s. Thus, *Swabhimana* "was an effort to develop new non-governmental institutional forms to enhance citizens' participation in ward-level politics" (ibid. 318). Moreover, as a government initiative, it was "an attempt to invite corporate groups to share in the maintenance of the city" (ibid. 114). Reaching beyond the simple 'monitoring' of garbage collection, some of these neighborhood associations developed decentralized small-scale waste management initiatives. Based on the implementation of segregation-at-source – the separate collection of 'wet-' and 'dry-waste' directly at the household level –, these initiatives experimented with decentralized recycling schemes but especially with different small-scale methods of composting, drawing on traditions linked to the long history of agricultural production within and around the city as well as on the longstanding existence of the *Karnataka Compost Development Corporation* (KCDC) (Zurbrügg et al. 2004: 657f). Yet, while the growing attention for the inadequacy of the formal waste disposal system and related 'corrupt' practices of the *contractor*-system were matched by burgeoning decentralized recycling and composting efforts in residential areas in the course of *Swabhimana*, the contributions of an enormous informalized recycling-sector played little role in the considerations of the civil-society organizations – as well as the responsible public authorities – engaged with waste. Only a few organizations, like *Mythri Sarva Seva Samithi* (MSSS, in existence since 1987)[18] and its *Waste Wise* project focused on the simultaneous integration of waste pickers into segregated waste collection schemes and composting efforts (Rosario 1994), even though these rare attempts received surprisingly high scientific attention in connection with the concept of integrated (sustainable) waste management (see ibid.; Furedy 1994; Beukering 1999; Baud/Schenk 1994) .

[18] "MSSS is a NGO involved in poverty and environmental issues working with waste pickers and their families since 1987" (Chengappa 2013: 2[fn11]).

5.2. The Bangalore Agenda Task Force

A concrete manifestation of the altered politico-economic power relations in Bangalore and the active although selective and limited role of civil-society organizations in the unfolding of the metropolis – at a time when the IT-boom had just taken off – was the *Bangalore Agenda Task Force* (BATF). This experiment of a '*Public-Private Partnership*' (PPP) of urban development has been "constituted by way of issuing a Government Order (GO) in 1999 (critics question under which law this was done)" (Chamaraj/Rao 2006: 101) by the newly elected Chief Minister (CM) *S.M. Krishna* of the governing Congress Party. It should serve as a forum for the pooling of civil-society interests with seven major urban (public) local bodies[19] under the reign of the most important figures of the *new economy* in order to identify and jointly address the biggest challenges Bangalore has to take on its way to a hypermodern metropolis of the 21st century. Or, put upside-down, the BATF represents a new institutional mechanism and mode of governance, that bypasses electoral politics and democratic decision making through working "directly with the agencies and parastatal bodies of the state and central governments" (Chamaraj/Rao 2006: 103f), while at the same time realizing exclusive participation by bourgeois middle- and upper-classes through selective conceptions of the city's 'stakeholders' as well as the ambitions to power of the *new economy* (ibid.; Nair 2008; Goldman 2011).

Drawing on a row of surveys[20] conducted, from early 2000 onwards until 2003, the BATF identified "garbage on the road" and the lack of dustbins along with pollution issues as third most important challenges faced by Bangalore, following the conditions of roads ('potholes') and mosquitoes ('insecticide not sprayed') as primary obstacles resulting from insufficient public-service provision (CDP-Vol.2 2006: 33f; Nair 2008: 336). Obviously, such a framing of the challenges related to urban planning and development illustrates the elitist bias marking the BATF, thereby representing a trade-off against more socially inclusive framings like public transportation, public health or integrated sustainable waste management. But in a way, such a prioritization of garbage also corresponded to the attention the 'waste problem' gained on a national level in the course of the *Supreme Court of India* committee on solid waste management and the preparations for the *Municipal*

[19] These included the Bangalore City Corporation (BMP), the Bangalore Development Authority (BDA), the Bangalore Metropolitan Transport Corporation (BMTC), the Bangalore Water Supply and Sewerage Board (BWSSB), the Bangalore Electricity Supply Company (BESCOM), Bangalore Telephones (BT) and the Bangalore City Police, see Chamaraj and Rao (2006: 102).

[20] These surveys are still used to represent the "citizen's perspectives" (CDP-Vol.2 2006: 33f) in the *City Development Plans* (CDPs) of 2006 and 2009, even though the deployed sampling methods have to be called into question according to Nair (2008: 336).

Solid Waste (Management and Handling) Rules at that time. As Bangalore was producing already a total of 2,500 t/day of MSW in 2001 (NSWAI 2001), of which at least 1,700 t/day (ibid.) were dumped along the city's periphery in a completely untreated manner (Lakshmikantha 2006: 641, 645), there was also a very material and immediate need to reconsider the city's handling of urban waste. However, BATF's preoccupation with cleanliness, and thus, the collection-side of MSWM, became most obvious in the work of its MSW-initiative launched together with the BMP, the *Swachha Bangalore* ('Clean Bangalore') program. Even though this initiative focused primarily on the 128 of 277 health-wards[21] not yet outsources to private contractors (thus, still served by the BMP itself) (Shanmugan n.d.), it was decisive for the establishment of door-to-door collection on a citywide scope. So, while *Swachha Bangalore* successfully supplemented the existing but malfunctioning concrete waste-collection points with door-to-door collection implemented in four steps each covering 25% of the city's space – and with the help of many additional *Pourakarmikas* (Ero1; Int4) –, it failed miserably with respect to another major goal: the introduction of segregation-at-source on a city-wide scale.

Table 3: Physical MSW Composition
based on NSWAI (2001)

Waste Fractions	**Shares**
Paper	13 %
Plastic	14 %
Metal	1 %
Glass	4 %
Recyclable in total	**32 %**
Putrescible (organic)	**60 %**
Dust	5 %
Rubber	3,4 %
Hazardous	1 %
Other	1 %

One supposed reason, since serving as a popular excuse for non-compliance with segregation efforts, was the fact that, even where PK's have been supplied with distinct bins for the separate collection of 'dry-' and 'wet-waste', everything got mixed up again in one big chamber of the transportation vehicles afterwards (Naveen/Hampole 2004: 6). Whereas such incidents definitely point towards a crucial issue for the organization of

[21] 'Wards' are, in principle, the smallest units of the Indian administrative system. With regard to public health, under which MSWM is also dealt with, these 'wards' can be further divided into 'health-wards'. While at the turn of the millennium there have been 277 'health wards' in Bangalore of which 147 have been outsourced, their total number was reduced to 224 'health wards' in 2003 with 187 of them being outsourced (Afshan 2005). With the next bid for tenders in 2006, their number was increased again to 294 'health wards', of which 182 have been subcontracted (CDP Vol.1 2006).

MSWM-efforts – the problem of mixed waste –, the actual cause for *Swachha Bangalore's* failure in this respect might be founded in its negligence of all those who did already engage in the segregation and recycling of waste for a long time: all the local initiatives and projects on a ward-level in different pockets of the city, run by CBOs and NGOs in close cooperation with ward-committees, *Resident Welfare Associations* (RWAs); and all the informalized recycling-agents and PK's directly involved. Thus, notwithstanding BATF's "direct call to 'take ownership and get to participate in governance'" (Nair 2008: 15), Kathyayaini Chamaraj and Prasanna Rao state that:

> [The] BATF has also shown practically no interest in promoting formal, decentralized, ward-level institutions and structures such as ward committees, which would enable greater local citizen, participation, and transparency and accountability of BMP to citizens in their own areas/wards. Accountability of the service providers is being seen, more or less, as 'accountability at city-level to BATF'. At the time BATF launched its Swachha Bangalore programme, the wards committees were very much in existence. But BATF did not involve the wards committees in any way in the Swachha Bangalore programme, though garbage disposal is very much a function of wards committees and hence, their legitimate territory. (…) Even in its engagement with Swachha Bangalore, BATF was only interested in seeing that garbage somehow disappeared from the streets, but it showed no interest in ensuring that BMP looked into the social aspects of garbage management, such as the wages and working conditions of the contract Pourakarmikas, i.e., the municipal sweepers. (Chamaraj / Rao 2006: 104f)

Unsurprisingly, these 'social aspects' of garbage management became most evident in November 2001, when contract *Pourakarmikas* held a months-long and finally successful strike to obtain the minimum-wage as well as basic labor rights and social benefits they were entitled to by law (RoyChoudhury 2002). Of the 11,331 PKs working in the city at the turn of the millennium, only 5,896 were deployed by the BMP, while the rest was subcontracted for door-to-door collection and street sweeping (NSWAI 2001). A majority of these contract PKs belonged to scheduled castes and 80% of them were women, facing horrific and "almost bonded labor-like conditions" (RoyChoudhury 2002), that were well documented by a 'Fact Finding Mission' of the *Support Group for Contract Powrakarmikas*[22]: A salary far below the minimum-wage, further impaired by an unequal and gendered division of labor (women earning Rs. 800 to 900 per month compared to Rs. 1,000 for men); denial of any social benefits (like medical compensation or pension schemes); no provision of maternity leaves and denial of (also weekly) holidays or leaves (except by way of replacement); denial of any written proof of employment, of a fixed payment date and place and of wage slips, thus taking advantage of the illiteracy of many

[22] The *Support Group of Contract Powrakarmikas* consisted of "various human rights organisations, autonomous groups, PUCL [People's Union for Civil Liberties], and concerned individuals to support the Powrakarmikas and the Sangha [PK's Union] in their struggle for justice. The Fact Finding Mission was constituted by the Support Group to enquire into the details of the struggle, the legality of the demands made by the struggle, and the living and working conditions of the Powrakarmikas" (Support Group of Contract Powrakarmikas 2002).

workers; absence and even prohibition of any protective gear and equipment, resulting in the exposure to serious health risks, further impaired by the total negligence of BMP's health officers supposed to inspect the working conditions; (unconfirmed) allegations of sexual harassment by the 'maistries' – the contractors agents (ibid.; Support Group of Contract Powrakarmikas 2002). The respective strike of around 6,000 contract PKs in November 2001 was only the culmination of a six-year long struggle for the redress of these serious violations of labor-rights by the '*contractors*' and in fact the BMP itself, as the responsible authority that failed to enforce its own tender agreements. Thus, the PKs union – the *Bangalore Mahanagara Palike Guttige Powrakarmikas Sangha* – organizing this struggle together with the *Support Group for Contract Powrakarmikas*, demanded that the contract PKs should be hired by the BMP directly, based on the fact that their work shouldn't have been subcontracted in the first place, as it is perennial in nature. While the BMP managed to ignore these allegations for many years, it finally admitted that the proclaimed 'efficiency' of subcontracting waste-collection and street-sweeping work is, in fact, a conscious decision for cheap labor at the price of serious exploitation and violation of labor rights, based on the assumption that it would otherwise not be possible to afford all the labor required (RoyChoudhury 2002).

The BATF was too busy to meet the *Support Group for Contract Powrakarmikas* in order to discuss the issue[23] (Support Group of Contract Powrakarmikas 2002). Instead, *Swachha Bangalore* was the first to invoke a GPS-supported geographic information system (GIS) in order to monitor, coordinate and improve the MSW-collection and -transportation scheme in Banglore (Shanmugan n.d.) – a technology-centered, managerial attempt clearly directed at the inefficient, intransparent and allegedly 'corrupt' practices of the '*contractors*'. However, the complete redesign and anew tendering of the street-sweeping and MSW-collection and transportation contracts by the BBMP in June 2003 promised to be much more relevant for the tackling of these practices (compared to GPS tracking-systems). Moreover, the redesigned contracts also addressed related issues of segregation-at-source and the working conditions of contract PKs (Zhu et al. 2008: 88; Naveen/Hampole 2004) and provided for at least some participation of civil-society actors (Int2, Int4): The street-sweeping, waste-collection and transportation was arranged in combined packages covering two to seven 'health wards'. A total of 73 packages were distributed amongst 52 private contractors in a process where one contractor could bid for

[23] Ironically enough, a World Bank publication later suggests that the strict regulation of contract PKs working conditions would have been the accomplishment of BATFs *Swachha Bangalore* (Zhu et al. 2008: 88, 105,165).

a maximum of four packages in order to prevent their concentration amongst a few powerful contractors (Zhu et al. 2008: 88; Afshan 2005). Yet, these efforts were allegedly subverted through the use of family-ties (relatives and spouses biding for contracts), including those of BMP corporators themselves (Afshan 2005; Ero1; Int2; Int3; Int6). Furthermore, while the improved working conditions of contract PKs have been achieved through labor struggles rather than by way of clear terms and conditions in the new tender agreements, the BMP also formulated norms providing for segregation-at-source and a tight time-schedule with detailed and place-bound regulations for the interplay of primary- and secondary-collection, both to be supervised and monitored by ward-based local volunteers called '*Shuchi Mitras*' in addition to BMP health officers (Zhu et al. 2008: 88; Naveen/Hampole 2004: 4ff). However, the total failure to implement segregation-at-source was obvious in numerous accounts (Naveen/Hampole 2004: 6f; CDP Vol.1 2006: 78, 81; BBMP 2008) and can be considered a result of the combined effects of all the features and related pitfalls of the governance of waste by the BMP and the BATF in the early 2000s.

In one of the few cases, where segregation at source was successfully implemented on a ward-level, it was done so by *Swabhimana* since 2003 and in consideration of all 'stakeholders' – from Resident Welfare Associations and active citizens to scrap dealers and *raddhi walas* – (Swabhimana 2005), but was stopped again out of political motivations (Int2). Thus, while reflections on the introduction of recycling did play a certain role in BATF's technocratic vision for the Bangalore of the 21st century, there was virtually no place at all for marginalized agents of the informalized recycling-sector in such considerations, let alone a consciousness of their importance for recycling in urban India. Still, the continuing work of civil-society organizations such as *MSSS / Waste Wise Trust* facilitated the integration of some informalized recycling agents into the extended system of Pourakarmikas.

Faced with "strong criticism from several civil society groups for setting aside priorities favoring the urban poor and (…) making a back door entry towards policy making [for the *new economy*]" (Sudhira et al. 2007: 386), the BATF slowly but surely failed with its office closing in 2004 due a "change of guard at the State government" (ibid.) as well as due to the lacking commitment by the *new economy* to fulfill their pledges (ibid.; Nair 2008: 334ff; Goldman 2011: 240). The pitfalls of exaggerated PPPs in the field of MSWM (and related orientations to private participation, cleanliness as well as capital- and technology intensive solutions) seemed to be obvious with the vanishing of the BATF. However, its elitist bias, selective and top-down understanding of participatory governance

towards 'private participation', and its underlying technocratic approach continued to structure Bangalore's urban planning and development processes for several years to come.

5.3. JnNURM and the Continuance of Partnerships for a '*private public*'[24]

After the BATF, the public handling of Bangalore's urban waste was marked by a number of continuities, although under different circumstances and with important exceptions: While the *contractors*-'*Mafia*' remained in place in principle (Afshan 2005; Int2; Int3; Int4), considerable administrative rearrangements and a number of big investments into waste-treatment and -disposal facilities and infrastructure at the city's periphery – in the course of the 2005 established *Jawaharlal Nehru National Urban Renewal Mission* (JnNURM) – altered the spatial, political-administrative and technological setting of waste-society relations in Bangalore. Under the reign of the BATF, the leaders of the *new economy* had continuously complained, that the BMP would not undertake the necessary and agreed on investments into waste treatment and disposal facilities. According to K. R. Naveen and Nandini Hampole (2004: 4), the 2003/2004 budget of the BMP would have had included Rs. 12,7 *Crore* [127,000,000] for capital expenditures into infrastructure, scientifically managed sanitary landfills and waste transportation, of which they claim nothing has been spent.

Table 4: Public MSWM expenditure (CDP-Vol.1-3 2006: 79)

Year	Expd. in Rs. *Lakh*	Contractors Share
2002 / 2003	3258 [325,800,000]	-
2003 / 2004	4207 [420,700,000]	317.3 [317,300,000]
2004 / 2005	4773 [477,300,000]	-
2005 / 2006	7000 [700,000,000]	380.0 [380,000,000]

This situation changed dramatically with the funds made available by JnNURM and unleashed a run for the capital- and technology-intensive modernization of Bangalore's waste management system, clearly framed by the PPP-approach institutionalized in the course of the BATF. The patterns of this modernization are well documented in the *City Development Plans for Bangalore* (CDP-Vol.1-3 2006; CDP-Vol.1-3 2009) – strategic

[24] As an influential critique of the BATF by *Asha Ghosh* was entitled: "Public-Private or a Private Public?" (Ghosh 2005: 4914)

urban development plans obligatory for the receipt of JnNURM-related funds. In a preliminary statement, the first of these reports declares that the "rapid growth of population in Bangalore metropolitan area, and changing lifestyles, has resulted in increased waste generation. Consequently, waste management has become a key issue needing be addressed" (ibid. 78). Subsequent problem-areas identified in this report haven been, first and foremost, the "[l]ack of awareness and absence of comprehensive segregation of waste at source, resulting in large quantities of non-biodegradable waste being collected and sent to the facilities for biological processing" (ibid. 81), which addresses the troubling relationship of the absence of segregation-at-source and the consequences of mixed waste elaborated in subsequent parts.

Table 5: Physical Composition of MSW in2004/2005(CPCB 2007/WorldBank 2008)

Waste Fractions	**Shares %**
Paper	11,6 %
Plastic	9,7 %
Metal	0,4 %
Glass	0,8 %
Recyclable in total	**22,5 %**
Putrescible (organic)	**51,8 %**
Dust, Ash & Inert	17,3 %
Cloths, Rags, Rubber & Leather	3,4 %

Furthermore, the "[a]bsence of transfer stations for transferring MSW into bigger vehicles for transportation to the treatment and landfill facilities" (ibid.), represents a structural linchpin related to the issues of segregation-at-source and mixed waste as well as to constrains posed by the limited availability of urban space for the treatment of waste. The consideration of such decentralized spatio-structural components of urban waste management systems can be considered a novelty and a pre-emption of the relevance *Dry Waste Collection Centers* (DWCCs) should gain in later years. More directed to the material and discursive significance of centralized treatment- and disposal facilities, the "[i]nadequate waste treatment capacity when compared to the quantum of waste generated" as well as the "[d]umping of MSW in drains, along the roads and in low-lying areas" (ibid.) introduces the third and major focus put forward in the CDPs.

The state of the art presented invokes a collection efficiency of 100% in the Bangalore City area and of around 80% in adjacent local bodies as well as 100% door-to-door collection in residential areas. Furthermore, it proudly announces a private-participation in 182 of 294 health-wards, the imminent acquisition of compactor-trucks for the sanitary transportation

of waste, as well as the development of composting-, 'Waste-to-Energy'- and sanitary landfill-facilities with private participation in order to deal with the shortfall of treatment- and disposal-capacity in the range of 1,000 t/day (ibid. 78f). In financial terms, the "budget allocation for SWM [in 2006 foresees] Rs. 70 *Crore* [700,000,000], of which Rs. 38 *Crore* [380,000,000] is towards contractor payment for collection and transportation" (ibid. 79; italics added), completed by additional Rs. 3 - 4 *Crore* [30 - 40 million] of 'tipping-fees' with the development of composting and landfill facilities (ibid.). In face of this situation, the "service delivery targets" (ibid. 83) projected for 2012 were: 100% collection efficiency, 85% segregation-at-source, 100% adequate treatment and disposal of MSW, all imbued with 100% cost-recovery for collection and transportation.

The strategy to reach these targets, putting center stage the main policy-orientation, identifies "[s]ubstantial investments required in treatment and disposal technologies" (ibid. 82) as major path on the roadmap to improved urban waste management. Quite contrary to this, but in line with similarly inconsistent global standards, the proposed MSWM implementation plan affirms the "waste hierarchy principles of reduction, reuse, recovery, and disposal" (ibid.). Thus, subsequently enlisted "key principles" like "[w]aste minimization at source", "[w]aste management closest to generation" and the accountability of 'generators' should build on the "[s]ignificant involvement of waste generators, local communities, and NGOs for effective segregation, collection, and transportation of waste" (ibid.). Notwithstanding this affirmation of the "development thrust" (Furedy 1994: 87) of waste reduction and separation as well as participatory governance, the proliferation of "heavy technology" (ibid.) holds sway over the urban waste management policy crystallized in the CDPs. The budget designated for the management of solid waste under the JnNURM project period from 2006 to 2012 illustrates this prevailing bias, as outlined in table 5. The capital expenditure amounted to Rs. 8 Billion, of which 35% have been earmarked for "[p]rocurement of plant and machinery for treatment and disposal facilities" (ibid. 84), 30% for "[c]ollection and transportation equipment" (ibid.), and 35% for operation and maintenance, including fuel expenses, salaries.

While the sheer financial capabilities combined with some structural considerations and strategic orientations included in this development plan could have sparked a glimpse on a non-conformist vision for the rearrangement of Bangalore's public handling of urban waste, the inscribed imperative of cost-recovery through the "Framework of PPP" (ibid. 86), and the respective orientation towards "private participation" (ibid. 85) in all segments

of MSWM announced the resumption of familiar patterns. This thorough 'private participation' included service contracts, management contracts and concessions in the controversial field of collection and transportation, as well as service contracts in the contentious case of street sweeping. For the development of "engineered sanitary landfills with private participation" – the main policy-focus of the CDPs – a "build-operate-transfer [BOT] concession framework" has been envisaged.

Table 6: JnNURM MSWM Budget (CDP-Vol.1-3 2006: 85)

Budgetary Item	Exp. in Rs. *Crore*
Capital Expenditure towards Equipment	250,3 [2.503.000.000]
Rolling Stock – Vehicles	216,4 [2.164.000.000]
Operation Expenditure	263,7 [2.637.000.000]
Land Acquisition	26,5 [265.000.000]
Installation of GIS-System	9,0 [90.000.000]
Tipping-Fee for existing Landfills	34,1 [341.000.000]
Grand Total	800

While JnNURM provided for the infrastructural and technological rearrangement of Bangalore's *waste-scapes*, political and administrative reconfigurations followed suit: In December 2006, eight adjacent local bodies – seven *City Municipal Councils* and one *Town Municipal Council* – were incorporated into the city administration previously constituted by the *Bangalore City Corporation* (BCC, or BMP for *Bangalore Mahanagara Palike*), to form the Greater Bangalore City Corporation (BBMP for *Bruhat Bengaluru Mahanagara Palike*). Comprising an area of 741 km^2, the BBMP was split into eight administrative zones with a total of 198 wards (Sudhira et al. 2007: 380, 386). Framed as the necessary political and administrative response to the city's growth, this extension can only be fully understood in terms of increased locational competition between metropolitan agglomerations and the endeavor to hold and expand the regional pioneering role of Bangalore as 'technopole' of the IT- and BT-industry. Accordingly, the leading figures of the IT- and BT-industry announced to leave the city if the land and infrastructure (especially road transportation) necessary to meet the sectoral growth demands wouldn't be provided by the city (Nair 2008: 333ff). This alluded to the longstanding plans to realize an extended 'IT-Corridor' between *Whitefield* in the east and *Electronic City* in the south that has been envisioned since the early days of the BATF. At the same time, according to

Sudhira et al., this enlargement of the city was implemented without adequate administrative, infrastructural and public service capacities in place[25] and, thus, only increased the pressure on the chronically overstrained public infrastructure and services like municipal solid waste management (Sudhira et al. 2007: 386).

5.4. Bangalore's Municipal Solid Waste Management and Handling

The large-scale investments into urban infrastructure and services in the context of JnNURM as well as the enlargement and rearrangement of Bangalore's municipal corporate body provided the spatial, politico-administrative, infrastructural and technological setting in which the 'garbage crisis' actually unfolded in 2012. Thus, it represents a suitable frame to sketch the contours of Bangalore's *waste-scapes* and MSWM-system by tracing the city's waste-flows backwards: Starting from the sites of disposal, moving further into the city via the trajectories of waste collection towards the sites of distribution and processing, treatment and recycling as well as generation of waste – and, thus, also towards the 'ground realties' of small-scale projects and initiatives as well as the informalized recycling market. This move, to go back from disposal via collection and distribution to treatment and generation, in a way, critically reflects the still powerful predominance of '*end-of-pipe*'-approaches and -technologies. Accordingly, Nicky Gregson and Mike Crang, in their guest editorial on "materiality and waste" (Gregson/Crang 2010: 1026), point towards the de-materializing effects of the governance of waste in terms of the management of "the matter of waste" (ibid.) framed by disposal mentalities and translated into disposal technologies – "principally the established ones of incineration and landfill" (ibid.), although recently more and more "reconfigured as resource recovery" (ibid.). Even though the '*wet-waste*'-'*dry-waste*'-separation in official municipal solid waste management guidelines for India leaves little conceptual room for residues at the '*end-of-pipe*', the '*down to earth*' realities in Bangalore look different and indicate the undaunted prevalence of '*disposability*' in the private and public handling of urban waste. This becomes most visible when looking at the issue of open and indiscriminate dumping, as well as the longstanding struggle for the establishment of sanitary (and less sanitary), or scientifically (and less scientifically) managed landfills around Bangalore.

[25] An informant also referred to this incidence when explaining the challenges faced at the landfill in Mandur.

Table 7: Bangalore MSW generation in t/day

Year	MSW generation
1995	1982 t/day[a]
1998	2214 t/day[b]
1999 / 2001	1450[c] – 2500[d] t/day
2004 / 2005	1669 t/day[e]
2008 / 2009	1742[f] – 3000[g] t/day
2010 / 2011	3700[h] – 5750[i] t/day

a) World Bank (1999); citing ERM India (1995) **b)** Own calculation based on total MSW excluding industrial waste according to Beukering et. al. (1999) / **c)** Lakshmikantha 2006: 644, citing IUEIP (1999) / **d)** NSWAI (2001) / **e)** CPCB (2007), based on NEERI (2004-05) / **f)** CDP-Vol.1 (2009): 88; citing the Bangalore MSWM Master Plan 2008 / **g)** BBMP (2008); estimated projection for 2009 / **h)** CPCB (2012) / **i)** UN-HABITAT (2010: 52f)

Table 7 shows the estimated increase of Bangalore's MSW generation throughout the years – drawing on a number of sources. Furthermore, table 8 gives "educated guestimates" (Beukering et al. 1999: 16) on the respective waste generation rates. Though limited in its validity[26], these numbers clearly indicate the enormous pressure exerted on the environmental health of urban and semi-urban communities in Bangalore through increased waste generation and the respective urgent need for political action. A policy-focus on 'save disposal technologies' – representing 'the' issue of waste related efforts in bilateral and international development corporation –, therefore, appears reasonable and straightforward necessary at first glance in order to cope with Bangalore's waste generation in the late 2000s.

Table 8: Bangalore MSW Generation Ratios

Year	Per cap. kg/day
1998	[*0,4428*][a]
1999 / 2001	0,27[b] - 0,384[c]
2004 / 2005	0,39[d] - 0,484[e]
2007 / 2008	0,38[f]
2010 / 2011	[*0,439*][g] – [0,736][i]

a) Own calculation based on total MSW excluding industrial waste according to Beukering et. al. (1999: 16f), using their population-base of 5,000,000 for 1998 / **b)** Lakshmikantha (2006: 644); based on IUEIP (1999) / **c)** NSWAI (2001) / **d)** CPCB (2007) based on NEERI 2004-05 (although the population-base used there seems to be far too low with 4,301,326) / **e)** Sharholy et.al. (2008: 460); based on CPCB (2004) / **f)** CDP-Vol.1 (2009) / **g)** Own calculation based on the total MSW generated in 2010/2011 according to CPCB (2012), amounting to 3,700 t/day, using the population base of the 2011 census of India (8,425,970) / **i)** Own calculation based on the yearly generation ratio of 269 kg in UN-HABITAT (2010: 52f)

[26] For a detailed discussion of the challenges and limitations of MSWM-data, and quantitative data on urban waste flows in particular, available for India and Bangalore, see Chapter 3.

5.4.1. The Issue of Waste Disposal in Bangalore

Even though the efforts to implement segregation-at-source on a citywide scale in the course of the BATF failed by and large, the plans to build sanitary waste-disposal facilities continued through the years and reached a peak in 2006 and 2007, when the JnNURM held out in prospect the funding of such large-scale urban infrastructure projects. Nevertheless, writing in 2006, *Lakshmikantha* still declares that there is no proper landfill available at all for the whole Bangalore Metropolitan Region, and that many of the open dumps accumulated throughout the years are seriously contaminated (2006: 641, 645). This points again to the very material and immediate necessity as well as to the political pressure to address the inadequate disposal of Bangalore's urban waste. The CDPs mention a treatment and disposal capacity shortfall in the range of 1,000 t/day for the late 2000s (CDP-Vol.1 2006: 79; CDP-Vol.1 2009: 89), although the quantities of indiscriminately or openly dumped urban waste are probably much higher, if the comprehensive waste-flow chart by Beukering et al. (1999: 20) is cross-checked with the increased amounts of urban waste generated and the infrastructure in place for treatment and disposal. At that time (2006), the only proper facilities in place were *Terra-Firma* and the *Karnataka Compost Development Corporation* (KCDC). *Terra-Firma Bio-Technologies Ltd.* is one of the first private companies operating a composting plant in India and a sister company of *Blue Crystal Agro* – producing chemical fertilizers since 1985 – with the proclaimed aim to replace chemical fertilizers through the conversion of urban waste. It was established 1994 in the South of Bangalore with an approximate capacity of 100 t/day, although it admits only around 25 t/day of organic waste collected from Bangalore's vegetable markets while the rest of the input is agricultural waste (Ramachandra / Bachamanda 2006: 59). Still, the CDPs invoked it with a capacity of 200 t/day (CDP Vol.1 2006: 87). The second, the *Karnataka Compost Development Corporation* was established already in 1975 and is the only still operational composting plant of thirteen such plants established back then all over India, "successful because of the adoption of indigenous, simple low cost maintenance technology, which is founded to be commercially viable" (KCDC n.d.). It is located on a compound initially comprising 6 ha in Hosapalya, in the South of Bangalore City. While it was designed to process up to 60 t/day of organic waste in the 1970s, the compound of the KCDC has been extended to around 9 ha in 2002 in order to increase the composting capacity of the plant to 150 t/day and further up to 200 t/day of mixed waste in addition to up to 100 t/day of organic market waste (KSPCB n.d.; Ramachandra/Bachamanda: 57; CDP-Vol.1 2006: 87). But since 2005, composting

operations have been seriously constrained at the KCDC as a consequence of the admission of 165,000 tons of mixed solid waste (KSPCB n.d.) from the BMP – causing a 10 m high waste heap with an extension of 100 m x 170 m –, which was unable to dispose the waste elsewhere because of heavy monsoon rains (CDM Project Design KCDC 2008: 2). In 2008, the KCDC applied for *Clean Development Mechanism* project funds of the UNFCCC (ibid.) and planned to remove the accumulated mixed wastes, restore its full operation and expend its capacity through the modernization of its technology and equipment to a capacity of 300 t/day under the Bangalore Mega City Scheme (ibid.; KCDC n.d.). Yet, instead of realizing these plans, "from September 2008 onwards the receipt of garbage has been stopped at instance of local public and elected representatives in view of environmental problems" (KCDC n.d.). Since then, the "KCDC is processing only the already stocked garbage" (ibid.). Thus, while the KCDC partly came to a halt because of the load of mixed urban waste arriving at the composting plant, large-scale investments at two major landfill-sites promised immediate relieve.

The disposal of Bangalore's urban waste in Mavallipura, a village located at the northern periphery of the city and predominantly inhabited by people belonging to the *Scheduled Castes and Tribes* (SC/ST)[27], has already been a contentious issue since 2003 (ESG 2010a). In 2007, an official landfill based on a BOT-concession contract awarded to *Ramky Enviro Engineers Ltd.* was established on a compound encompassing 40,5 ha of public land in the vicinity of the mentioned open dump (ESG 2009; KSPCB n.d.). The landfill with an official capacity between 600 t/day (CDP-Vol.1 2006:87) and 1,000 t/day (KSPCB n.d.) was supposed to meet all requirements of a sanitary landfill. Initial plans included a waste processing plant, composting facilities with a capacity of 300 t/day and a 12 MW 'Waste-to-Energy' plant in addition to the landfill (KSPCB). While *Ramky* has been provided with the public land and public funds for infrastructural investments, the company was also entitled to charge a 'tipping fee' for every truckload of disposed waste in order to provide for the treatment and maintenance costs. The second official landfill established at that time – and the largest so far – is situated in Mandur in the northeast of Bangalore. The northern part of the premise – comprising 13,8 ha – is "used only for dumping" (KSPCB n.d.: 3) by the BMP, respectively the BBMP, while the much bigger southern part – comprising 54,6 ha – is operated by *Srinivasa Gayathri Resource Recovery Ltd.* (SGRR) on base of a BOT-concession contract with the BBMP. SGRRs landfill with an official capacity of 1,000 t/day was also supposed to meet all requirements for the

[27] SC/ST refers to "most disadvantaged groups" (Dreze/Sen 2008: 28f), which are recognized and registered by the Government of India, in order to receive certain entitlements (ibid.).

scientific management of MSW when it was established in 2007. Initial plans allowed for an "integrated MSW processing plant" (ibid: 3) including composting and vermin-composting, a Refuse-Derived-Fuel (RDF) facility, brick manufacturing and a 8 MW 'Waste-to-Energy' plant in addition to the landfill (KSPCB: 3f). Both were supposed to be sanitary landfills with a number of treatment and recycling facilities in place. However, in both cases the handling of waste amounted – again – to little more than open dumping. The private operators of the landfills blamed the delivery of mixed waste for the whole misery, which would exceed the facilities' capacities and impede the adequate processing, treatment and composting of the arriving waste.

5.4.2. Waste Collection and the Consequences of Mixed-Waste

This brings us back to the question of segregation-at-source – as nodal point of every urban waste management system – and the troubling consequences of mixed wastes for the capabilities and inclinations of waste processing, treatment, recycling and disposal. On the one hand, the mixing of different waste materials, especially of 'wet' organic waste and 'dry' recyclable materials, changes their physical and at times also bio-chemical characteristics, and thus, affects their proneness of being separated again into different waste fractions – not to mention the additional effort involved – as well as their subsequent capabilities of being treated, composted and recycled afterwards (Binion/Gutberlet 2012: 48ff; Furedy 91f, 100f). On the other hand, mixed waste can imply serious health-risks for everybody directly involved in its handling, especially waste workers, but also for the environmental health of urban communities as a whole: It contains materials "that are prone to lead to injuries, such as broken glass, syringes" (Binion/Gutberlet 2012: 50) and it is transported "along with all negative aspects of it, such as [infectious] chemical and biological pathogens, and therefore needs specific care when handled" (ibid. 48). In addition, unregulated and propagating waste-streams can cause clogged drains and stagnant water, creating "breeding grounds for pathogenic organisms, facilitating the spread of diseases vectors such as dengue" (ibid.). Furthermore, "incorrect storage of organic waste can create dangerous molds, toxins, and gases" (ibid.) and attracts animals that potentially transmit diseases, pointing towards the issue of appropriate space for storage, processing, and treatment of waste, which is in a way relating, again, [adding synthetic and chemical waste] also to the disposal of mixed waste and its implications for the environmental health of surrounding communities.

Table 9: Physical Composition of MSW in Bangalore 1998 - 2008

	Paper	Plastic	Metal	Glass	Recyclable in total	Putrescible (organic)	Dust, Ash & Inert	Cloth, Rag, Leather & Rubber	Hazardous	Other
1998[a]	16,5 %	6,7 %	1,5 %	2,9 %	27,6 %	42,6 %	-	9,9 %	2 %	17,9 %
1999[b]	11,6 %	6,2 %	0,2 %	1,4 %	19,4 %	72,0 %	6,5 %	1 %	0,9 %	-
2001[c]	13 %	14 %	1 %	4 %	32 %	60 %	5 %	1 %	1 %	1 %
2004/05[d]	11,6 %	9,7 %	0,4 %	0,8 %	22,5 %	51,8 %	17,3 %	3,4 %	-	-
2008[e]	13 %	12 %	-	-	25 %	36 %	5 %	4 %	2 %	-

a) Beukering et.al. (1999) / **b)** Lakshmikantha (2006) / **c)** NSWAI (2001) / **d)** CPCB (2007) and WorldBank (2008) / **e)** BBMP (2008)

Thus, the establishment of segregation-at-source at a household-level is a crucial but not necessarily sufficient condition for the success of simultaneous resource-recovery efforts and the minimization of environmental health risks stemming from urban waste, as it is related to a number of other factors. Or, to put it in another way, its success is not only dependent on the compliance and cooperation of all different kinds of 'waste generators'[28] – an issue preferably invoked along complains of lacking public consciousness by engaged civil-society activists, service providers and responsible officials. Rather, the complementary interplay of an all-encompassing waste collection and processing scheme with segregation-at-source and recycling efforts – before urban waste is reused, composted, recycled or disposed – involves the concurrence and collaboration of a number of actors involved in public and private management of urban waste, small-scale waste management initiatives and projects by CBOs or NGOs, and especially a variety of actors of the informalized recycling-sector. One influential factor determining the success of integrated waste management efforts is the need for appropriate space for waste storage and processing, which is arising for all involved actors, although with very different and distinct capabilities to lay respective claims. With accelerated urban growth, intensified land use and excessive rise in real estate prices (Furedy 91; Sudhira et al. 2007: 385), space for waste becomes scarce and expensive. Subsequently, most formal actors are depending – directly or indirectly – on the provision of public or at least designated land to thoroughly engage in the processing and treatment of waste, especially once a certain operational scale and formalization is envisaged. Informalized actors, on the other hand,

[28] In fact, these 'generators' are not to be confused with the producers of waste, but are merely the 'consumers' involved in the generation of 'post-consumer' waste.

are faced by a constant threat of being displaced. Thus, the availability of '*space for waste*' turns out to be a major constraint not only for the establishment of proper landfills – as the revised CDP invokes (CDP-Vol.1 2009: 95) –, but also for the implementation of a decentralized system of segregation-at-source – which justifies the use of this notion as central analytical category in later chapters. Especially for the informalized recycling-sector as well as small-scale projects and initiatives, the scarcity of space for waste storage, processing and treatment reveals itself as major impeding factor. But what's with the most obvious, recognized and visible actors of public waste management?

Increased private participation in Bangalore's MSWM has been the proclaimed and realized aim of responsible officials for many years, with more than 60% of waste collection and transportation contracted out to private service providers in 2006 (CDP-Vol.1 2006: 85). According to the 2011 *Request for Proposal* (RFP) – the official BBMP tender document for MSWM-services – these contractors are paid a monthly "lump sum" (BBMP 2011: 38) to cover all expenses related to the separate primary door-to-door collection and transportation of 'wet' and 'dry'-waste as well as street sweeping, bulk waste collection and removal of debris in a designated area (ward-level) (ibid.: 7, 15ff). This tender-document clearly reflects the historically evolving issues of tackling 'corrupt' practices (e.g. through compulsory installation of GPS tracking-systems in every closed tipper and compactor truck for secondary collection), ensuring adequate working conditions for contract PKs and integrating segregation-at-source into the established door-to-door collection schemes. Accordingly, an interesting facet of this public-service contract is the provision of weekly separate 'dry'-waste collection directly from households and bulk-waste generators, the obligation to separate 'dry' and 'wet'-waste appropriately if mixed waste is received, the instruction to promote awareness for segregation-at-source in the vicinity, and the stipulated transfer of the 'dry'-waste to designated centers (ibid. 7, 15ff, 23). Furthermore, it is stated that a clear priority would be given to any "Self Help Group" (ibid. 17) – referring to community-based initiatives – willing to take over door-to-door collection, thereby providing for the cooperation of the '*contractors*' with CSO initiatives. Of course, the need to cooperate with agents of the informalized recycling-sector was not mentioned at any place. Still, considering such a detailed regulation of segregation-at-source – although, a weekly 'dry'-waste collection might appear insufficient – into the public service contracts, it's stunning how little impact these provisions had for everyday practices (CDP-Vol.1 2009; Int2; PartOb 3): Despite the fact that non-compliance would constitute an "Event of Default" (BBMP 2011: 65f), the 60%

outsourcing where matched by 60% of the BBMP waste management budget going to the transport of mixed waste from the city to the landfills (Janaagraha n.d.). While segregation-at-source could reduce the overall transportation costs for the '*contractors*', it would also incur further initial and long-term costs, especially in terms of awareness-campaigns, additional labor, training and monitoring required. The '*contractors*" overall duty is the removal of urban waste. This is epitomized in the monitoring-systems focusing either on indirect control of input-efficiency through *Suchi Mithras* (ibid. 24), or direct control of output-efficiency – mainly in terms of disposal – through GPS tracking of secondary transportation (ibid. 23), but not so much on what happens in-between. The '*contractors*' are trying to fulfill their major duty at a minimum of costs and have little incentives to extensively engage in or cooperate with segregation efforts, as this is something they wouldn't gain anything from, while it would simultaneously reduce their role with the reduction of the amounts of waste going for disposal in the long run. Furthermore, while the PKs employed for door-to-door collection represent a real asset for the implementation of centralized formal segregation-at-source, their workload and the practical lack of provision for segregation-efforts leaves literally no room for them to engage in thorough separate-source collection and segregation except for the reported recovery of a limited amounts of high-valuable recycling materials (Furedy 1994: 93) – not to speak of a potential competitive relationship the centralized formal segregation-at-source could constitute between PKs and marginalized agents of the informalized recycling-sector. This might explain the undaunted prevalence of disposability at the nodal point of formal waste collection and processing, irrespective of the regulations provided by redesigned and renewed tender-contracts.

5.4.3. Waste Segregation and Recycling in Bangalore

In view of the prevailing shortcomings of the formal waste management system, the combined efforts of the informalized recycling-sector and mostly community-based civil-society initiatives accounts for the biggest proportion of recycling and resource recovery in Bangalore. It is completed by some composting- and recycling-services provided by private companies and certain actors of the formal waste management, like in the case of direct collection of market-wastes for large-scale composting or the private handling and recycling of bulk-wastes from institutions, apartment-complexes and private companies. In contrast, other traditional practices still in place in the 1990s, like the diversion of municipal waste to local farmers, have been halted due to the high proportion of inorganic

and synthetic materials in the mixed public waste stream (Int2; Int3). Respectively, both the informalized recycling-sector and civil-society initiatives to segregate and recycle urban waste have to be dealt with under one common frame and in a strongly interlinked way. Even though a few waste-related civil-society organizations have been working closely with marginalized agents of the informalized recycling-sector, their contribution as well as their working and living situations played a minor role in the considerations and setup of most community-based waste management projects and initiatives. Still, at a certain point, they are also depending on up-scaled recycling agents of the informal sector for the sale of recycling materials. Therefore, the existing separate collection of waste materials for reuse, recycling and resource recovery was – although also enabled by still influential "frugal habits" (Furedy 1994: 97) and traditions of households and enterprises – as much the economically motivated contribution of the informalized recycling-sector as Furedy (1994: 90, 98) and Beukering et. al. (1999: 20, 22, 34) depicted it for the 1990s:

> [A] large informal workforce consisting of waste pickers, itinerant buyers and others connected to the recycling sector (small and large scrap dealers, whole sale traders and recycling industries) plays a crucial role in managing the city's waste. [Yet, t]here is little or no recognition of the informal workforce's contribution to the city's solid waste management or to the positive impact this workforce has on the environment. (Chengappa 2013: 1)

Thus, and on the other side, informal recycling activities have been also negated, ignored and often even thwarted on a structural policy and day-to-day operational level in the late 2000s (Chengappa 2013: 1; Ero1), as much as it was the case in the 1990s (Furedy 1994: 90ff, 96). Actually, '*informality*' refers to the very fact that respective practices are "not promoted by municipal authorities (indeed, [are] often hampered by them), and [are] not assisted by planning or specialized training and equipment" (ibid. 90). Actors of the informalized recycling-sector, especially marginalized recycling-agents like waste pickers and IWBs, are still exposed to constant harassment and extortion by the police, municipal workers and officers, and the general public, in addition to exploitative and suppressive relations within the recycling-sector and often in relation with "long-standing status systems that discriminate against people who handle waste […] or simple prejudices that stem from the highly visible practices of waste picking" (ibid. 91; see also Chengappa 2013: 5). Moreover, privatization of waste management, the establishment of door-to-door collection, and recent efforts to implement segregation-at-source clearly had a negative impact on waste pickers' access to recyclable materials within the city: As an increasing amount of these materials was directly diverted from the households to secondary collection and in many cases disposal, they were often left with only mixed and polluted

waste of low value (Chengappa 2013: 6). Nevertheless, in 2010, a UN-HABITAT publication drawing on municipal accounts (UN-HABITAT 2010: 52f) notes, that:

> An active informal sector recovers around 15 per cent of the city waste and feeds the regional industrial recycling supply chain, while supporting livelihoods of more than 30,000 waste-pickers in the city and at the landfill site, who sell to junk dealers, sorters and recycling units, which comprise an additional estimated 10,000 workers. (ibid. 53)

In addition to the estimated 15% recovered by informalized recycling activities (ibid.; Wilson et al. 2009: 631; Sharholy et al. 2008: 465), an estimated further 10% are recycled by 'formal' actors, like community-based and civil-society initiatives or private enterprises, amounting to the recycling and recovery of 25% of the 2,098,750 tons of urban waste generated in Bangalore per year (UN-HABITAT 2010: 53); respectively, an estimated 5,750 tons per day[29]. There is an imperative to 'pay off' for both, informalized recycling-agents and CBO/NGO-initiatives, as both are subject to and have to cope with the particular dynamics and distorted conditions of the recycling-market – namely unequal terms of trade and monopolized value-added chains –, but under distinct circumstances and with different capabilities. While marginalized recycling-agents are depending solely on the dynamics of the recycling market, CBO/NGO-initiatives are often supported by community contributions or residents waste collection fees, which is close to a service-scheme model, although organized by communities under non-profit considerations. Therefore, their need to 'pay off' is different and often considerably smaller, although, this also depends a lot on the socio-economic profile of the particular community concerned, its solvency, and the respective waste-materials generated. In 2004, Zurbrügg et al. (2004) pointed to the risk that the introduction of "mandatory solid waste fees for all households, businesses and institutions" – planned by the BMP back then "to increase its financial resources for waste management services" – could negatively affect such initiatives and projects because residents "will not be willing to pay twice to finance two parallel systems" (ibid. 658). Although the relationship between government representatives or municipal authorities and CBO/NGO-initiatives is slowly changing for good – as illustrated in the RFP of 2011, cited above, providing for the recognition and support of community-based waste management initiatives, sometimes even in terms of the provision of public space for waste –, these concerns have been amply founded and confirmed with the constraints this 'solid waste management cess' (tax) (Chengappa 2013: 1[fn1]) posed to decentralized segregation and recycling efforts of the following years (Janaagraha n.d.).

[29] This is an extraordinary high estimation, but probably one that is much closer to the actual amount of urban waste causing Bangalore's 'garbage crisis' in 2012, and, if compared to the underestimated figures usually provided by municipal authorities.

Consequently, while parts of these projects and initiatives simply tried not to interfere with the formal waste management services, others persistently strived to influence official waste management policies and practices through lobbying, advocacy and legal activism, drawing heavily on the experience gained from existing initiatives and projects on an operational level – with increasing success.

5.4.4. Civil-Society Alliances in Solid Waste Management

By 2011, a number of new initiatives, projects and organizations have added to the already vibrant scene of civil-society organizations concerned with waste in Bangalore. The detrimental impacts MSWM-policies like the '*garbage cess*' had on some community-based initiatives, as well as the political incapacity to truly influence these policies and implement segregation-at-source on a city-scale, experienced by some of these organizations during the highly selective partnerships for a '*private public*' of the 2000s, must have had a lasting effect: In 2009, the twelve – self-proclaimed – most relevant and serious of these organizations (Int6) and a number of individual civil-society activists formed an alliance called *Solid Waste Management Round Table* (SWMRT). With the intention to "strategically introduce the practice of waste segregation and recycling in Bangalore"[30], this network has been "pivotal in influencing key municipal policies regarding waste management" (ibid.). It enjoyed "credibility with the BBMP, the *Karnataka Pollution Control Board*, the *Lok Adalat*[31] and the public" (Chengappa 2013: 3; italics added) and gained considerable importance in the course of Bangalore's upcoming '*garbage crisis*'. Its program was the decentralization of waste management, in order to facilitate segregation-at-source and recycling on a city-scale. The major instrument proposed for that reason by the SWMRT are decentralized *Dry Waste Collection Centers* (DWCCs) operated by private service providers, NGOs or community-based 'self help groups'. These centers, called *Kartavya* (meaning 'duty'), should "address the city's garbage problem locally at a ward level by setting up a parallel system of collection of segregated waste and trading bulk quantities of sorted waste to authorized recyclers" (Janaagraha n.d.). Thereby, they would introduce a nodal relay-function for the formal segregation and recycling on a decentralized but up-scaled level, thus also

[30] SWMRT's website is currently unavailable, but the network is very active on its facebook site: www.facebook.com/SWMRTBangalore [November 29th 2013]. The organizations currently active within the SWMRT include *Waste Wise Trust*, *Habitat for Humanity India*, *Saahas*, *Full Circle*, *Janaagraha*, *Hasirudala*, *YIMBY*, *JGI*, *Green Commandos*, *Clean Bengaluru*, *Project Green Diamond* and *Radio Active*.

[31] '*Lok Adalat*', also "People's court", refers to an "alternate conflict resolution system", which is "usually presided over by retired judges, social activists, or other members of the legal profession" (Chengappa 2013).

addressing the lack of 'transfer stations' mentioned already in the CDPs. But most of the involved civil-society activists considered the city's waste management '*contractors*' to posed serious constraints to the implementation of such a model (Ero1; Int2; In3; Int6). On the other side, the SWMRT itself was initially only little concerned about the impact this framework would have on Bangalore's informalized recycling-sector (Ero1), even though some of its members have been working with informalized recycling agents for many years. To put it with Chaya Chengappa:

> Despite more than two decades of working with waste pickers and their children, NGOs in the city have not successfully 'organized' or 'formalized' them. Rather, NGO engagement with waste pickers was focused on improving their access to education, housing, basic services and to waste through linkages with households and business. The process was limited to certain pockets within the city. (Chengappa 2013: 1)

This situation changed with a sample survey conducted by MSSS and the *Cooperative Housing Foundation International* (CHF)[32] in 2010. It revealed that up to 20,000 waste pickers are recovering 600 t/day of urban waste, "which saves the BBMP around Rs. 13,5 Lakh [1,350,000]" (ibid.) of public expenditure every day, which again would amount to Rs. 49,275 Crore [492,750,000] per year – nearly one quarter of the BBMP budget spend on MSWM (ibid.) at that time. Hence, this survey provided important facts for the promotion and support of marginalized recycling-agents, also within the SWMRT: Its members realized that there is something they can do to make a difference also with respect to the social issues involved in urban waste management (Ero1). This survey basically paved ground for the establishment of a network of civil-society organizations, which achieved a 'landmark'-success with the formal recognition of marginalized recycling-agents by the BBMP and the formation of *Hasirudala* (meaning 'green force'), "a city wide waste pickers' and waste itinerant buyers' membership-based organization" (ibid. 2) in mid 2011.

The network was initiated by the *Alliance of Indian Waste Pickers* (AIW)[33], MSSS and CHF in late 2010 and soon joined by seven more organizations[34] working with marginalized recycling-agents. It participated in the SWMRT, which subsequently "proposed and promoted the integration of waste pickers and small scrap dealers in running *Dry Waste Collection Centers*" (ibid. 3; italics added), in order to "provide a

[32] CHF International is an international development and humanitarian aid organization based in the United States. It changed its name in 2012 to '*Global Communities*'.

[33] The AIW "is a national network of over 30 organizations working with and comprised of informal recyclers, waste pickers and / or itinerant buyers with a presence in 22 cities across India. It is a platform for undertaking issue-based advocacy" (Chengappa 2013: 2[fn9]).

[34] These include *Gilgal Charitable Trust*, *Grace*, *Divya Jyothi Trust*, *Ragpickers Education & Development Scheme*, *Waste Wise Trust*, *Namana Foundation* and *Radio Active* (Chengappa 2013: 2).

formal platform for employing waste-pickers in safer working conditions“ (Janaagraha n.d.). In the following, “[c]ontinuous dialogue with citizens and officials has resulted in the BBMP approving *Hasirudala* to operate three *Dry Waste Collection Centers* in the city” (Chengappa 2013: 6; italics added) by mid 2012. Accordingly, the topic of informalized recycling-agents inclusion was partly integrated into the program for citywide implementation of segregation-at-source through its conceptual linchpin, the DWCCs, which at the same time serve as a major instrument to address the challenging need for space for waste within the city. The program for decentralized formal segregation and recycling was also enriched in the process. Through strategic engagement in high-profile lobbying, the SWMRT was able to get on track the setup of *Kartavya*-centers for all 198 wards of the BBMP. Their program for decentralized formal segregation and recycling should be implemented in three phases, starting with 10 DWCCs in selected wards, numbering already over 70 in late 2012, with many more scheduled for immediate establishment (Janaagraha n.d.; BBMP n.d.; Ero1). But, this was not only the result of persistent lobbying with government representatives, city officials and technocrats:

> In addition, the SWMRT has engaged with the *Lok Adalat* since mid-2010 to direct the BBMP to implement decentralized waste management across the city. The network [around *Hasirudala*] was able to utilize these efforts to lobby on behalf of waste pickers. (Chengappa 2013: 3; italics added)

In May 2011, AIW and MSSS presented the case for informalized recycling-agents on behalf of the SWMRT in front of the *Lok Adalat* and filed an affidavit “regarding the present situation of waste pickers, the legal provisions for their integration into formal waste management systems” (ibid. 3f) and a road map for the actual implementation of their formal integration. The BBMP has had already expressed its interest and recognition after being presented the scientifically established contribution of waste pickers to the city’s waste management. In addition, it was directed by the *Lok Adalat* to implement the road map for the formal integration informalized recycling agents. As a consequence, the commissioner of the BBMP approved and commissioned the registration of all waste pickers and IWBs and the enumeration of small scrap dealers of the city in the course of a low-threshold bureaucratic procedure. This registration procedure only requires the authentication of informalized recycling-agents by one resident, NGO or scrap dealer to provide for the issuing of *ID-cards* officially certified by the BBMP. These authorized photo *ID-cards* entitle registered recycling-agents to retrieve waste all over Bangalore and, thus, provide certain protection against day-to-day harassment from police, municipal officers and the general public (ibid. 4f). Thereby, the BBMP became “the first urban local body in the country to initiate the registration of waste pickers” (ibid. 1), which represents

a major breakthrough in terms of the recognition of informalized recycling agents. While the BBMP allocated also a budget for the registration forms, a centralized data-base, data entry and the production of ID-cards, the registration process still involved an enormous bureaucratic endeavor. Therefore, the BBMP also supported 18 facilitators from the NGO-network around *Hasirudala* and appointed nodal officers on a central and zonal level as answerable counterparts. In the following process, the AIW and the networks' seven locally based organizations trained the responsible BBMP-staff, mobilized and registered informalized recycling-agents in each of Bangalore's eight administrative zones and collected additional ward-based data on the performance of the informalized recycling-sector through the registration forms (ibid. 4f). While the first 220 ID-cards were distributed amongst informalized recycling agents on occasion of the first waste pickers conference in August 2011, further 2700 ID-cards were distributed in January 2012 (ibid. 5). In October 2012, there have been already 5,190 ID-cards issued to informalized recycling agents and more then 6,000 registrations achieved in this process (Int4).

To summarize, if we draw on the numbers presented by UN-HABITAT (2010), the daily amount of MSW generated in Bangalore has more than doubled in the last 15 years. While the BBMP and the BDA have acknowledged the importance of waste management for urban development, they have tried to cope with the challenges posed by urban waste within a selective framework of 'private participation', amply geared towards capital- and technology-intensive actors and solutions. This gave way to a number of big investments into centralized waste transportation, treatment and disposal infrastructure and facilities. At same time, this public waste management strategy has constantly undermined the existing recycling systems (community-based and informalized) and progressively encroached especially on the informalized recycling sector, leading to an enormous decline in overall waste recovery and recycling rates in the same period of time. A vibrant scene of civil-society organizations engaged with waste has invested considerable efforts into high-profile lobbying and advocacy for decentralized formal segregation and recycling schemes matched by feasible, small-scale waste management and recycling initiatives on a community-base, and has finally also acknowledged the contribution of marginalized recycling agents and promoted their integration into formal segregation and recycling. Notwithstanding their recent success in the provision and advancing implementation of a decentralized institutional framework for formal segregation and recycling – epitomized in the DWCCs sprouting all over the metropolis – as well as the achievement of formal recognition and moderate integration of marginalized actors of the informalized recycling-

sector, the rearrangement of Bangalore's waste-society relations since the 1990s has created a situation of critical imbalance in urban-rural relations and the environmental health of urban and semi-urban communities, not to speak of the deepened inequalities in the extended political-economy of recycling.

6. Bangalore's 'Garbage Crisis'

The empirically based analysis of waste-society relations in Bangalore is oscillating between concrete societal practices overwhelmingly shaped by waste-related 'ground realities', and at times more abstract positions and strategies – in terms of concepts, approaches and societal modes of interaction – prone to the analysis of involved actors and their arrangements, as it is also reflected in the empirical material itself. Consequently, the following chapter is going to trace the unfolding of Bangalore's 'garbage crisis' in its temporally dense situatedness, strongly focusing on the succession of events, their impacts and the practical responses by different actors in order to cope with changing conditions. While this, indeed, also involves the recourse to and accounts of strategies and approaches on a conceptual level (especially in terms of governance responses), the concrete impacts on empirically grounded realities of waste management and recycling efforts take center stage. The final parts of this chapter resume to the appraisal of more abstract concepts and understandings encountered in the waste-related scene of civil-society organizations and reverberating in the waste management policies addressing the 'crisis'.

In a spectacular series of events starting in July 2012, Bangalore's public waste management system collapsed with a severeness that the incumbent *commissioner* of the BBMP – the administrative counterpart of the major –, M.K. Shankaralinge Gowda, stepped down on August 28th, when there were first howls of a 'garbage crisis' (The Hindu, 29.8.2012a; 29.8.2012b). At that time, the metropolis was generating an estimated 5,000 t/day[35] of municipal solid waste. The crisis was mainly triggered by local resistance against the longstanding disposal of untreated urban waste at Bangalore's two major dumping sites – Mavallipura and Mandur – and a simultaneous strike held by the cities Pourakarmikas (The Hindu, 10.8.2012). The unbearable situation at Bangalore's dumping sites amounts to a tragic case of environmental (in)justice (ESG 2010a) that, according to a number of informants, sadly had to occur in order to advance the proper implementation of formal segregation-at-source and recycling (Ero1; Int1; Int4; Int6; ESG 2012c), thus providing – again – an appropriate point of departure to discern the unfolding of Bangalore's 'garbage crisis'.

[35] Drawing on UN-Habitat (2010: 53) as well as on several accounts of the waste-related scene of civil-society organizations, Bangalore's daily waste generation has been around or well above 5,000 t/day, which is also reflected in the shapes the 'crisis' in garbage management took.

6.1. Environmental (In-)Justice at the Disposal-end of Bangalore's Waste Stream

Even though *Ramky* has been provided with public land and public funds for infrastructural investments at the designated landfill in Mavallipura and was furthermore entitled to charge a 'tipping fee' in the dimension of an estimated Rs. 2,457 *Crore* [24,570,000] per year (ESG 2010a: 12), hardly any of the agreed treatment and disposal facilities have been operational by 2012 (ESG 2012a; ESG 2012b). For years, the mixed waste arriving at the premises was simply dumped without any treatment and monitoring into a "massive pit which is several tens of feet deep and acres across", which is "not concrete lined, [and where] there is no impermeable layer to prevent groundwater contamination [and] no soil to cover the garbage dumped" (ESG 2009; ESG 2010a: 19). Furthermore:

> At the lower end of the pit, a perfunctory canal is dug out to drain out leachate, which is led into a huge pound spread over a couple of acres. This pond which is buttressed only by a polythene sheet is claimed to be the solar evaporation pond. (…) Once this pond is full, it is quietly drained out by yet another canal into the streams that run into Mavallipura tank. (ESG 2010a: 19)

Therefore, some informants referred to *Ramky's* operation of the supposed 'sanitary landfill' as "tipping-fee racket" (Int6). Termed in such a way, these practices clearly point towards the distorted and misplaced enforcement of western blue-print models of 'tipping fee'-approaches in solid waste disposal by a dyad of large private companies, government officials and technocrats on the one hand and international financial institutions on the other, prone to the embezzlement of public funds. The resulting ruthless dumping-practices, well documented by an engaged environmental justice organization called *Environmental Support Group* (ESG), caused serious pollution to the local groundwater reservoir, agricultural land and air, leading to fatal diseases amongst the local village population (ESG 2010a: 5ff, 23ff). For many years, these practices have provoked protests by the local villagers, which fruitlessly tried to address the issue with officials from the BBMP, the *Karnataka State Pollution Control Board* and *Ramky* itself. After two more deaths caused by the long-term effects of Mavallipura's toxic environment in June 2012, the protests finally culminated in the militant resistance to and blockage of the disposal of urban waste (ESG 2012a). Also the deployment of a massive police force couldn't break the resistance and stop the blockade, only further propelling the public reception and political attention for the agitations by local villagers (The Hindu 4.7.2012). Once these agitations turned into 'violent blockades', and after one year of inconclusive notices[36]

[36] The KSPCB has repeatedly pointed to the lacking authorization to operate the landfill in Mavallipura, as the respective permit expired already on December 31st 2010. Furthermore, also a '7-days closure notice'

issued to the BBMP and *Ramky*, the *Karnataka State Pollution Control Board* (KSPCB) finally stepped in and closed the dumping site in Mavallipura for three months on July 11th 2012, directing the BBMP to temporarily dispose all the city's waste in Mandur until the menace has been remedied (KSPCB 2012a; The Hindu, 13.7.2012). Roughly at the same time, Kavita Shankar – an individual civil-society activist close to the SWMRT – filed a first Public Interest Litigation (PIL) addressing the issue at the *High Court of Karnataka* (Case Nr.: WP 24739/2012), which was heard in front of the court on July 31st 2012, complaining that the disposal of mixed waste in Mavallipura by the BBMP has resulted in serious pollution and demanding "directions to ensure that solid wastes are segregated at source by citizens of Bangalore" (The Hindu, 1.8.2012) and properly dealt with by the BBMP.

The closure of *Ramky's* 'landfill' in Mavallipura also increased the pressure on the landfills in Mandur, which subsequently had to bear the biggest brunt of Bangalore's urban waste stream along much smaller premises used in Doddaballapur and Rajarajeshwarinagar. This also spurred local protests in Mandur, with the local population starting to block the access roads to the landfills on August 27th 2012 (The Hindu, 28.8.2012) – in a way inspired by the successful resistance in Mavallipura. Resembling *Ramky* in Mavallipura, *SGRR* has been provided with public land and funding in order to establish the waste processing, treatment and disposal facilities outlined above, but by and large, engaged in little more than untreated dumping of the arriving waste – in a way justifying the denunciation of its activities as "a farce of Waste-to-Energy" and "token composting" by informants (Int6). In the course of a field visit on November 15th 2012 (PartOb6), I was able to locate a number of sorting and treatment facilities and additional infrastructure like concrete lining and roofed processing halls at the *SGRR* premises, although in doubtful shape and seemingly out of service for quite some time.[37] Furthermore, the existing leachate collection system was overstrained and congested to a degree, that the leachate spilled over the collection ponds and made its way through the concrete boundary walls of the premise, running in a long black tongue towards the nearest water body – which is the drinking water reserve of a nearby village. The northern part of the premises has been excessively "used only for dumping" (KSPCB n.d.: 3) by the BBMP, without any requisite infrastructure visible to cope with the pilled up mountains of

---

including the call for a short-term action plan, issued in August 2011, has been ignored by *Ramky* and the BBMP.

[37] I was able to identify a rotary sieve and a few conveyor belts, partly placed in an open hall, and machinery for the processing of organic waste. Parts of the processing and storage area were covered with concrete-lining, although I couldn't scrutinize the landfill facility at SGRR's premises.

mixed waste, with the result that there has been a small lake of black leachate dammed up all along the concrete boundary walls, at times gushing through it into the surrounding landscape (PartOb6).

As mentioned earlier, the discharge of mixed urban waste is put forward as prior explanation of the private companies, justifying their total failure in proper treatment and save disposal. Albeit the malfunctioning segregation-at-source, indeed, poses a challenge to its adequate treatment and disposal, this can only be considered an aggravation, which at the same time has been simultaneously enabling and veiling for a number of reckless practices at the disposable-'*end of pipe*' of urban solid waste streams. Furthermore, while the delivery of mixed waste also posed serious challenges to the longstanding operation of the KCDC in the south of Bangalore – within the southern periphery of the envisioned '*IT-Corridor*' –, it was in fact the entanglement with land-speculations against the backdrop of an increased need for housing space, that almost caused the shutdown of the facility: The extensive buffer zone laid out around the facility has repeatedly been violated by housing-need driven illegal land acquisitions – allegedly encouraged by a local-based MLA of one of the leading parties (Int6) –, until the buildings reached the outer wall and the small tree-lined green-buffer zone around the KCDC. It was only due to the direct proximity of the housing-space, that the odor-emissions caused by the delivered mixed waste became a problem and a reason for contentions by the local residents. Eventually, they blocked the gate of the facility – presumably incited by the local politician again (Int6) – and achieved the closing of the KCDC for the delivery of municipal solid waste in 2008 (KCDC n.d.), which, of course, increased the value of the adjacent real estate. Similar forms of land speculations with the negative character of waste can be detected in Mavallipura (Int6) as well as in Mandur, where the layouts of an apartment complex called *Aishwarya Grand Hills* are already clearly visible – including the street lains and drainage system – just next to the compounds of SGRR Ltd. and the BMTC (PartOb6). Such forms of land speculations with 'space for waste'[38] – in a way relating to the notion of 'accumulation by contamination' invoked by Demaria (2010) – mingle with the resistance of local residents clearly aimed at environmental justice and sometimes even empower their claims. Accordingly, the late summer-months of 2012 witnessed the total shutdown of all major landfills established since 2007.

[38] The term 'space for waste' basically signifies the spatial dimension of waste management in urban development and has already been introduced as such in chapter 5.4.2. But, due to its significance for the societal handling of urban waste in Bangalore, it is also used as an analytical category to describe some central conflict dynamics and lines of dispute, which is discussed in chapter 7.2.

6.2. The escalating 'Crisis'

This left Bangalore in the midst of the festival season for weeks without a proper place to dispose of the city's waste, leading to growing piles of garbage in the streets and endless rows of fully laden waste-trucks on the arterial roads. As a consequence, the government of Karnataka and the BBMP announced on August 22nd 2012, that they are planning to reopen the landfill in Mavallipura again – in direct opposition to the KSPCB, actually questioning its authority (The Hindu, 23.8.2012; Times of India, 24.8.2012). Furthermore, they invoked immediate investments into a waste-to-energy plant at the location to deal with the garbage woes and accumulated mixed waste there (Times of India, 13.7.2012; The Hindu, 26.8.2012; ESG 2012c; ESG 2012d). This spurred further protests and gave way to the first common statement of a broad alliance of civil-society organizations represented through ESG, *Saahas*, the SWMRT and *Hasirudala* on August 23rd 2012 (ESG 2012d; Times of India, 24.8.2012): They jointly criticized the official crisis-rhetoric used to legitimatize and enforce the continued dumping of Bangalore's 'toxic legacy' on adjacent village communities as in fact being based on the "systematic failure of the BBMP" itself and Ramky's "criminal disregard of applicable standards, norms and laws" (ESG 2012d). This "crisis-mentality" would furthermore empower some entrepreneurs "aggressively promoting Waste to Energy (WTE) projects" (ibid.), while in fact WTE projects are as much inadequate to cope with Bangalore's urban waste and in conflict with the legal guidelines laid down by the *Supreme Court of India* as is the landfilling of unsegregated waste. Instead, the joint statement demanded to prescribe bulk waste generators to segregate and compost their waste on-site, make segregation-at-source mandatory on a citywide scale and "humanely integrate waste-pickers in decentralized management of solid waste as an essential and sustainable prerequisite of such municipal services" (ibid.). Bangalore's 'garbage crisis' revealed its full political dimension with the villagers around Mandur also blocking the disposal of municipal waste at the landfills located there and the incumbent *commissioner* of the BBMP, M.K. Shankaralinge Gowda, resigning on August 28th. In the following weeks, there were reported cases of dengue fever that fanned fears of a spreading of the disease, which got quickly linked to the piling waste in the streets and drains by the media and concerned civil-society organizations (The Hindu, 23.10.2012). As the '*garbage crisis*' unfolded, three more PILs were filed at the *High Court of Karnataka* in addition to the one already in place: One was filed by another individual addressing the BBMP's supposed incapacity to manage the cities' waste in principle, the second was filed

by the '*contractors*' – also against the BBMP, once the renewed tendering of the waste-collection contracts was under debate, in a move to prohibit such steps –, and the last was filed by a civil-society activist involved in the SWMRT with respect to the lacking recognition and integration of the informalized recycling sector (Int4). To top it all, a *New York Times* article published on October 26th (Harris 2012) elevated the cities' '*garbage crisis*' to global publicity and acted "like egg on Bangalore's face" (Int6).

6.3. 'Crisis'-Management and the Governance of Waste

This concatenation of events created enormous political pressure on the city's government and the BBMP. Consequently, the newly appointed commissioner of the BBMP, Rajneesh Goel, invited all 'stakeholders' to consultative talks in which the members of the SWMRT could take up a particularly influential role (Int1; Int3, Int4; Int6). On September 14th, an *Expert Committee on Municipal Solid Waste* was constituted by the BBMP (BBMP 2013). Furthermore, the *High Court of Karnataka* joined all PILs related to the 'garbage crisis' to a combined case which received much attention from the media, the city government and the BBMP alike, and served as additional advisory setting – a forum that provided even more space of articulation for the alliance of civil-society organizations. ESG added another PIL to this combined case in November, to ensure by way of a High Court direction that the 'landfill' in Mavallipura remains closed also after the prohibition period of the KSPCB has elapsed. At times directed by the court proceedings, the BBMP engaged in intensified 'crisis management' together with city and state governments and carried out some major policy changes aiming at a 90%-reduction of MSW designated for landfilling, comprising only inert materials (BBMP 2012c). On September 15th it issued a public notice announcing the introduction of compulsory segregation-at-source (from the household-level onwards) coming into effect with October 1st all over the BBMP area. This regulation allowed only for segregated collection of '*dry*', '*wet*' and sanitary waste by the PKs – with non-compliance being punishable by an increased fee – and was supported by a big public information- and awareness-campaign (BBMP 2012a). Another public notice issued on September 20th detailed compulsory segregation-at-source for bulk waste generators and compelled them to segregate all wastes on site, take responsibility for the composting of organic ('*wet*') fractions – also on site wherever possible –, and hand over the segregated '*dry waste*' to the nearest authorized DWCCs, with the BBMP being only responsible for the collection of rejects and inert materials (BBMP 2012b). In order to make the public waste management service comply with the foreseen reconfiguration of

Bangalore's public handling of waste, the BBMP announced the complete redesign and anew tendering of the waste-collection contracts for 89 packages on November 15th – what provoked the already mentioned PIL by the 'contractors' –, thus taking up again the thorny issue of the *contractors*-'*Mafia*' by "ensuring better participation and competition" and "preventing monopoly and hegemony of existing contractors" (BBMP 2012c). Furthermore, with the approval of the KSPCB (KSPCB 2012b), the BBMP engaged into a "back-to-tradition experiment" aimed at the revived "recycling of plant nutrients from urban waste to farmland" (BBMP 2012d) by offering local farmers small quantities of segregated and processed organic waste coupled with an expense allowance. Finally, an elaborated directive to all zonal officers issued on September 24th touched all of these policy measures to ensure that the projected implementation of decentralized waste management and segregation-at-source on a citywide scale interlocks with accorded actions taken on all governments levels. This included the identification of at least three locations for the storage and composting of 'wet waste' and the establishment of one DWCCs in each ward, as well as a number of measures to raise awareness, and monitor and enforce the directives with respect to the general public and public waste management service providers (BBMP 2012c).

6.4. Grounded Recycling Realities

Beyond the media hype and political strokes, the 'ground realities' of actors engaged in small-scale, community-based and informalized recycling-activities painted a different but complementary picture of Bangalore's '*waste scapes*'. The area of Ejipura – located southeast of the city center – provides a comprehensive glimpse on this different but complementary picture. It is home to three distinct small-scale waste management initiatives and projects in close proximity, located between slum areas, mixed residential areas and (lower) middle-class apartment complexes: The first, *Parivarthana*, is a project initiated by CHF to provide income-generating opportunities for women from slum-communities through the set up of a separate door-to-door collection and recycling service in surrounding communities and institutions like *Christ University*. *Parivarthana's* layout in Ejipura – established on a small piece of public land next to a channel – is directly collecting '*dry waste*' from 250 households and is furthermore receiving '*dry waste*' from PKs engaged in Ambedkar Nagar and Rajendra Nagar. It also collects 'wet waste' for naturally aerated composting in concrete boxes, but its composting capacities are limited to only a small fraction of the organic waste generated in these two wards, mainly due to a

lack of space (which is also impeding segregation activities) (PartOb3; Ero2). The second, *Kasa Rasa* (meaning 'waste extract'), is a model case for a decentralized solid waste management facility developed and established – also with support from CHF – by *Saahas*, one of Bangalore's more influential organizations active in the SWMRT. It is established on a plot of public land and receives small shares of '*dry waste*' from the immediate neighborhood and the PKs working there, but the biggest share of '*dry waste*' is coming from nearby bulk-waste generators like institutions, schools and apartment complexes, from which the waste is collected with two vehicles. The center is also receiving '*wet waste*' from the apartment complexes and PKs, which is composted with the help of an organic waste converter in boxes with forced aeration, thus representing above-average technology-investments (PartOb4). The third is a community-based waste management initiative set up with support of the *Association for India's Development* (AID) at the *Tungabhadra*-block of the *National Games Village* – a gated compound of apartment complexes established by the *Karnataka Housing Board*. It handles the waste generated by the residents of the *Tungabhadra* apartment-block in a fenced shed next to the complex used for waste segregation, processing and composting in open low-tech but effective pits (Int5).

The media attention, awareness campaigns, and the BBMP policy measures to implement segregation-at-source and decentralized waste management definitely had a positive effect on a number of community-based small-scale initiatives and projects insofar as resistance against and non-compliance with segregation efforts slowly faded away with it becoming an official top-priority. *Kasa Rasa* has attracted already public attention before the 'garbage crisis' even gained momentum (The Hindu, 1.8.2012) and continued to do so during the crisis with a number of elected representatives and government officials visiting the model case. Also, the *Tungabhadra*-initiative received a lot of interested phone calls, especially after the bulk waste generators directive by the BBMP mandated apartment complexes to manage their wastes on site (Int5). *Parivarthana*, on the other hand, was negatively affected by the public strive for the establishment of DWCCs, as it was threatened to lose half of the public land it was entitled to use before for the segregation and storage of '*dry wastes*', because the local corporation didn't find any other plot. Instead of extending the center already established by *Parivarthana* to a DWCC, the local corporation started to demolish the segregation shed covering half of the plot on October 10th (PartOb3; Ero2).

Furthermore, there are implications of the different sources these three distinct projects and initiatives are drawing their '*dry waste*' from. While all three of them face problems to deal with low-quality and low-valuable recyclables – "because the recycling-market is rejecting a lot" (Ero2) –, this low-value materials make up the biggest proportion of the '*dry waste*' received at *Parivarthana* and *Kasa Rasa*. Both projects are trying to find ways to cope with the "bad price and low demand" (ibid.) such materials are traded with at the recycling-market, as this is seriously constraining their economic viability (PartOb3; PartOb4; Ero2). Moreover, while *Kasa Rasa* can easily hand over its residual waste because the BBMP is involved as project partner (PartOb4), *Parivarthana* is constantly facing problems to dispose off the materials refused by the recycling-market (PartOb3; Ero2). In addition to unequal terms of trade and distorted value-added chains within the recycling market – and, of course, also limitations of recycling-technologies related to material properties and respective production patterns of low-value materials –, the difficulties with low-value recyclables are also connected to the lack of 'space for waste' and transportation capacities, as higher volumes would also involve higher demand and better prices. Accordingly, the hard competition and little monetary rewards faced especially by small-scale projects not entrusted with solvent communities, institutions or private enterprises under a service-scheme model, point to the strong imperative to 'pay off' for both, informalized recycling-agents and formal recycling initiatives operated by CBOs or NGOs: They are basically all subject to and have to cope with the particular dynamics of the recycling-market, but from different positions, under distinct circumstances and with different capabilities. Thereby, their relationship involves a back and forth between mutual exclusion (trade offs), competition or cooperation, or perspectively even integration and inclusion. The projected DWCCs could constitute some kind of intermediate space on a partly different (but closely related) scale, that potentially provides for the mediation of mutually exclusive, competitive or cooperative relations between the informalized recycling-sector, CBO- and CSO-initiatives, but also private recycling enterprises as well as formal door-to-door collection and segregation-at-source. Their interplay is a crucial factor with respect to the principal chances for success of and the particular setup of segregation-at-source, recycling and resource recovery modes in Bangalore. Their interplay is also crucial for the socio-ecological and politico-economic shapes such modes of societal handling of waste take in Bangalore.

6.4.1. Informalized Recycling Realities[39]

As the ILO states with respect to the historical conditions of scavenging in urban development: "until solid waste systems are modernized and attention paid to the waste management hierarchy, waste is a common property resource, to which anyone, including the poorest of the poor, can have access if they take the time and use their own physical resources" (ILO 2004: 22). The retrieval and recovery of recyclable materials from urban waste often represents the only way for 'urban poor' to survive, cope with the challenges of urban deprivation and even gain some independent income and perspective of life against the otherwise subjected and disenfranchised working- and living-conditions of working poor in urban India. As Chaya Chengappa summarizes, the 2010 sample survey conducted by MSSS and CHF illustrated some of the challenges related to the different categories of self-employment as well as socio-economic working- and living-conditions involved in the retrieval of urban waste:

> The survey found a significant number of young (18 to 40 years of age), illiterate, and economically and socially disadvantaged people engaged in waste picking in the city. In addition to traditional waste pickers, a significant proportion of the migrant population in the city is working with waste. The majority of waste pickers surveyed (70 per cent) earned between 100 and 200 rupees per day. Their access to water, sanitation and housing facilities in the city still remains inadequate. This situation is worse among migrant waste pickers, who live in temporary accommodation and lack basic identity cards. Interestingly, the survey also revealed that although waste picking was once a female-dominated profession, the number of men who waste pick as their profession is increasing [especially among waste pickers with migration background]. (Chengappa 2013: 1)

As the majority of waste pickers are still women (Hasirudala n.d.), the autonomy involved in the retrieval of recycling materials from public waste-streams is, furthermore, in many cases a precondition to be able to engage in income-generating activities in the first place. Often, their responsibility for reproductive work – like taking care of households and children –, in some cases even as sole bread-winners, make it impossible to engage in any kind of wage labor (PartOb1). But this autonomy comes for the price of extreme vulnerability in urban public space, as illustrated by the continuous reports of denunciations, harassments and extortion by the police, municipal officers and workers, residents and the general public (PartOb1; PartOb2; Hasirudala n.d.); of exploitation by scrap dealers on the price and weight of recycling materials (Chengappa 2013: 1); of regular suspicions and imputations of thievery and criminal activities without social backing and access to attorneys attesting innocence (PartOb1; Hasirudala n.d.); and of social exclusion and rejection by family- and community members (ibid.). According to

[39] The following remarks sketch accounts of everyday working-conditions, respective changes and life-experiences of waste pickers and small scrap dealers, based on participant observations in the course of Bangalore's 'garbage crisis' and information provided by the engaged civil-society scene.

accounts of waste pickers (ibid.), the registration process and *ID-cards* authorized by the BBMP since 2011 have provided them with dignity and some protection against harassment and extortion by officials like the police and municipal officers. Nevertheless, small scrap dealers are still reporting the extortion of briberies[40], e.g. by municipal workers and officers for the disposal of residual waste (PartOb2).

Furthermore, throughout the last decade, but especially in the last few years, informalized recycling-agents have been confronted with declining incomes because of increasing difficulties to recover, retrieve and access high-valuable wastes (ibid.; PartOb1). Increased formal segregation, recycling and resource recovery diverts recyclables from the waste-streams available for marginalized recycling-agents and big companies use their political and economic power to secure exclusive access on high-valuable recyclables in order to sell them with enormous profits directly at the up-scaled recycling market or use them as secondary resource, like in the case of ITC's grab for waste paper for its own paper mills (Chengappa 2013: 8; Hasirudala). The combined effects of public efforts to modernize the waste management system through 'private participation' and increased interest of big private companies in direct access to secondary resources and high-valuable recycling materials has resulted in the enclosure of waste as urban 'common'. This is exactly where *Hasirudala's* approach to the engagement of the informalized recycling-sector in the rearrangement of Bangalore's handling of urban waste sets in:

> Network partners have formed and trained informal collectives of waste pickers to cope with requests to provide waste management services at the BBMP's Dry Waste Collection Centres and for bulk waste generators. These services include composting organic waste and collecting and segregating recyclable waste. (Chengappa 2013: 6, italics added)

Thus, the network is trying to mitigate the encroachment of the informalized recycling-sector in the course of Bangalore's waste management modernization through the up-scaled integration of marginalized recycling-agents into the newly evolving framework for decentralized formal recycling. This is a difficult process, not only constrained by societal power relations imbuing the city government and bureaucracy, molding public discourses and materializing in institutional conditions – as well as by the subsequent competition and dynamics faced on the recycling-market and for DWCCs. Moreover, as the NGO *NIDAN* – working with waste pickers in North India – puts in a way that holds also true for Bangalore:

[40] Interestingly, the BBMP has provided Hasirudala with support for the filing of complaints against bribery extorted by the police or municipal officers (PartOb2).

> The transition from working independently to being employed to work on contracts (…) has created a number of challenges for [waste pickers]. For the first time, they have to achieve externally defined targets and their work is monitored. In addition, instead of earning money whenever they decide to sell their materials, they now need to wait until they are paid their wages. (Samson 2009: 18)

This points to the fact, that many marginalized recycling-agents are used to the hardships of street life, but also to some sense of – although precarious – autonomous mobility in space and time that comes along with it, and often have problems to adjust to regulated working-environments (PartOb1, Ero1). Often, there is also a very reasonable sense of mistrust against state authorities and formal actors that needs to be dealt with in order to leverage integration into formal waste management schemes (ibid.). Cooperatives are the preferred institutional form to collectively organize the work of informalized recycling-agents all over the world (Samson 2009), exactly because they offer a self-organized collective space to mitigate the adjusting pressure resulting from conflicting working-conditions and realities of life, while at the same time granting ownership. Correspondingly, *Hasirudala* is also invoking the DWCC as "co-operative fair trade scrap store" (Hasirudala n.d.) and is trying to incite the formation of informal waste picker collectives providing the organizational base for cooperatives – supplemented by social entrepreneurs able to cope with the demand for waste management services, thus better suiting the dominant 'entrepreneurial spirit' and institutional bias towards 'private participation' in India, and Bangalore in particular. Yet,

> …[t]he formation and operation of waste picker collectives is a difficult process and requires consistent support by network partners as, to be successful, the collectives have to function as viable businesses. This is crucial not only because this is waste pickers' main source of income, but also because the success of these cooperatives will promote the integration of waste pickers into the city's waste management system. (Chengappa 2013: 8)

On the flip side, the number of informalized recycling agents possibly integrable into the network of DWCCs is limited, ranging from three to eight for each center, depending if door-to-door collection is included (Janaagraha n.d.; Int4). Further on, despite the fact that even all 198 envisaged DWCCs would hardly be capable of accommodating the number waste pickers engaged in the metropolis, *Hasirudala* could only secure the operation of five out of over 70 centers against the competition of companies by late 2012. Moreover, it takes at least two and a half to three years for such centers to become viable businesses. Correspondingly, by now, the official acknowledgement and recognition of informalized recycling-agents was not sufficient to leverage their comprehensive integration into the upcoming formal segregation and recycling system in Bangalore, not to speak of the particular terms and institutional forms of their inclusion. This was also exemplified by the assignment of informalized recycling-agents, facilitated through Hasirudala, to help out the

BBMP during the worst woes of its 'garbage crisis': Their assignment proved rather unrewarding, as their workforce and expertise was simply used to compensate for PKs without offering proper payment (only Rs. 100 compensation per day) or the opportunity to retrieve satisfactory amounts of recyclables (The Hindu, 27.10.2012; PartOb2; Int4).

Thus, while it holds true that the collective or cooperative is as an institutional form, which is geared not to build on the exploitation and subjugation of previously autonomous although extremely precarious waste workers, it still comes on conditions: First, the service-scheme model, where waste 'generators' pay for a waste management service, is a crucial premise for the successful inclusion of informalized recycling-agents under terms acceptable for them. Second, even if the provision of formal segregation and recycling services is framed under a service-scheme model, it is intricate if not unlikely that cooperatives of marginalized recycling-agents would be able to assert themselves within an unconstrained market environment and without directed support of municipal authorities. This refers directly to the workings of the recycling-sector and waste economy in India, their explicit and implicit regulation by state authorities, and to general and abstract concepts and functions negotiated with respect to the changing societal handling of waste in Bangalore.

6.5. CSO's abstract Understanding of Bangalore's Waste

Through their continued activities on a downscaled operational level, Bangalore's waste-related civil-society organizations have been able to incorporate a number of issues encountered in the everyday workings of such 'ground realities' into their conceptual framework for the reconfiguration of the city's handling of urban waste. Conversely, these 'ground realities' are also reflected to varying degrees in the civil-society organization's abstract understanding of and visions for Bangalore's waste-society relations, which are echoed again in the official waste management policies pursued by the BBMP in the course of its 'garbage crisis'. As part of six expert interviews conducted in October and November 2012 with related civil-society activists, I was able to discern at least three such central and recurring abstract concepts and ideas.

(1.) This included a circulatory understanding of material flows in human-nature interactions and urban-rural relations: The emphasis on a circulation model related to longstanding recycling traditions was one of the issues repeatedly put forward by some interviewed informants (Int3; Int5; Int6). One the one hand, it refers to the maintenance of nutrient cycles embodied in the longstanding tradition of local farmers taking back urban

organic waste as fertilizer to enrich their soil. On the other hand, this refers to the equally longstanding tradition of collecting every small bit and piece of non-organic waste materials, like irons, for reuse and the recovery of resources. The recent "back-to-tradition experiment" (BBMP 2012d) involving local farmers into the recycling of urban organic wastes is a good example for the enduring efficacy of such concepts.

(2.) Closely related to the figure of equilibrium involved in the circulatory model of material flows in human-nature interactions and urban-rural relations, a few of informants invoked also a concept of 'extended producers responsibility'. At times firmly situated in critical reflections of local industrialization processes, its strong form departs from a critique of the exposure to all kinds of pollutants and toxic materials from production processes towards a generalized claim to hold producers responsible for all consequences of product-design – ranging from the material properties of products to their packaging (Int3). In its weak form, it is sometimes limited to the mere monetary responsibility of 'generators' of post-consumer waste (Int1), thereby relating to the service-scheme model in waste management.

(3.) This is, again, related to differing appraisals of the recycling economy in India, which is often praised for its high recycling rates. While a few informants still hold up its high recycling efficiency (Int5), a number of informants put forward substantial skepticism – firmly grounded on the experiences of day-to-day 'ground realities' in the formal and informalized recycling-sector – about the economical, ecological and social unsustainability as well as the concrete working- and living-conditions this 'efficiency' involves (Int1; Int3; Int4; Int6). The emphasis on the service-scheme model and the liability of bulk-waste generators is as much a consequence of this skepticism as the conceptual framework of decentralized segregation and recycling through a network of DWCCs. Respectively, the critique of unconstrained – and thus distorted and monopolized – market conditions is followed by a call for public regulations, although to varying degrees and with similar skepticism towards centralized service-operations entrusted with municipal authorities (Int2; Int3; Int6). Still, the emphasis on service-scheme models and the liability of bulk-waste generators, channeled through the intermediate scale of DDWCs and tared between 'the market' and 'the state', provokes questions about the access to service-scheme models in a double sense: Which 'generators' offer sufficient economic incentives – in the form of high-value recyclables and solvency – to be provided with services, and which service providers have the capacity to gain access to generators with

promising solvency and high-value recycling materials[41]? – Or in triple sense: Which 'generators', which recycling-agents, and which waste materials are left behind on the way to a modernized waste management system?

These are some of the essential questions explicitly or implicitly (re-)negotiated in the course of Bangalore's 'garbage crisis'. Against the backdrop of this 'crisis', its history, and the interplay of concrete structures and situated practices with interpretative concepts and frames epitomized therein, it is now possible to identify a number of different actors directly or indirectly involved in the molding of the cities' waste-society relations. The diverging and at times downright conflicting interests and distinct strategies at work in the handling of Bangalore's waste constitute the point of departure for the detailed analysis of these actors, coming up in the following chapter.

[41] Beukering et al. (1999: 18) have been able to show already in the late 1990s, that there is a clear positive relationship between income and waste generation. However, of course, this does not indicate anything per se about the waste materials involved.

7. Bangalore's contested Waste-Society Relations

Building on the delineations of historically evolving contours of Bangalore's waste-society relations, the following chapter contains the main analysis of waste-related socio-ecological conflicts against the backdrop of the city's 'garbage crisis' and the profound changes and reconfiguration in the societal handling of urban waste it involves – or at least anticipates. An analysis of waste-related environmental conflicts necessitates the differentiation and examination of conflicting actors and actor-constellations, which is usually framed under the concept of a stakeholder analysis (SHA). Most SHAs in the field of waste management in cities of the Global South include a number of different actors, like the government (municipality), private companies (contractors and recycling units), civil-society organizations (CBOs and NGOs), informalized recycling-agents (waste pickers, IWBs, scrap dealers and wholesalers) and 'consumers' or 'generators' (households, institutions, commercial establishments, businesses and industries) (Ahmed / Ali 2004: 468; Baud et al. 2001: 5; Beukering et al. 1999: 24; Scheinberg / Anschtz 2006: 260). These are typically illustrated in charts depicting the relationship of respectively only two actors vis-à-vis each other, mainly based on their activities and the modes of their interaction – be it partnerships, competition or straightforward neglect. In a first analytical step, I propose to analyze the involved actors primarily in terms of their strategic approaches and interests, crosschecked with their *positionalities*[42], in order not to reify them as predefined subjects, nor in terms of their actions and relationships, but rather embrace them in their fragmented and at times contradictory agency. In a second analytical step, the insights gained thereafter are interwoven to identify major conflict dynamics and lines of disputes along three central dimension of Bangalore's waste-society relations and the 'garbage crisis'.

7.1. Stakes on Garbage

This first analytical part is going to examine the various actors involved in the societal handling of urban waste in Bangalore with respect to their varying approaches to the 'waste problem', and subsequently analyzes the metropolis' governance of waste before taking a detailed look at the informalized recycling-sector and the waste-related scene of civil-society organizations. For a reasonable differentiation of the actors involved in

[42] My use of the notion of '*positionalities*' is outlined in chapter 3. Drawing on *Avtar Brah* (1996), I understand *positionalities* as "the manner in which a group comes to be 'situated' in and through a wide variety of discourses, economic processes, state policies and institutional practices (...). This 'situatedness' is central to how different groups come to be relationally positioned in a given context" (Brah 1996: 182f).

Bangalore's waste-society relations, the established division into public, private and civil-society spheres (ibid.) appears inadequate, even if the informalized actors of the recycling sector are included. In a situation, where the societal forms of a bourgeois state are perpetually evolving – always in friction with other and prevailing societal forms –, the pre-emption of a corresponding differentiation of societal spheres has simplifying and deceptive effects. For a meaningful mapping of the involved actors and their ascription to evolving actor-constellations, it is integral to combine the analysis of varying interests and strategies to gain benefits and profits from society's handling of waste (including its negative attribution), with reflections on the respective *positionalities* of actors within changing and evolving societal relations at large. The consideration of these varied interests and strategies indicates four different approaches, additionally discerned along the differentiation of 'waste' as something dirty, dangerous and repelling on the one hand, and of 'waste' as a resource on the other.

7.1.1. Gaining from the Negative Attributions of Waste

A first and long-time dominant strategy identified thereafter is aiming at the preservation of established clientelistic and intransparent structures and relations, in order to gain benefits and profits through the embezzlement, misappropriation and misuse of public means along the negative attribution of waste. The practices of the *contractors*-'*mafia*', originating from the entanglement of elected representatives and government officials with private service providers (Afshan 2005; Ero1; Int3; Int6), serve as an example for such an approach in the privatized waste-collection system of Bangalore (BBMP 2012c). In connection with the intransparent land-use zoning and entitlement practices of the BDA and related practices by local politicians (Nair 2008: 177ff; Int2; Int6), the appropriation of and speculation with land located close to waste-treatment and -disposal facilities represents as much an example for congruent approaches along the negative characterization of 'waste' as the very selection of the sites for such facilities in the first place (ESG 2010a). Respective forms of land speculations have been depicted for the case of the KCDC – which has been closed on that ground –, as well as in Mavallipura (ibid. Int6) and Mandur (PartOb6), where the layouts of private housing estates next to the premises of the landfills are already visible.

7.1.2. Economic Valorization of Waste

A second approach is geared towards economic rentability, respectively towards the profitability of technology- and capital-intensive forms of handling 'waste' as a resource. In a way, and when conceptualized as economic rentability oriented towards livelihoods, the different actors of the informalized recycling sector also fall under this category: while the profit orientation of large scrap dealers and wholesalers in recycling materials appears to be obvious, the aspirations of marginalized recycling agents – ranging from *waste pickers* and *raddhi wallas* (IWBs) to *small scrap dealers* – also match with this approach in as far as economic rentability for livelihoods is concerned. However, especially the various private companies of the waste-related service- and recycling-industry at times represent economically and politically influential advocates of this approach. This includes major private corporates like *Ramky* and *ITC* as much as middle-sized private waste-management and recycling companies – for instance all kinds of treatment and recycling as well as disposal enterprises like *Terra Firma* with respect to large-scale composting or also *SGRR* in the case of Mandur. Private service providers focusing on bulk-waste generators like institutions, companies or housing estates and apartment complexes basically also pertain to this kind of approach. While ecological considerations and the tackling of the negative facets of waste do – at least implicitly – play a role for these actors, economic aspects are their major concern. At the same time, and related to the physical properties of different garbage materials molded by socio-technological developments in the recycling-industry, the respective strive for the valorization of waste is causing considerable competition for high-value recycling-materials. Consequently, the seizing of valuable materials happens often under blunt disregard of the ecological (low-value recyclables) and social (expulsion and displacement of marginalized recycling-agents) consequences involved in the sole focus on valorization. To summarize, this approach is closest to what can be critically referred to as '*green economy*' in the field of waste management, handling and recycling. As such, this approach is also explicitly or implicitly promoted by a number of elected representatives, government officials and technocrats in favor of '*market efficiency*'.

7.1.3. Technocratic Management of Waste

A third approach focuses on the technocratic management of MSW – especially on its negative implications for environmental health – although on the condition of economic sustainability and preferably also fiscal cost-neutrality. It is emphasizing the public-service

character, and respectively the public responsibility for the proper handling of urban waste. While ecological aspects clearly occupy the center stage within this approach – although with a strong public-health and cleanliness inclination – economic aspects gain more and more importance through the emphasis on segregation-at-source (in order to reduce waste quantities designated for disposal), the conceptualization of waste as a resource and the efficiency logic of public management. Another link to the economic orientation of a '*green economy*' of waste are technology- and capital-intensive large-scale investments into waste management infrastructure, which furthermore bear risks of continued clientelistic rent-seeking and kickback payments. However, it is differentiated from primarily economic approaches through its emphasis on government regulations and control, and its proneness to disposability and end-of-pipe mentalities and technologies. This approach towards the technocratic management of the '*waste problem*' is advocated mainly by bourgeois civil-society organizations focusing on cleanliness and health aspects, by state-related actors of the administration and judiciary, and to a certain degree by environmental-justice organizations. Irrespective of their economic orientation, service providers in SWM also have a certain inclination towards this approach, because they depend on the enforcement of generator's liability. Furthermore, the economic elites of Bangalore's *new economy*, in expectation of the efficient management of the metropolis, can also be ascribed to this kind of approach (The Hindu, 25.8.2012).

7.1.4. Integrated Sustainable Handling of Waste

A fourth approach is merging the pursuit of ecological and particularly also social sustainability of society's handling of waste with the acknowledgement of India's recycling economy. This involves a strong orientation towards decentralized and self-organized small-scale segregation-, recycling- and composting-services and facilities, often emphasizing reliance on work-intensive strategies instead of high capital- and technology-investments, at times geared towards the thorough integration of marginalized recycling-agents. Entangled within the economic valorization of waste and its governance through public regulation and control, this approach gave rise to up-scaled decentralized recycling at DWCCs, mandatory segregation-at-source and bulk-waste generator's liability as preferred vehicles in order to make the vision of 'zero waste' city tangible. Thus, represented by a broad alliance of civil-society organizations, this approach was indeed able to exert certain influence in the course of the escalating '*garbage crisis*'.

7.1.5. The Governance of Waste

The boundaries between these approaches are blurred, but still, they serve as important landmarks in the societal landscape formed by waste-related actors in Bangalore. Due to the longstanding implicit prevalence of the first approach in waste-related policy measures, there are a number of actors engaging in practices that are closely related to the clientelistic enrichment through the embezzlement, misappropriation and misuse of public means, even though their strategies are more directed towards the valorization of waste as resource or its technocratic management, thus causing their ascription to the second or third approach. This is illustrated by *Ramky's* "tipping-fee racket" in Mavallipura and *SGRR's* "farce of Waste-to-Energy" and "token composting" in Mandur (Int6), which – seemingly – both involved considerable aspirations to gain profits from the valorization of waste. Also, the borderline between technocratic management and economic profitability is hard to draw and marked by intersections. Out of a combination of these two approaches, an increasingly influential mode of waste-governance developed in the years following the BATF, grouped around the neoliberal and technology-centered concepts of '*good governance*', '*new public management*', '*market efficiency*' and '*green economy*'. Their advocates in the private sector, government, bureaucracy and some elitist civil-society organizations failed to cease forms of clientelistic enrichments throughout the implementation of their waste management policies and have been increasingly challenged by a bourgeois scene of very active civil-society organization, already before the actual '*garbage crisis*' unfolded. As a consequence, this broad alliance of civil-society organizations was able to advance an integrated and decentralized approach to waste management, which has the potential to form a new dominant mode to govern waste with varying compliance to the economic valorization of waste and its technocratic management. In its week form, it lies in perfect accordance with the neoliberal and technology-centered concepts mentioned above, although on a downscaled level and with a clear emphasis on economic valorization of waste. In its strong form, it has the potential to profoundly reconfigure the basic premises of waste-society relations in Bangalore, as the analytical supplement of *positionalities* is meant to clarify.

7.1.6. Strategic Positioning in Practice

All of these approaches revolve – in one way or another – around the question: Who gains what kind of benefits and profits from the societal handling of waste and the '*garbage crisis*', and who has to take responsibility for and bear the societal costs of urban waste?

The respective dividing lines – exactly because of their proneness to overlappings – need to be linked to the *positionalities* of the actors in order to gain analytical significance and attain critical social meaningfulness: Marginalized agents of the informalized recycling-sector like waste pickers collect valuable garbage materials in order to survive and sustain their lives, and not on the account of an ecological consciousness (which, indeed, doesn't change much about the ecological service they provide in doing so). If this instance is used for accusations based on a reactionary bourgeois' standpoint, then this is done from a privileged position and with disregard or straightforward negation of existing power relations and basic inequalities (Gill 2009: 21). If ITC – as major Indian private corporate – uses its economic and political power to gain selective access to high-value waste without taking ecological responsibility for less valuable garbage-materials (Changappa 2013: 8) – not to mention the exploitation of the deployed labor – its denunciation as "corporate ragpicker" (Int6) appears quite reasonable.

Informalized recycling-agents stakes and claims

This, however, does not mean that questions of ecological responsibility and sustainability have no relevance for marginalized actors of the informalized recycling-sector. Rather, the assignment of a socio-ecological function and responsibility, under conditions of formal recognition as well as social and economic security, offers considerable identification potential (PartOb1; PartOb5). The fulfillment of these conditions, in addition to the unrestricted access to recycling materials in urban waste streams, is a major goal of organizations representing or supporting waste pickers like the *Alliance of Indian Waste Pickers*, the *KKPKP* and *SWaCH* in Pune, the *AIKMM* in Delhi, or *Hasirudala* in Bangalore.

(1.) In the case of marginalized recycling-agents, a formal recognition would involve the legitimization of self-organized recycling activities by the state, and thus, a certain right to exist in urban space, which could provide a certain degree of protection against the discrimination informalized recycling-agents are facing on a daily basis. That is why the issuing of official *ID-cards* for waste pickers, IWBs and scrap dealers by the BBMP was considered such a 'landmark'-success (Chengappa 2013: 2).

(2.) Social security, furthermore, pertains to their inclusion into public health insurance, pension schemes, work-related social benefits, and to scholarship schemes for their children, despite the informal and self-employed status of their self-organized activities, respectively their labor law related informalization. This issue has been discussed on a

national level throughout the last decade and addressed in the *Unorganized Workers' Social Security Act 2008*, which is linked to schemes for the provision of health- and life-insurance, pension, housing and education. Accordingly, *Hasirudala* is lobbying in Bangalore for the inclusion of informalized recycling-agents into the government's '*Arogyashri*'-scheme for tertiary medical care. Furthermore, beside the demanded provision of safety gear and scholarships for children,

> [t]he network has also lobbied for the creation of a special social security scheme for waste pickers under the BBMP's urban poverty alleviation program and for the creation of opportunities for waste pickers to access various government schemes to start new cooperative businesses. These requests have been accepted in principle by the BBMP Commissioner. (Chengappa 2013: 6f)

In addition to the unrestricted access to high-value waste, these two aspects of recognition and social security constitute the core demands of informalized waste-workers in India (Samson 2009). This is also reflected in *Hasirudala's* mission statement, positing the prior intention to "create recognition for the contribution of waste pickers in diverting waste from landfills, recycling resources and reducing greenhouse gas emissions, thereby identifying them as 'green-workers; and improving their image in society" (Hasirudala n.d.). This is followed, among others, by the aim to "secure the benefits of social security, improved working conditions and continued access to waste for waste pickers" (Hasirudala n.d.).

(3.) Unrestricted access to recycling-materials in the urban waste stream, however, is a complicated matter on its own – as already thematized in the preceeding parts – and directly connected to the role assigned to self-organized recycling-agents in the changing societal handling of waste in Bangalore. Even though the BBMP recognized and registered waste pickers in principle, their access to waste – especially high-value recyclables – has been restricted step by step in the last years through the privatization of waste management, the establishment of door-to-door collection, and the bias towards capital- and technology-intensive 'private participation', under which efforts to formally implement citywide segregation-at-source and recycling have been framed. On a downscaled level, informalized recycling-agents have repeatedly lost access to clean and segregated high-value waste – which is not only affecting their income, but also their occupational health – in localities where established private companies like ITC launched the collection of recycling-materials. Yet, also on the up-scaled level of decentralized segregation facilities, Hasirudala is facing "competition from large companies also seeking to operate the Dry Waste Collection Centres" (Chengappa 2013: 8):

> [ITC] collects recyclable waste from citizens and pays them for this waste, whereas Hasirudala charges user fees for providing waste management services. In addition, ITC deals only with high quality waste. While the paper waste goes to ITC paper mills, ITC separates the rest of the waste and sells it to scrap traders at enormous profits. [Moreover] the BBMP and SWMRT have supported ITC's efforts to operate the proposed Dry Waste Collection Centres and continue to promote it. This may affect Hasirudala's aim to operate as many centres as possible in Bengaluru. (Chengappa 2013: 8)

Thus, there are a number of peculiar issues involved in the back and forth between recognition and inclusion, formalization and incorporation. These issues are structurally embedded in the close interplay between privatized public waste management, the implementation of segregation-at-source on a city-scale and civil-society organizations' strive for the inclusion of informalized recycling-agents against the competition of powerful private companies interested in exclusive access to cheap recycling materials and secondary-resources. This situation results in thin but consequential lines between the successful implementation of formal segregation-at-source in Bangalore, the incorporation of informalized recycling-agents into the up-scaled formal segregation- and recycling-system, and the autonomy these actors often have to rely on in order to cope with the precarious totality of their living-conditions, until their access to extended social security is granted. The effects of the two BBMP-directives (mandatory segregation-at-source and bulk waste generators) have to be scrutinized along these lines, while their affirmation can only be understood in terms of the precarious framework for the up-scaled integration of informalized recycling agents in newly arising schemes provided by *Hasirudala*.

Waste-related civil-society scene and the SWMRT

The broad alliance of waste-related civil-society organizations has been crucial for the 'garbage crisis' to really unfold its political scope and dimension. Thereby, this alliance actively shaped the political opportunity structures, which helped to really leverage the reconfiguration of Bangalore's public waste management towards decentralized formal segregation and recycling. This exemplifies the politically strategic relevance of civil-society organizations in the dynamic reconfiguration of waste-society relations in the course of Bangalore's '*garbage crisis*' and suggests a detailed examination of the alliance of waste-concerned civil-society actors crystallizing around the SWMRT. The organizations associated to the SWMRT have been active on a number of different scales, ranging from concrete waste management initiatives, facilities (especially DWCCs), projects and service contracts on a local scale to lobbying, legal actions as well as public relations and awareness-raising activities on a city- and state-politics scale. In doing so, these organizations don't exhibit a unified position – although they are able to formulate

joint statements at any rate – but rather represent a whole range of approaches, are to a certain extend in competition with each other (especially for DWCCs and service contracts), and thus, provide revealing insights into conflicts around the societal handling of waste in Bangalore. In the following section, the analysis of two organizations associated with the SWMRT serves to illustrate the respective positions, approaches and contentions.

Saahas has existed since 2001 and has been focusing initially on awareness-raising activities, community-based waste management and the promotion of 'segregation at source'. However, in the last years *Saahas* emerged as a waste management service provider for bulk-waste generators – thus, defined entities like private companies, institutions and apartment complexes, which produce large amounts of waste – with considerable economic success. Anticipating this transition towards a 'service-scheme model' and financial liability, *Saahas* split into an NGO and a private service provider in 2010. By now, the private company *Saahas Ltd.* is managing the waste of big private corporations like *Texas Instruments*, *Microsoft* or *Britannia* and is the partner agency of *Tetra Pack* for all South India. The NGO *Saahas* is still focusing on awareness-raising activities and has been developing the already mentioned model for '*community-based waste management initiatives*' called *Kasa Rasa* since 2011. With the support of the BBMP and CHF, two fancy showcases of these *Kasa Rasa* centers have been established in Ejipura and Koramangala. Themed '*nothing is waste*', *Saahas* is geared towards economic profitability of waste management activities, has been a strong proponent of the service-scheme model and has successfully lobbied for the 'producers responsibility' of bulk-waste generators (Int1, Int6). *Saahas* is arguing that the payment for waste management services is integral for the recycling-sector in order to become an economically viable and socially just field of activities, where waste workers are able to gain a decent living. At the same time, it has a much more moderate stance towards private service '*contractors*' in Bangalore's public waste management and the engagement of big private companies in the formal segregation and recycling sector (ibid.), which is causing increased competition for high-value recycling materials to an extent that is seriously constraining the inclusion of marginalized recycling-agents within institutional forms acceptable to them.

Hasirudala, on the other side, has been primarily "[f]ormed to support and represent the cause of waste pickers in the city, [… and] is working towards becoming a registered membership-based organization with its own organizational structure and constitution"

(Chengappa 2013: 2; italics added). This network in-metamorphosis is strongly influenced by and linked to WIEGO, *GlobRec* and the AIW, and – against the backdrop of the particular shaping of Bangalore's waste-society relations ahead of BBMPs '*garbage crisis*' – has chosen to adopt a 'top-down' approach for the development of a marginalized recycling-agent's membership-based organization, first forming a network of organizations engaged in strategic and high-profile lobbying as well as legal advocacy, before striving to collectively organize informalized recycling-agents:

> Almost all initiatives to organize waste pickers have taken a 'bottom up' approach, organizing waste pickers first before lobbying with government. In Bengaluru, the opportunity to organize waste pickers came through the reverse approach – advocacy with the top leadership in the municipality and the use of the Lok Adalat for a quick decision on the process of registration. Challenges on the ground were successfully overcome because organizations mobilized and trained waste pickers intensively across the city and because they regularly interacted with BBMP leadership and field staff at the centre and in different zones. (Chengappa 2013: 4)

Hasirudala has been facing strong critique due to this 'top-down' approach in organizing waste pickers (Ero1; Int4). On the other side, the respective 'top-down' approach has to be considered against the backdrop of – at one angle – competition from large private companies on the recycling-market in general, and within the up-scaled framework for decentralized formal recycling in particular. At the other angle, the power structures involved in the already existing social and economic forms of organization in the informalized recycling-sector (along the discriminatory lines of sex, gender, caste, community affiliation and religion, etc.) also have to be considered in the assessment of this approach being qualified for the particular situation faced in Bangalore. *Hasirudala* has been working closely together with scrap dealers, trying to organize them within the network – conditioned by the adherence of ecological and social norms[43] – in order to address exploitation and power relations within the informalized recycling-sector (PartOb2). It has also maintained "a channel of communication with waste pickers through regular meetings held in the respective zones and at the city level" and developed "a two day training module for waste pickers to equip them with the essential life and entrepreneurship skills necessary to prepare them for their new role" (Chengappa 2013: 6) – addressing the difficulties involved in regulated working-environments. While considerable achievements have already been outlined in the previous chapters, the final success of this approach is still open and hard to assess.

[43] The three basic rules for scrap dealers organized within *Hasirudala* are: „No burning, no dumping, and no exploitation of waste pickers" (PartOb2).

Both, *Saahas* and *Hasirudala*, appear to have a similarly entrepreneurial approach towards the alignment of the recycling sector in Bangalore – especially regarding DWCCs and bulk waste generators – and represent the service-scheme model. However, they differ a lot in terms of the role marginalized recycling-agents of the informalized sector is envisioned to take in such an entrepreneurial reconfiguration as well as the orientation and confidence put into the 'contractors' and big private companies like ITC. These differences are also reflected on the operational level and illustrate the variety of approaches reconciled and partially unified within the SWMRT. Furthermore, both have engaged in lobbying activities with the BBMP and *Hasirudala* has also engaged in legal activism and advocacy with the *Lok Adalat* and the *High Court of Karnataka*, though addressed very different issues in doing so. Although the waste-related civil-society organizations around the SWMRT have been very successful precisely because of their concerted proceedings, this also exemplifies the diversity of positions, strategies and operational activities within seemingly coherent constellations of civil-society actors. In fact, this diversity of positions also holds true for the BBMP – and seemingly monolithic state actors in principle – and substantiates the necessity to analyze the involved actors along the conflict dimensions and lines of dispute that structure the dynamic reconfiguration of waste-society relations in Bangalore.

7.2. Wasted Lines of Disputes

The preceding delineation, now, invites a return to the research questions posed in the introduction, which have been guiding my research process – to recollect:

- *How, and in which ways are waste flows and their societal handling – their circulation, distribution, treatment, recovery and disposal – determinants of environmental conflicts?*
- *What are the social inequalities and societal contradictions inscribed in waste-related environmental conflicts?*

Based on the outlined conflict trajectories and dynamics as well as the delineated positions and approaches of involved actors, it is now possible to sketch the central socio-ecological lines of dispute around the societal handling of waste in Bangalore, which I conceive in terms of recognition-, access-, distribution- and appropriation-conflicts (Brand 2010: 250). These lines of conflict are deduced along three basic dimensions of waste-society relations in India: the economic dynamics of the recycling market, the spatial dynamics of capitalist

development and urbanization in India, and the reconfigurations of public and private against the backdrop of a contingently evolving bourgeoisie state.

(1.) The dimension of *waste economics*, on the one hand – referring to the economics of recycling involved in it – entails socio-ecological conflicts over the access to and appropriation of high-value recycling materials, which unfold around the materiality of different waste's and their (re-)valorization. Because of that, the economics of recycling is also inherently linked to the dominant mode of production, the design of products and production processes, and the produced waste involved in them, which is, however, not the focus of this thesis. On the other hand, another integral dynamic of this highly informalized and at the top-end of value chains also monopolized recycling market stems from the economics of scale, which in turn are entangled with the spatial dynamics of capitalist development and urbanization in India.

(2.) This spatial dimension of *space for waste* depicts socio-ecological conflicts over the access to urban and semi-urban land for the collection, treatment, processing as well as recycling and disposal of waste. Indeed, this includes conflicts arising from the speculative appropriation of public as well as private land previously devalued due to the vicinity to 'waste', or the placing of waste-treatment and -disposal facilities in the first place. The outlined differentiation of the negative attribution of 'waste' – as something dirty, repelling, unorderly, dangerous and polluting – on the one hand, and of 'waste' as a resource on the other, serves as a necessary prerequisite for a sufficiently nuanced placing of socio-ecological conflicts revolving around the *waste economics* and the *space for waste*. Thus, this differentiation – although not a conflict dimension on its own – provides an underlying discursive structure enmeshed into the historical formation of waste-society relations in India, for it situates the societal handling of waste between enrichments along waste as "abject" (Moore 2012: 792) or contamination and its later capital- and technology-intensive valorization as recycling materials. In fact, this differentiation bears also considerable significance for the implicit negation or straightforward ignorance of marginalized recycling-agents, which is again linked to the last conflict dimension.

(3.) Moreover, socio-ecological distribution and recognition conflicts over legitimate claims, shares and benefits on the one hand, as well as dues, liabilities and responsibilities for waste-related societal costs, burdens and deprivations on the other, are inscribed into the contingent reconfigurations of public and private (Véron 2006: 2103ff) against the backdrop of an evolving bourgeois state in India. This dimension of *public and private waste* often acts as an intermediary in between the *waste economics* and the *space for*

waste and unfolds considerable significance regarding the societal handling of waste and its democratic implications alongside the dynamics of inclusion and exclusion and the question of urban citizenship (Nair 2008: 112ff). It is related to questions such as: How is responsibility for waste conceptualized – as 'generators' (thus, largely consumers) responsibility or in terms of 'extended producers responsibility'? And, how is public handling of waste configured – in terms of 'private participation' and PPPs, and what exactly does this mean; does it provide for the small-scale, low-tech initiatives including marginalized recycling agents? Moreover, which 'generators' offer sufficient economic incentives – in the form of high-value recyclables and solvency – to be provided with services, and which service providers have the 'capability' to gain access to generators with promising solvency and high-value recycling materials? – Or in a quadruple sense: Which 'generators', which recycling-agents, which marginalized communities and which waste materials are left behind, excluded, contaminated or displaced on the way to a 'modernized' waste management system? Accordingly, the efficacy of this third conflict dimension ranges from, to name just a few, struggles for the recognition of marginalized recycling-agents, to legal struggles regarding Bangalore's 'toxic legacy' and court proceedings directed at policy-making for formal decentralized segregation and recycling, further to the distribution of (public) *space for waste* (like the DWCCs) and the regulation of waste-related fields of economic activity. And, all of these socio-ecological lines of conflict are molded and reshaped by power relations along sex and gender, class and cast, 'race' and community.

7.3. Contours of Waste-Society Relations in Bangalore

This study was not set out to provide an explicit and detailed description of waste-society relations and their regulation in Bangalore, let alone India[44] – as such an endeavor would exceed the scope of this format, would require further engagement in critical research and would also necessitate a collective effort in situated knowledge production. Nor has this study provided detailed and systematic analytical accounts of the production of waste in relation with disseminating 'imperial modes of living', although it has staked out some patterns of the societal handling of waste (in terms of a "dominant mode of waste circulation and metamorphosis" (Gille 2007: 34) in the "sphere of distribution" (ibid.))

[44] While a detailed account of the regulation of waste society relations in Bangalore would definitely go beyond the city's own scope, involving at least India at large, one important insight of the chosen theoretical framework suggests that reconfigurations of waste-society relations on a city scale definitely have the potential to contribute to subsequent changes on much larger scales, as I will also try to illustrate in the conclusion of this paper.

such modes of living involved in Bangalore. This study has also not included an examination of the actual formal and informal recycling industry in Bangalore, whereas it has offered some understanding of the 'ground realities' in the informalized recycling-sector and the distorted 'driving forces' of the recycling market. Rather, this case study was framed as analysis of waste-related environmental conflicts in Bangalore, geared only towards a first explorative appraisal of the various shapes and patterns such waste-society relations and their regulation could take, as well as the major lines of disputes this involves. Yet, through the exploration of the social and ecological content of waste-related environmental conflicts in Bangalore, this appraisal was able to endorse the basic premise of the notion of waste-society relations in terms of the manifold ways in which "the natural and the social merge" (Armiero 2008: 60) with relation to waste. Hence, there are still some tendencies in waste-society relations and their regulation discernible from the described conflict trajectories.

While the materiality of waste has been subject to profound change throughout the last decades – marked by an increase in synthetic materials – which has been negated by formal state and private actors, there has recently been found an increased tendency towards the (re-)valorization of waste materials by formal and big private corporate actors. Yet, as the selective emphasis one easily available 'high-value' recyclables shows, and as Nicky Gregson and Mike Crang (2010: 1026) have pointed out with respect to a managerial approach towards waste, this does not necessarily mark a departure from the negation of wastes materiality and from mentalities of disposability, so deeply entrenched in the "systemic causes of waste in capitalism" (Gille 2007: 31). On the contrary, the stories of Ramky in Mavallipura, SGRR in Mandur and ITC's selective grab for high-value recyclables in the city – along with frequently reoccurring proposals to implement Waste-to-Energy projects – exemplify the continued displacement of waste into marginal places and spaces of invisibility.

The spatiality of waste in Bangalore has also been subject to profound change. In the long term, it has changed from an intimate rural-urban relationship and prevalent recycling traditions to a situation, where there is actually a lack of acknowledged space for waste – in the physical sense, and with respect to the changed materiality of waste –, while the quantities of waste are as much increasing as their composition is getting more complex. The spatial dynamics of capitalist urbanization and real estate markets make space for waste scarce, especially for marginalized recycling agents in the city. The DWCCs have introduced an important new scale in the struggle for space for waste, but it is not yet clear

if this is going to be for the advantage of marginalized recycling-agents, or rather for big private corporations encroaching the recycling-sector. Respectively, there is also a profound change in the figurative space for waste, altering the places for waste not only in terms of new bins and procedures for segregation-at-source, but also in the imaginative and discursive terrains of social classifications and societal orders, of concepts of quality and value. Yet, it has to be shown weather this is going to unfold positive effects on the relative positionalities and working- and living-conditions of marginalized recycling-agents, or rather displace them merely into another realm of invisibility. The formal recognition and registration of waste pickers, IWBs and small scrap-dealers by the BBMP has been a 'landmark success' in this regard, but it will hardly leverage the inclusion of marginalized recycling-agents if this success is not completed by their up-scaled integration into the newly evolving framework for decentralized formal segregation and recycling – constrained by multiple societal power relations imbuing the city's government and bureaucracy, molding public discourses and materializing in institutional settings, as well as by the subsequent competition and dynamics faced on the recycling-market and its newly established scale of DWCCs.

Both tendencies, the negation of wastes materiality and its imperative of disposability and the produced scarcity of space for waste, are mediated through the contiguous (re-) configuration of public private divides, which has been marked by an intensifying trend towards the privatization of public waste management. The competition that small-scale waste management initiatives and enterprises, NGOs and collectives of recycling-agents are facing from large private companies, especially with regard to the operation of an increasing number of DWCC, is itself a condition resulting from (and constantly renegotiated along) public-private divides: It is a tangible public although not necessarily democratically legitimized decision if publicly established vehicles (DWCC) for the establishment of segregation-at-source and formal recycling on a city-wide scale are organized as a competitive environment on an operational level – which actually refers to the similarly tangible decision to give preference to powerful private interests of large-scale companies, those who messed up Bangalore's waste-related PPPs in the first place – rather than designed as democratically accountable and protected recycling economies in order to really meet all requirements of a public service ensuring the socially, ecologically and economically sustainable handling of metropolitan waste. Under this dominant framework of privatization – lately geared towards a new 'green economy of waste' – the mere focus on the valorization of high-value recyclables tends towards the exclusion of

less affluent groups from the provision of waste-related services, of marginalized actors of the informalized recycling-sector from essential access to waste, and of marginalized communities in peripheral spaces from a healthy environment. For all three groups, these tendencies in the societal handling of waste crystallize around the question of urban citizenship and their very right to exist in urban and semi-urban space. As David Harvey (2008) puts it, this…

> … right to the city is far more than the individual liberty to access urban resources: it is a right to change ourselves by changing the city. It is, moreover, a common rather than an individual right since this transformation inevitably depends upon the exercise of a collective power to reshape the processes of urbanization. The freedom to make and remake our cities and ourselves is, I want to argue, one of the most precious yet most neglected of our human rights. (ibid. 23)

Moreover, this 'right to the city' is exactly what has been exercised by the broad alliance of waste-related civil-society organizations, which has been crucial for the 'garbage crisis' to really unfold its political scope and dimension. This CSO-alliance has been active on a number of different scales, ranging from a downscaled operational level of concrete waste management initiatives, to protests and media activism trespassing local contexts, and further to lobbying, legal actions as well as public relations and awareness-raising activities on a city- and state-politics scale. Yet, its success was not only based on the range of scales spanned by its activities, but it was also founded in the scope of different fields of the societal handling of waste covered by this activities. Largely corresponding to the modes of circulation, distribution and metamorphosis of waste, this included conflicts around the treatment and disposal of urban waste (addressed by ESG); the social practices of classification involved in the implementation of segregation-at-source and the related organization of primary and secondary collection, processing and treatment of waste (addressed within the SWMRT), as well as the role the marginalized recycling-agents of the informalized recycling-sector play therein (addressed by Hasirudala). This exemplifies the importance to overcome the limited focus on isolated and separated parts and pieces of the societal handling of waste, and rather grasp each and every incidence, step and process in its strong interrelatedness. Yet, to really comprehend the contiguous (re-)configuration of Bangalore's waste-society relations, such an endeavor must necessarily take into account the sphere of waste production, the modes of urban spatialization and the modes of transformation of waste within the recycling industry. Thus, an emancipatory and democratically informed urban political ecology of waste, in the long run, has to aim for the rearrangement of the patterns and dynamics in the industrial production and transformation of waste – and of related modes of living –, as much as it needs to address

the modes of social classification and displacement, and circulation and distribution of waste under consideration of spatial dynamics of urbanization processes.

8. Conclusion

By way of conclusion, I will first summarize the coherencies and insights gained from the appraisal of waste-related environmental conflicts and entangled waste-society relations on a downscaled level of Bangalore's urban political ecology of waste. This is followed by an outlook on the continued politics of waste and possible future trajectories of politically engaged knowledge production in the field of an urban political ecology of waste in Bangalore.

8.1. Summary

This diploma thesis has analyzed how the changing flows and the altered materiality of waste – itself caused by profound changes of India's political economy – gave rise to different and at parts contradictory modes of societal handling of waste – itself deeply entangled in uneven and combined capitalist development –, which again caused ecological distribution conflicts in relation with waste's material agency, framed either negatively (representing something dirty, repelling and unorderly, but also materializing as pollution and contamination) or positively (as positive 'use value', resource, as well as valuable work). The simultaneous negation of waste's materiality and privatization of public responsibility for waste by public authorities in Bangalore resulted in a distinct form of disposability in the public handling of the city's waste in the 1990s – characterized by the embezzlement, misappropriation and misuse of public means through the clientelistic and intransparent entanglement of elected representatives and government officials with private service providers. The social practices of classification and displacement involved in this distinct form of disposability corresponded with the accumulation and metamorphosis of waste materials in all kinds of marginal spaces of the unfolding metropolis – especially along the city's periphery, where it revealed its "negative use value" (Gille 2007: 25) in the serious contamination of equally marginalized communities' environmental health. Yet, this imperative of disposability was also met by an enormous informalized workforce trying to survive in urban space by addressing the negated materiality of waste as resource and recycling material. Moreover, this disposability was supplemented by a vibrant scene of waste-related civil-society organizations, which was largely concerned with the cleanliness of their 'residential' neighborhoods and the inadequacy of the formal waste management system – yet, only 'complementing' the "disposal work of the municipalities" (Rosario 1994) –, and in many cases as ignorant of

the contributions of an enormous informalized recycling-sector as the responsible public authorities.

The first phase of privatized disposability gave way to a second wave of privatization, geared towards cleanliness and capital- and technology-intensive investments – what Christine Furedy calls "inappropriate technology" (1994: 87) – in a close interplay of highly selective 'civil-society participation', parastatal agencies bypassing electoral politics and democratic decision making, and international financial institutions advocating and funding "heavy technology" (ibid.) in the course of the BATF and JnNURM. The implementation of privatized door-to-door collection further obstructed marginalized recycling-agents' access to waste and impaired the overall recycling-rates, thus, increasing the overall amount of waste 'diverted to landfills'. The story of Mavallipura is a sobering example of the undaunted prevalence of disposability in the 'modernization' of Bangalore's waste management system – to highlight it with Erik Swyngedouw:

> [T]he power of one social group over another is mediated by and organized through the ways in which nature is transformed and socialized. It is quite clear that the technological argument belongs to the arsenal of discourses, if not ideologies, developed and advocated by those who hold power. Not surprisingly, the technological system itself helps both to maintain the mechanisms of control and exclusion while simultaneously contributing to the construction of an argument that ignores or, at best, minimizes the role of socio-political power. (Swyngedouw 2004:176)

Enmeshed in this second wave of privatization, an increasing tendency towards the (re-) valorization of high-value waste by powerful private companies led to further encroachments of the informalized recycling sector and intensified competition for valuable recycling-materials. This emerging 'green economy of waste' matched with the interests of economically minded NGOs and partly supplemented the vivid and increasingly consolidated scene of waste-related civil-society organizations in its endeavor to rearrange Bangalore's public handling of waste towards formalized segregation-at-source and recycling. I have analyzed the various and at times straightforward conflicting interests of the different actors involved in the reconfiguration of Bangalore's societal handling of waste along four overlapping strategic approaches, aiming at (1.) the embezzlement, misappropriation and misuse of public means along the negative attribution of 'waste', (2.) the profitability of technology- and capital-intensive forms of handling 'waste' as a resource, (3.) the technocratic management 'waste' as 'pollution', and (4.) the ecological and particularly also social sustainability of society's handling of waste under acknowledgement of India's informalized recycling economy.

Yet, under the prevailing imperative of privatized disposability, "waste proliferates (…), the waste disposed of comes back to haunt us in newer forms and ever-greater quantities"

(Gille 2007: 25). I have argued that Bangalore's 'garbage crisis' was in fact produced by the capital- and technology-intensive imperative of privatized disposability dominating the city's public handling of waste throughout the 2000s – constantly impeding the work of an enormous informalized recycling-sector instead of enhancing it. However, the contradictions in Bangalore's societal handling of waste did not bring about the 'garbage crisis' by itself. On the contrary, an accruing broad alliance of diverse waste-related NGOs, CBOs and EJOs, together with the continued resistance of marginalized groups against the contamination of their environmental health, has been crucial for the 'garbage crisis' to really unfold its political scope and dimension in 2012. Subsequently, the alliance of civil-society organizations has been able to strongly influence the 'garbage crisis' management and governance of waste in Bangalore, mainly because it became active on a range of different scales – including juridical activism at the *High Court of Karnataka* as crucial vehicle for policy-making – and because it covered a number of areas affected by the societal handling of waste – from the disposal end of urban waste-flows to the classificatory practices that underlie segregation-at-source, further to the public organization of the actual circulation and distribution of waste in terms of collection, processing and treatment and the role the informalized recycling-sector plays therein. Finally, I have pointed out how the corresponding renegotiation of Bangalore's waste-society relations is unfolding around the distribution of *space for waste*, the contested valorization of high-value recyclables in the *economics of waste*, and the contiguous reconfiguration of *public and private divisions*, reverberating on space for waste and waste economics through the political regulation of the societal handling of waste.

8.2. Outlook

Much has happened since Bangalore's waste-related environmental conflicts escalated in the summer months of 2012. While it was prerequisite to stick to the timeframe imposed by the empirical material to provide for a marked out process of analysis, it is equally reasonable to extend this limited glimpse in time for a moment, when engaging in the outlook on the relations entangled in the '*garbage crisis*'.

Bangalore's '*garbage crisis*' continued to have an effect throughout 2013, prolonged the upheaval of the city's *waste scapes*, and witnessed the resignation of – therewith interim – *Commissioner* Rajiv Goel and the return of former *Commissioner* M.K. Shankaralinge Gowda. In February 2013, a huge expo themed '*Wake Up Clean Up Bengaluru*' was staged under the patronage of the BBMP, in order to draw attention of experts and media

alike in an attempt to solve the '*garbage crisis*' once and for all. While the subsequent considerations were again marked by the invisibility of the informalized recycling sector, they gave rise to one more model case for a decentralized formal segregation-at-source and recycling scheme – '*Kasa Muktha*' (Malusare 2013). The simultaneous continuation of privatized disposability was exemplified by one more plan to reopen Mavallipura along with major investments into a '*Waste to Energy*' plant there – proposed by *Ramky* and BBMP officials on August 1st 2013 (Deccan Herald 1.8.2013). This proposal came shortly after a contentious new draft version of *Municipal Solid Waste (Management and Handling Rules) 2013* were announced by the *Ministry of Environment and Forests* (MoEF) in Delhi. The amendment would have strongly emphasized disposal and incineration technologies over the establishment of formalized segregation-at-source and recycling. Yet, in a striking move, the *High Court of Karnataka*, in the course of the continued combined case of waste-related PILs in Bangalore, successfully obtained an adjournment of the public consultation process for the proposed new law and subsequently directed the *Ministry of Environment and Forests* to withdraw from this draft version, as it would impede the progressive waste management policies established in the course of Bangalore's '*garbage crisis*' (Suchitra 2013a; Deccan Herald 13.11.2013; Suchitra 2013b). Accordingly, the combined case of waste-related PILs is a remarkable example of how an alliance of waste-related civil-society organizations not only repeatedly defeated the enforcement of pronounced forms of disposability and shaped Bangalore's waste management policies through the authority of the *High Court of Karnataka*, but also managed to prevent or at least retard a reactionary amendment of the *Municipal Solid Waste (Management and Handling) Rules 2000* on a national level, by way of using the *High Court's* power to issue directives – indicating how the reconfigurations of waste-society relations on a city scale do definitely have the potential to contribute to subsequent changes on much larger scales. Yet, the crucial factors for a socially and ecologically sustainable rearrangement of the city's waste-society relations lie in tangible details, like the concrete organization of an upscaled formal decentralized segregation-at-source and recycling scheme. To say it in the words of one informant:

> [The] recycling industry itself will survive and will be better (…). But, weather the people on the ground level, like waste pickers, will be eliminated, that's a big thing, (…) we have to wait and see. (Int4)

Possible future trajectories of politically engaged knowledge production in the field of an urban political ecology of waste, therefore, should first and foremost ask which 'generators', which recycling-agents, which marginalized communities and which waste

materials are left behind, excluded, contaminated or displaced on the way to a 'modernized' waste management system? Moreover, such future research must include the analysis of modes of waste-production and its transformation in addition to modes of classification, displacement and circulation of waste, all with respect to the spatial dynamics of urbanization processes.

Regarding the spatiality of waste, this could include research on the uneven distribution of (decentralized) space for waste between older congested and newer spacious parts of the city as well as the dispersion of waste along other vital urban metabolic flows (like traffic and drainage systems, cannels, and ponds). Also, this could include research on the uneven distribution of waste-related infrastructure and services as well as the relatively changing density of informal (scrap shops), formal and privatized space for waste between slum areas, poorer quarters and affluent neighborhoods. Moreover, investigations into the role of residents welfare associations (RWAs) and 'bulk waste generators' in the selective establishment of waste-related services could provide interesting insights into the renegotiation of the figurative spatiality of waste on a downscaled level and in close interrelation with the concrete reconfigurations of public and private divides of waste in Bangalore.

With respect to the materiality of waste, future research could focus on 'low-value' recycling materials and the conditions of their production, generation, distribution, transformation, revaluation and recycling, and further, how they can be made use of for the informalized recycling sector together with other blind spots and other realms of 'disposability' like the enormous amounts of organic wastes. Yet, also the unequal access to and the uneven allocation of high-value waste materials are in urgent need of further investigations. Both perspectives on the materiality of waste could be enhanced by further research on the structure of as well as patterns and dynamics in the upscaled formal and informalized recycling industries, also in order to map out potential synergies and convergences with efforts to organize marginalized recycling-agents.

Moreover, with respect to the politics of privatization, such research questions could be merged by an explicit research-focus on the dislocations involved in processes of privatization of the public handling of waste in Bangalore. This would necessitate further investigations to which extend powerful large-scale private companies are able to dominate the evolving public recycling-sector (notably materializing in the shares of DWCCs). Regarding *wasted public private divides*, and with direct reference to the remarkable juridical activism indicated above, this research-focus would also have to investigate the

consequences of *High Court* led policy making by civil-society organizations for trajectories of urban democracy and urban citizenship in the metropolis. This could be complemented by further research on the institutional settings and forms potentially unfolding as supportive structures for the organizing of the informalized recycling-sector, including further mappings of the relationship between CSO's and informalized recycling-agents, as answer to processes of privatization.

9. Sources

Aglietta, Michel (1979): *A Theory of Capitalist Regulation. The US Experience*. London: New Left Books.

Ahmed, Shafiul Azam / Ali, Mansoor (2004): Partnerships for solid waste management in developing countries: linking theories to realities. In: *Habitat International*, 28(3), pp. 467–79.

Ahmed, Waquar (2011): From Mixed Economy to Neoliberalism: Class and Caste in India's Policy Transition. In: Ahmed, Waquar / Kundu, Amitabh / Peet, Richard (eds.): *India's New Economic Policy. A Critical Analysis*. Jaipur: Rawat Publications, pp. 33-56

Ahuja, Ravi (2013): Informalisierung und Arbeitskämpfe in Indien. Eine zeithistorische Perspektive auf die Gegenwart. Conference paper presented at ‚*Streik?! Annäherung an den Bedeutungswandel von Arbeitskämpfen*' in Hamburg, June 13th -14th 2013.

Anjaria, Jonathan Sapiro / McFarlane, Colin (eds.) (2011): *Urban navigations: politics, space, and the city in South Asia*. New Delhi: Routledge India.

Armiero, Marco (2008): Seeing Like a Protester: Nature, Power, and Environmental Struggles. In: *Left History*, 13(1), pp. 59–76.

Baud, Isa / Grafakos, S. / Hordijk, M. / Post, J. (2001): Quality of Life and Alliances in Solid Waste Management: Contributions to Urban Sustainable Development. In: *Cities*, 18(1), pp. 3–12.

Bauman, Zygmunt (2004): *Wasted Lives. Modernity and its Outcasts*. Cambridge, Malden: Polity Press.

Baviskar A. (2002): The Politics of the City. In: *Seminar*, 516, pp. 40-42

Beukering, Pieter van / Sehker, Madhushree / Gerlagh, Reyer / Kumar, Vijay (1999): Analysing Urban Solid Waste in Developing Countries: a Perspective on Bangalore, India. *CREED Working Paper* No. 24. London, Amsterdam: CREED - Collaborative Research in the Economics of Environment and Development.

Binion, Eric / Gutberlet, Jutta (2012): The effects of handling solid waste on the wellbeing of informal and organized recyclers: a review of literature. In: *International Journal of Occupational and Environmental Health*, 18(1), pp. 43-52

Bogner, Alexander / Menz, Wolfgang (2005): Das theoriegenerierende Experteninterview. Erkenntnisinteresse, Wissensformen, Interaktion. In: Bogner, Alexander / Littig, Beate / Menz, Wofgang (eds.): *Das Experteninterview. Theorie, Methoden, Anwendung*. Wiesbaden: VS Verlag für Sozialwissenschaften, pp. 33–70.

Brah, Avtar (1996): *Cartographies of Diaspora: Contesting Identities*. London, New York: Routledge.

Brand, Ulrich (2010): Konflikte um die Global Governance biologischer Vielfalt. Eine historisch-materialistische Perspektive. In: Feindt, Peter H. / Saretzki, Thomas (eds.): *Umwelt- und Technikkonflikte*. Wiesbaden: VS Verlag für Sozialwissenschaften, pp. 239–55.

Brand, Ulrich / Christoph Görg (2003): *Postfordistische Naturverhältnisse. Konflikte um genetische Ressourcen und die Internationalisierung des Staates*. Münster: Westfälisches Dampfboot.

Brand Ulrich / Görg Christoph / Hirsch Joachim / Wissen Markus (2008): *Conflicts in Global Environmental Regulation and the Internationalization of the State. Contested Terrains*. London: Routledge

Brand, Ulrich / Wissen, Markus (2012a): Crisis and continuity of capitalist society-nature relationships: The imperial mode of living and the limits to environmental governance. In: *Review of International Political Economy*, *iFirst (2nd Aug 2012)*: pp. 1–25.

Brand, Ulrich / Wissen, Markus (2012b): Global Environmental Politics and the Imperial Mode of Living: Articulations of State–Capital Relations in the Multiple Crisis. In: *Globalizations*, 9(4), pp. 547–60.

Brüsemeister, Thomas (2000): Soziologische Beobachtung. In: id. (ed.): *Qualitative Forschung*. Wiesbaden: Westdeutscher Verlag, pp. 81–115.

Butler, Judith (2011): Bodies in Alliance and the Politics of the Street. In: *Transversal multilingual* 10/2011. Online available at: http://eipcp.net/transversal/1011/butler/en [January 28th 2014]

Castree, Noel (2000): Marxism and the Production of Nature. In: *Capital & Class*, 24(3), pp. 5–36.

Chengappa, Chaya (2013): Organizing Informal Waste Pickers: A Case Study of Bengaluru, India. Cambridge, Manchester: WIEGO - Women in Informal Employment: Globalizing and Organizing. Online available at: http://www.inclusivecities.org/wp-content/uploads/2013/08/Chengappa_Bengaluru_Waste_Pickers.pdf [January 29th 2014]

Chamaraj, Kathyayaini / Rao, Prasanna (2006): Functioning of Wards Committees in Bangalore: A Case Study. In: Sivaramakrishnan, K.C. (ed.): *People's Participation in Urban Governance*. New Delhi: Ashok Kumar Mittal Concept Publishing Company, pp. 57-137.

Charmaz, Kathy (2006): *Constructing Grounded Theory. A Practical Guide Through Qualitative Analysis*. London, Thousand Oaks, New Delhi: Sage Publications.

Coelho, Karen / Kamath, Lalitha / Vijayabaskar, M. (eds.) (2013): *Participolis. Consent and Contention in Neoliberal Urban India*. New Delhi: Routledge India.

Crang, Mike (2010): The death of great ships: photography, politics, and waste in the global imaginary. In: *Environment and Planning A*, 42(5), pp. 1084–1102.

Demaria, Federico (2010): Shipbreaking at Alang–Sosiya (India): An Ecological Distribution Conflict. In: *Ecological Economics*, 70(2), pp. 250–260.

Desai, Renu / Sanyal, Romola (eds.) (2012): *Urbanizing Citizenship: Contested Spaces in Indian Cities*. Thousand Oaks, New Delhi: SAGE.

Dietz, Kristina / Wissen, Markus (2009): Kapitalismus und "natürliche Grenzen". Eine kritische Diskussion ökomarxistischer Zugänge zur ökologischen Krise. In: *Prokla*, 156, pp. 351–69.

Douglas, Mary (1970)[1966]: *Purity and Danger. An Analysis of Concepts of Pollution and Taboo*. Harmondsworth, Baltimore: Penguin Books.

Drèze, Jean / Sen, Amartya (2008 [2005]): *India. Development and Participation*. Oxford, New York, New Delhi: Oxford University Press, 5th impression.

Evans, David (2011): Review Essay: Waste Matters. In: *Sociology*, 45(4), pp. 707–12.

Fischer-Kowalski, Marina / Weisz, Helga (1999): Society as Hybrid Between Material and Symbolic Realms. Toward a Theoretical Framework of Society-Nature Interaction. In: *Advances in Human Ecology*, 8, pp. 215–51.

Flick, Uwe (2009): *Sozialforschung: Methoden und Anwendungen*. Reinbek b.H.: Rowohlt.

Forsyth, Tim (2006): Cooperative environmental governance and waste-to-energy technologies in Asia. In: *International Journal of Technology Management & Sustainable Development*, 5(3), pp. 209–20.

Forsyth, Tim (2008): Political ecology and the epistemology of social justice. In: *Geoforum*, 39(2), pp. 756–64.

Fritsch, Katharina / Schlitz, Nicolas (2013): Space Intruders — Analyzing Viennese squats from radical-democratic and biopolitical perspectives. In: *Transversal multilingual* 10/2011. Online available at: http://eipcp.net/transversal/1011/fritsch-schlitz/en [January 29th 2014]

Ghosh, Asha (2005): Public-Private or a Private Public? Promised Partnership of the Bangalore Agenda Task Force. In: *Economic and Political Weekly*, pp. 4914–22.

Gidwani, Vinay / Reddy, Rajyashree N. (2011): The Afterlives of "Waste": Notes from India for a Minor History of Capitalist Surplus. In: *Antipode*, 43(5), pp. 1625–58.

Gill, Kaveri (2009): *Of Poverty and Plastic: Scavenging and Scrap Trading Entrepreneurs in India's Urban Informal Economy*. New Delhi: Oxford University Press.

Gille, Zsuzsa (2007): *From the Cult of Waste to the Trash Heap of History: The Politics of Waste in Socialist and Postsocialist Hungary*. Bloomington: Indiana University Press.

Gille, Zsuzsa (2010): Actor networks, modes of production, and waste regimes: reassembling the macro-social. In: *Environment and Planning A*, 42(5), pp. 1049–64.

Giroux, Henry A. (2006): Reading Hurricane Katrina: Race, Class, and the Biopolitics of Disposability. In: *College Literature*, 33(3), pp. 171-196.

Gläser, Jochen / Laudel, Grit (2006): Auswertung von Experteninterviews mit der qualitativen Inhaltsanalyse. In: ids. (eds.): *Experteninterview und qualitative Inhaltsanalyse als Instrumente rekonstruierender Untersuchungen*. Wiesbaden: VS Verlag für Sozialwissenschaften, pp. 191–252.

Goldman, Michael (2011): Speculating on the Next World City. In: Roy, Ananya / Ong, Aihwa: *Worlding Cities. Asian Experiments and the Art of Being Global*. Malden, Oxford: Wiley-Blackwell, pp. 229-258

Görg, Christoph (2003): *Regulation der Naturverhältnisse. Zu einer kritischen Theorie der ökologischen Krise*. Münster: Westfälsches Dampfboot.

Görg, Christoph (2011): Societal Relationships with Nature: A Dialectical Approach to Environmental Poltics. In: Biro, Andrew (ed.): *Critical Ecologies. The Frankfurt School and Contemporary Environmental Crises*. Toronto: University of Toronto Press, pp. 43–72.

Gregson, Nicky / Crang, Mike (2010): Materiality and waste: inorganic vitality in a networked world. In: *Environment and Planning A*, 42(5), pp. 1026–32.

Gregson, Nicky / Crang, Mike / Ahamed, Farid / Akhter, N. / Ferdous, R. (2010): Following things of rubbish value: End-of-life ships, "chock-chocky" furniture and the Bangladeshi middle class consumer. In: *Geoforum*, 41(6), pp. 846–54.

Haberl, Helmut / Fischer-Kowalski, Marina / Krausmann, Fridolin / Martinez-Alier, Joan / Winiwarter, Verena (2011): A socio-metabolic transition towards sustainability? Challenges for another Great Transformation. In: *Sustainable Development*, 19(1), pp. 1–14.

Hammersley, Martyn / Atkinson, Paul (2007): *Ethnography. Principles in practice.* London, New York: Routledge, 3rd edition.

Harvey David (2008): The Right to the City. In: *New Left Review*, 53 (Sept/Oct), pp. 23-40.

Heitzman, James (2004): *Network City: Planning the Information Society in Bangalore*. New Delhi: Oxford University Press.

Heynen, Nik / Kaika, Maria / Swyngedouw, Erik (2006): Urban political ecology. Politicizing the production of urban natures. In: ids. (eds.): *In the Nature of Cities. Urban political ecology and the politics of urban metabolism*. London, New York: Routledge, pp. 1-19.

Hopf, Christel (2003): Qualitative Interviews – ein Überblick. In: Flick, Uwe / Kardorff, Ernst v. / Steinke, Ines (eds): *Qualitative Forschung. Ein Handbuch*. Reinbek b.H.: Rowohlt, pp. 349-360.

Horton, Stephen (1997): Value, waste and the built environment: A marxian analysis. In: *Capitalism Nature Socialism*, 8(2), pp. 127 - 139.

Kabeer, Naila (2008): *Mainstreaming gender in social protection for the informal economy*. London: Commonwealth Secretariat.

Karlsson, Bengt G. (2011): *Unruly Hills: A Political Ecology of India's Northeast*. New Delhi: Esha Béteille Social Science Press / Orient Blackswan.

Klinger, Cornelia / Knapp, Gudrun-Axeli (2007): Achsen der Ungleichheit — Achsen der Differenz: Verhältnisbestimmungen von Klasse, Geschlecht, »Rasse«/Ethnizität. In: Klinger, Cornelia/Knapp, Gudrun-Axeli/Sauer, Birgit (eds.) (2007): *Achsen der Ungleichheit. Zum Verhältnis von Klasse, Geschlecht und Ethnizität*. New York, Frankfurt: Campus Verlag, pp. 19-41.

Köhler, Bettina / Wissen, Markus (2010): Gesellschaftliche Naturverhältnisse. Ein kritischer theoretischer Zugang zur ökologischen Krise. In: Lösch, Bettina / Thimmel, Andreas (eds.): *Kritische politische Bildung. Ein Handbuch*. Schwalbach: Wochenschau Verlag, pp. 217–27.

Lakshmikantha, H. (2006): Report on waste dump sites around Bangalore. In: *Waste Management*, 26(6), pp. 640–50.

Lamnek, Siegfried (2005): Inhaltsanalyse. In: id. (ed.): *Qualitative Sozialforschung. Lehrbuch*. Weinheim / Basel: Beltz Verlag, pp. 478–546.

Lüders, Christian (2003): Beobachten im Feld und Ethnographie. In: Flick, Uwe / Kardorff, Ernst v. / Steinke, Ines (eds): *Qualitative Forschung. Ein Handbuch*. Reinbek b.H.: Rowohlt, pp. 384-401.

Martinez-Alier, Joan (2002): *The Environmentalism of the Poor. A Study of Ecological Conflicts and Valuation*. Cheltenham, Northampton: Edward Elgar.

Martinez-Alier, Joan (2007): Social metabolism and environmental conflicts. In: Panitch, Leo / Leys, Colin (eds.): *Coming to Terms with Nature. Socialist Register 2007*. London: Merlin Press, pp. 273-93

Martinez-Alier, Joan (2009): Social Metabolism, Ecological Distribution Conflicts, and Languages of Valuation. In: *Capitalism Nature Socialism*, 20(1), pp. 58–87.

Martinez-Alier, Joan / Kallis, Giorgos / Veuthey, Sandra / Walter, Mariana / Temper, Leah (2010): Social Metabolism, Ecological Distribution Conflicts, and Valuation Languages. In: *Ecological Economics*, 70(2), pp. 153–8.

Matthews, Emily / Amann, Christof / Bringezu, Stefan / Fischer-Kowalski, Marina / Hüttler, Walter / Kleijn, René / Moriguchi, Yuichi / Ottke, Christian / Rodenburg, Eric / Rogich, Don / Schandl, Heinz / Schütz, Helmut / Van der Voet, Ester / Weisz, Helga (2000): *The Weight of Nations. Material Outflows from Industrial Economies*. Washington: WORLD RESOURCES INSTITUTE.

Medina, Martin (2008): *The Informal Recycling Sector in Developing Countries: Organizing Waste Pickers to Enhance their Impact*. Washington: World Bank

Moore, Sarah A. (2012): Garbage matters: Concepts in new geographies of waste. In: *Progress in Human Geography*, 36(6), pp. 780–99.

Mutha, Nitin H. / Patel, Martin / Premnath, V. (2006): Plastics materials flow analysis for India. In: *Resources, Conservation and Recycling*, *47*(3), pp. 222–44.

Nair, Janaki (2008): *The Promise of the Metropolis: Bangalore's Twentieth Century*. Oxford, New York, New Delhi: Oxford University Press, 2nd edition.

Naveen K. R. / Hampole Nandini (2004): Swacha Bangalore: A New Way of Managing Waste in Urban Areas. CCS Research Internship Papers 2004. New Delhi: Centre for Civil Society (CCS). Online available at: http://ccs.in/internship_papers/2004/5.%20NPM%20for%20swacha%20blore_Nandini.pdf [January 29th 2014]

Novy, Andreas / Beinstein, Barbara / Voßemer, Christiane (2008): Methodologie transdisziplinärer Entwicklungsforschung. Aktion & Reflexion. Texte zur Transdisziplinären Entwicklungsforschung und Bildung. Heft 2. Wien: Paulo Freire Zentrum.

Pfadenhauer, Michaela (2005): Auf gleicher Augenhöhe reden. Das Expertinterview – ein Gespräch zwischen Experte und Quasi-Experte. In: Bogner, Alexander / Littig, Beate / Menz, Wolfgang (eds.): *Das Experteninterview. Theorie, Methoden, Anwendung*. Wiesbaden: VS Verlag für Sozialwissenschaften, pp. 113-130.

Ramachandra, T.V. / Bachamanda, Shruthi (2006): Environmental Audit of Municipal Solid Waste Management. Technical Report 118. Bangalore: Centre for Ecological Sciences, Indian Institute of Science. Online available at: http://www.ces.iisc.ernet.in/biodiversity/pubs/ces_tr/TR118_SPoonancha/Shruthi_report_12_TVR_r_230407.pdf [or] http://www.ces.iisc.ernet.in/biodiversity/pubs/ces_tr/TR118_SPoonancha/Index.htm [January 29th 2014]

Robbins, Paul (2004): *Political Ecology. A critical introduction*. Malden MA: Blackwell.

Rosario, Anselm (1994): A decentralized Approach to Solid Waste Management. In: *Appropriate Technology*, 21(3), pp. 29.

Roy, Ananya / Ong, Aihwa (eds.) (2011): *Worlding Cities: Asian Experiments and the Art of Being Global*. Malden, Oxford: Wiley-Blackwell.

Samson, Melanie (ed.)(2009): *Refusing to be Cast Aside: Waste Pickers Organizing Around the World*. Cambridge: WIEGO - Women in Informal Employment: Globalizing and Organizing.

Scheinberg, Anne / Anschütz, Justine (2006): Slim pickin's: Supporting waste pickers in the ecological modernization of urban waste management systems. In: *International Journal of Technology Management & Sustainable Development*, 5(3), pp. 257–70.

Schöne, Helmar (2005): Die teilnehmende Beobachtung als Datenerhebungsmethode in der Politikwissenschaft. Methodologische Reflexion und Werkstattbericht. In: *Historical Social Research*, 30(1), pp. 168–99.

Schwartz-Shea, Peregrine / Yanow, Dvora (2012): *Interpretive research design: Concepts and processes*. New York: Routledge.

Sharholy, Muffed / Ahmad, Kafeel / Mahmood, Gauhar / Trivedi, R. C. (2008): Municipal solid waste management in Indian cities – A review. In: *Waste Management*, 28(2), pp. 459–67.

Singh, Simron J. / Krausmann, Fridolin / Gingrich, Simone / Haberl, Helmut / Erb, Karl-Heinz / Lanz, Peter / Martinez-Alier, Joan / Temper, Leah (2012): India's biophysical economy, 1961–2008. Sustainability in a national and global context. In: *Ecological Economics*, 76, pp. 60–9.

Smith, Neil (2008)[1984/1990]: The Production of Nature. In: Bauder, Haraldand / Engel-Di Mauro, Salvatore (eds.): *Critical Geographies: A Collection of Readings*. Kelowna: Praxis (e)Press, pp. 368-401

Sudhira, H. S. / Ramachandra, T. V. / Subrahmanya, M. H. B. (2007): City profile Bangalore. In: *Cities*, 24(5), pp. 379–90.

Swyngedouw, Eric (2004): *Social Power and the Urbanization of Water. Flows of Power*. Oxford, New York: Oxford University Press.

Swyngedouw, Eric / Heynen, Nik (2003): Urban political ecology, justice and the politics of scale. In: *Antipode*, 35(5), pp. 898–918.

Véron, René (2006): Remaking urban environments: the political ecology of air pollution in Delhi. In: *Environment and Planning A*, 38(11), pp. 2093–109.

Wilson, David C. / Araba, Adebisi O. / Chinwah, Kaine / Cheeseman, Christopher R. (2009): Building recycling rates through the informal sector. In: *Waste Management*, 29, 629-635

Wissen, Markus (2011): *Gesellschaftliche Naturverhältnisse in der Internationalisierung des Staates. Konflikte um die Räumlichkeit staatlicher Politik und die Kontrolle natürlicher Ressourcen*. Münster: Westfälisches Dampfboot.

Witzel, Andreas (2000): The Problem-Centered Interview. In: *FQS - Forum: Qualitative Social Research*, Vol. 1, No. 1, Art. 22.

Zhu, Da / Asnani, P.U. / Zurbrügg, Chris / Anapolsky, Sebastian / Mani, Shyamala (2008): *Improving Municipal Solid Waste Management in India: A Sourcebook for Policy Makers and Practitioners*. Washington: World Bank

Zurbrügg, Christian / Drescher, Silke / Patel, Almitra / Sharatchandra, H. C. (2004): Decentralised composting of urban waste – an overview of community and private initiatives in Indian cities. In: *Waste Management*, 24(7), pp. 655–62.

9.1. Documents by Government Agencies, Institutions and CSO's

BBMP - Bruhat Bengaluru Mahanagara Palike (2008): Solid Waste Management in Bruhat Bangalore Mahanagara Palike.
Online available at: http://218.248.45.169/download/health/swm.pdf [January 29th 2014]

BBMP - Bruhat Bengaluru Mahanagara Palike (2011): Request for Proposal Document (RFP): Municipal Solid Waste Management.
Online available at: http://218.248.45.169/download/engineering/tender1.pdf [January 29th 2014]

BBMP - Bruhat Bengaluru Mahanagara Palike (2012a): Public Notice, 15.9.2012: New Look for Bangalore. The Power is in our Hands: Segregate Waste at Home.
Online available at: http://218.248.45.169/download/engineering/SWM-notice.pdf [January 29th 2014]

BBMP - Bruhat Bengaluru Mahanagara Palike (2012b): Public Notice, 20.9.2012. Online available at:
http://218.248.45.169/download/engineering/SWM%20PublicNotifn%28Bulk%20Genr%29.pdf [January 29th 2014]

BBMP - Bruhat Bengaluru Mahanagara Palike (2012c): Note to Zonal Commissioners, 24.9.2012. Online available at:
http://218.248.45.169/download/engineering/SWMnotetoJC-eng.pdf [January 29th 2014]

BBMP - Bruhat Bengaluru Mahanagara Palike (2012d): Letter to the Organic Farming Commission, 29.9.2012. Online available at:
http://218.248.45.169/download/engineering/Permissionletter.pdf [January 29th 2014]

CDP – City Development Plan Vol.1 (2006). Bangalore: KUIDFC - Karnataka Urban Infrastructure Development & Finance Corporation, JnNURM. Online available at: http://www.kuidfc.com/WEBSITE/WebPage.nsf/lookupAllCat/Projects-J%20N%20N%20U%20R%20M-CDP-Bengaluru [January 29th 2014]

CDP – City Development Plan Vol.1 (2009). Bangalore: KUIDFC - Karnataka Urban Infrastructure Development & Finance Corporation, JnNURM. Online available at: http://www.kuidfc.com/WEBSITE/WebPage.nsf/lookupAllCat/Projects-J%20N%20N%20U%20R%20M-CDP-Bengaluru [January 29th 2014]

CPCB – Central Pollution Control Board (2007): Management of Municipal Solid Waste. Delhi: Ministry of Environment & Forest. Online available at:
http://www.cpcb.nic.in/divisionsofheadoffice/pcp/management_solidwaste.pdf [January 29th 2014]

CPCB – Central Pollution Control Board (2012): Status Report on Municipal Solid Waste Management. Delhi: Ministry of Environment & Forest. Online available at: http://www.cpcb.nic.in/divisionsofheadoffice/pcp/MSW_Report.pdf [January 29th 2014]

ERM – Environmental Resources Management India (1995): Status of Solid Waste Disposal in Metro Cities in India. New Delhi.

ESG - Environmental Support Group (2009): Why Phase Out Ramky Landfill at Mavallipura. Press Release, 14.10.2009. Online available at: http://www.esgindia.org/campaigns/mavallipura/press/ramky-landfill-mavallipura-must-be-phase.html [January 29th 2014]

ESG - Environmental Support Group (2010a): Bangalore's Toxic Legacy. Investigating Mavallipura's Illegal Landfills. Online available at: http://www.esgindia.org/campaigns/mavallipura/resources/bangalores-toxic-legacy-investigating-ma.html [January 29th 2014]

ESG - Environmental Support Group (2010b): Bangalore's garbage killing people in Mavallipura. Villagers refuse to cremate young victim's body. Press Release, 23.7.2010. Online available at: http://www.esgindia.org/campaigns/mavallipura/press/bangalores-garbage-killing-people-mavall-span-classdate-display-single23-july-201.html [January 29th 2014]

ESG - Environmental Support Group (2012a): 2 more die, yet no one cares for Mavallipura's people affected by Banaglore's waste. Press Release, 30.6.2012. Online available at: http://www.esgindia.org/campaigns/press/2-more-die-yet-few-care-mavallipuras-peo.html [January 29th 2014]

ESG - Environmental Support Group (2012b): KSPCB shuts down Ramky's SWM Landfill at Mavallipura. Press Release, 12.7.2012. Online available at: http://www.esgindia.org/campaigns/press/kspcb-shuts-down-ramkys-swm-landfill-mav.html [January 29th 2014]

ESG - Environmental Support Group (2012c): Mavallipura has woken wasteful Bangalore from its slumber. Press Release, 17.7.2012. Online available at: http://www.esgindia.org/campaigns/press/landfills-arent-solution-bangalores-wast.html [January 29th 2014]

ESG - Environmental Support Group (2012d): Landfills aren't the solution to Bangalore's 'waste' problem. Segregation of 'waste' at source is the only way forward - Joint Statement. Press Release, 23.8.2012. Online available at: http://www.esgindia.org/campaigns/press/landfills-arent-solution-bangalores-wast.html [January 29th 2014]

Janaagraha (n.d.): Matchmaking Form on decentralized dry waste collection centers setup through public-private partnership (PPP). Prepared for the Abdul Latif Jameel Poverty Action Lab (J-PAL) Urban Service Initiative (USI). Online available at: http://www.povertyactionlab.org/sites/default/files/documents/USI%20%20Matchmaking%20Form_SWMRT%20-Janaagraha_India.pdf [January 29th 2014]

KSPCB - Karnataka State Pollution Control Board (n.d.): Implementation of Municipal Solid Waste (Management and Handling) Rules, 2000 - IN KARNATAKA. Online available at: http://kspcb.kar.nic.in/MSW%20Rules.pdf [January 29th 2014]

KSPCB - Karnataka State Pollution Control Board (2012a): Notice, 11.7.2012: Non-Compliance to the Conditions stipulated and directions issued as per provision of Environmental (Protection) Act, 1986 and Rule (6) of MSW Rules, 2000. Online available at: http://www.esgindia.org/sites/default/files/education/community-outreach/press/kspcb-mavallipura-ramky-landfill-closure.pdf [January 29th 2014]

KSPCB - Karnataka State Pollution Control Board (2012b): Letter to the BBMP Commissioner, 28.9.2012. Online available at: http://218.248.45.169/download/engineering/Letter%20to%20Chairman.pdf [January 29th 2014]

NSWAI – National Solid Waste Association India (2001). Online available at: http://www.nswai.com/databank.php [January 29th 2014]

Supreme Court (1999): *Report of the Supreme Court Appointed Committee on Solid Waste Management in Class I Cities in India*. Supreme Court of India, New Delhi.

UN-HABITAT - United Nations Human Settlements Programme (2010): *Solid Waste Management in the World's Cities: Water and Sanitation in the world's cities 2010*. London, Washington DC: UN-HABITAT/Earthscan. Online available at: http://site.ebrary.com/lib/alltitles/docDetail.action?docID=10392047 [January 29th 2014]

World Bank (1999): *What a Waste: Solid Waste Management in Asia*. Washington: World Bank.

9.2. Newspaper and Magazine Articles

Afshan, Yasmeen (2005): BMP invites tenders for garbage clearance. In: *The Hindu*, 17.12.2005. Online available at: http://www.hindu.com/2005/12/17/stories/2005121722620300.htm [January 29th 2014]

Deccan Herald, 1.8.2013: Mavallipura landfill may reopen soon. Online available at: http://www.deccanherald.com/content/348571/mavallipura-landfill-may-reopen-soon.html [January 29th 2014]

Deccan Herald, 13.11.2013: No new norms for solid waste management. Online available at: http://www.deccanherald.com/content/368876/no-norms-solid-waste-management.html [January 29th 2014]

Harris, Gardiner (2012): India's Plague, Trash, Drowns its Garden City during Strike. In: *New York Times*, 26.10.2012. Online available at: http://www.nytimes.com/2012/10/27/world/asia/indias-plague-trash-drowns-bangalore-its-garden-city.html?pagewanted=all&_r=0 [January 29th 2014]

The Hindu, 4.7.2012: Mavallipura issue rocks BBMP Council again. Online available at: http://www.thehindu.com/todays-paper/tp-national/tp-karnataka/mavallipura-issue-rocks-bbmp-council-again/article3600374.ece [January 29th 2014]

The Hindu, 13.7.2012: Pollution board closes Mavallipura landfill. Online available at: http://www.thehindu.com/todays-paper/tp-national/tp-karnataka/pollution-board-closes-mavallipura-landfill/article3633751.ece [January 29th 2014]

The Hindu, 1.8.2012: High Court notice to government on segregation of waste at source. Online available at: http://www.thehindu.com/news/national/karnataka/high-court-notice-to-government-on-segregation-of-waste-at-source/article3708796.ece [January 29th 2014]

The Hindu, 10.8.2012: Cracks in pourakarmikas union; garbage collection may resume in a few areas. Online available at: http://www.thehindu.com/news/cities/bangalore/cracks-in-pourakarmikas-union-garbage-collection-may-resume-in-a-few-areas/article3749379.ece [January 29th 2014]

The Hindu, 22.8.2012: Added garbage disposal costs set to be dumped on citizens. Online available at: http://www.thehindu.com/news/cities/bangalore/added-garbage-disposal-costs-set-to-be-dumped-on-citizens/article3804639.ece [January 29th 2014]

The Hindu, 23.8.2012: Mavallipura landfill to reopen today. Online available at: http://www.thehindu.com/todays-paper/mavallipura-landfill-to-reopen-today/article3809645.ece [January 29th 2014]

The Hindu, 25.8.2012: Vox Pop on Bangalore's garbage. Online available at: http://www.thehindu.com/news/cities/bangalore/vox-pop-on-bangalores-garbage/article3820141.ece [January 29th 2014]

The Hindu, 26.8.2012: 'We have located eight landfills'. Online available at: http://www.thehindu.com/todays-paper/tp-national/tp-karnataka/we-have-located-eight-landfills/article3823160.ece [January 29th 2014]

The Hindu, 28.8.2012: Mandur doesn't want city's trash either. Online available at: http://www.thehindu.com/news/cities/bangalore/mandur-doesnt-want-citys-trash-either/article3830670.ece [January 29th 2014]

The Hindu, 29.8.2012a: 'Garbage crisis not reason for transfer'. Online available at: http://www.thehindu.com/news/cities/bangalore/garbage-crisis-not-reason-for-transfer/article3834599.ece [January 29th 2014]

The Hindu, 29.8.2012b: Micro-management is my mantra: new BBMP chief. Online available at: http://www.thehindu.com/news/national/karnataka/micromanagement-is-my-mantra-new-bbmp-chief/article3834628.ece [January 29th 2014]

The Hindu, 23.10.2012: K.R. Market is a slushy mess. Online available at: http://www.thehindu.com/news/cities/bangalore/kr-market-is-a-slushy-mess/article4023555.ece [January 29th 2014]

The Hindu, 27.10.2012: Mavallipura landfill will be reopened soon, says Shettar. Online available at: http://www.thehindu.com/news/cities/bangalore/mavallipura-landfill-will-be-reopened-soon-says-shettar/article4035642.ece [January 29th 2014]

Malusare, Nikita (2013): 'Kasa Muktha' could mark new era in Bangalore's waste management. In: *Citizen Matters*, 23.7.2013. Online available at: http://bangalore.citizenmatters.in/articles/kasa-muktha-waste-segregation-22-wards-pilot [January 29th 2014]

Ramani, Chitra V. (2012): It took a community to raise a stink. In: *The Hindu*, 2.10.2012. Online available at: http://www.thehindu.com/news/cities/bangalore/it-took-a-community-to-raise-a-stink/article3957820.ece [January 29th 2014]

Ranganna, T. S. / Ramani, Chitra V. (2013): A daunting task ahead. In: *The Hindu*, 23.4.2013. Online available at: http://www.thehindu.com/news/cities/bangalore/a-daunting-task-ahead/article4644642.ece [January 29th 2014]

RoyChoudhury, S. (2002): A struggle in Bangalore. In: *Frontline*, Volume 19 (Issue 5). Online available at: http://www.frontline.in/static/html/fl1905/19050380.htm [January 29th 2014]

Suchitra, M. (2013a): Court stays proposed amendments to solid waste management rules. In: *Down To Earth*, 21. Oktober 2013. Online available at: http://www.downtoearth.org.in/content/court-stays-proposed-changes-municipal-solid-waste-management-rules [January 29th 2014]

Suchitra, M. (2013b): Municipal solid waste rules amendments: MoEF asked to formulate new draft. In: *Down To Earth*, 2. November 2013. Online available at: http://www.downtoearth.org.in/content/municipal-solid-waste-rules-amendments-moef-asked-formulate-new-draft [January 29th 2014]

Times of India, 13.7.2012: Dump the Mavallipura landfill. Online available at: http://articles.timesofindia.indiatimes.com/2012-07-13/bangalore/32662510_1_mavallipura-landfill-dump-garbage-dump-waste [January 29th 2014]

Times of India, 24.8.2012: Eco-experts: You can't force waste on villages. Online available at: http://articles.timesofindia.indiatimes.com/2012-08-24/bangalore/33366081_1_mavallipura-landfill-mavallipura-residents-mavallipura-villagers [January 29th 2014]

9.3. Websites

Hasirudala (n.d.): Hasirudala Website. Online available at: http://www.hasirudala.in/ [January 29th 2014]

KCDC (n.d.): Karnataka Compost Development Corporation Ltd. Website – Our History. Online available at: http://kcdc.in/about/our-history/ [January 29th 2014]

Shanmugan, Senthil (n.d.): GIS – MIS - GPS for Solid Waste Management. GISdevelopment.net. Online available under: http://www.gisdevelopment.net/application/urban/overview/urbano0025pf.htm [November 29th 2013]

9.4. Movies

Taylor, Astra (2008): *Examined Life*. Co-produced by Sphinx Productions and the National Film Board of Canada, in association with the Ontario Media Development Corporation, TVOntario and Knowledge Network.

9.5. Empirical Material[45]

Ero1: Ero-epic talk with a longstanding activist of the waste-related civil-society scene (function undisclosed for the purpose of anonymity), October 23rd 2012, Bangalore

Ero2: Ero-epic talk with a practitioner on the operational level of a civil-society initiated waste management project, November 6th 2012, Bangalore

Int1: Interview with management staff of a NGO related to the SWMRT (exact function undisclosed for the purpose of anonymity), October 30th 2012, Bangalore

Int2: Interview with a longstanding activist of the waste-related civil-society scene (function undisclosed for the purpose of anonymity), October 31st 2012, Bangalore

Int3: Interview, with a Lok Adalat chairman (in a waste-related case), November 6th 2012, Bangalore

Int4: Interview with management staff of a NGO related to the SWMRT (exact function undisclosed for the purpose of anonymity), November 7th 2012, Bangalore

Int5: Interview with the initiator of a community-based waste management project, November 9th 2012, Bangalore

Int6: Interview with a longstanding activist of the waste-related civil-society scene (function undisclosed for the purpose of anonymity), November 15th 2012, Bangalore

PartOb1: Participant Observation at a meeting of a NGO related to the SWMRT, October 23rd 2012, Bangalore

PartOb2: Participant Observation at a meeting of a NGO related to the SWMRT, October 25th 2012, Bangalore

[45] The interviewees, other research participants and the exact details of participant observations have been undisclosed for the purpose of anonymity within a readily comprehensible scene of involved actors.

PartOb3: Participant Observation at the operational level of a civil-society initiated waste management project, November 1st 2012, Bangalore

PartOb4: Participant Observation at the operational level of a civil-society initiated waste management project, November 6th 2012, Bangalore

PartOb5: Participant Observation at the operational level of a civil-society initiated waste management project, November 8th 2012, Bangalore

PartOb6: Participant Observation at the landfill site and surrounding areas in Mandur, November 15th 2012, Bangalore

Abbreviations

AIW	– Alliance of Indian Waste Pickers
BATF	– Bangalore Agenda Task Force
BCC	– Bangalore City Corporation
BDA	– Bangalore Development Authority
BBMP	– Bruhat Bengaluru Mahanagara Palike (Greater Bang. City Corp.)
BMP	– Bangalore Mahanagara Palike (See BCC)
BMTC	– Bangalore Metropolitan Transport Corporation
BOT	– Build-Operate-Transfer (Concession)
BT	– Bio Technology
CBO	– Community Based Organization
CHF	– Cooperative Housing Foundation International
CDM	– Clean Development Mechanism
CDP	– City Development Plan
CM	– Chief Minister
CPCB	– Central Pollution Control Board
CSO	– Civil Society Organization
DWCC	– Dry Waste Collection Center
EJO	– Environmental Justice Organization
EROI	– Energy Return on Investment
ESG	– Environmental Support Group (EJO in Bangalore)
HANPP	– Human Appropriation of Net Primary Production of Biomass
ILO	– International Labor Organization
IWBs	– Itinerant Waste Buyers
IT	– Information Techology
JnNURM	– Jawaharlal Nehru National Urban Renewal Mission
KCDC	– Karnataka Compost Development Corporation
KSPCB	– Karnataka State Pollution Control Board
MEFA	– Material and Energy Flow Accounting
MSSS	– Mythri Sarva Seva Samithi (NGO in Bangalore)
MSW	– Municipal Solid Waste
MSWM	– Municipal Solid Waste Management
NGO	– Non Governmental Organization
PIL	– Public Interest Litigation
PKs	– Pourakarmikas (City Employees, Waste Workers)
PPP	– Public Private Partnership
RDF	– Refuse-Derived-Fuel
RFP	– Request for Proposal (for BBMP Tenders)
RWA	– Resident Welfare Association
SGRR	– Srinivasa Gayathri Resource Recovery Ltd. (active at Mandur)
SHA	– Stakeholder Analysis
SWMRT	– Solid Waste Management Round Table
UN-HABITAT	– United Nations Human Settlements Programme
UNFCCC	– United Nations Framework Convention on Climate Change
WIEGO	– Women in Informal Employment: Globalizing and Organizing
WTE	– Waste to Energy

List of Tables

Appendix I: Lebenslauf / Curriculum Vitae

Vorname	Nicolas
Zuname	Schlitz
Akademischer Grad	B.A.
E-Mail Adresse	a0404883@unet.univie.ac.at

Schulabschluss

2000 – 2004	Bundesoberstufenrealgymnasium Graz Monsbergergasse, Naturwissenschaftlicher Schwerpunkt
Juni 2004	Matura mit gutem Erfolg

Studienverlauf

Seit Oktober 2004	IDS Internationale Entwicklung an der Universität Wien
Okt. 2005 – Feb. 2012	Diplomstudium Politikwissenschaft an der Universität Wien
März 2012	Bachelor of Arts (B.A.) Politikwissenschaft

Auslandsaufenthalte

Juli 2008 – Sept. 2009	Praktikum (Auslandszivildienst) am Umweltbüro des Tibetan Settlement Office Dharamsala, Nordwest-Indien
Okt. 2012 – Jan. 2013	Dreimonatiger Forschungsaufenthalt in Delhi und Bangalore, im Rahmen der vorliegenden Diplomarbeit zu ‚WasteDisputes'

Wissenschaftliche Konferenzen

17. – 20. Oktober 2013	Momentum13 – Kongress in Hallstatt. Beitrag im Rahmen des Track #5 zu 'Ökologie und Gesellschaft': Umkämpfter Müll
13. – 14. Juni 2013	Streik!? Annäherungen an den globalen Bedeutungswandel von Arbeitskämpfen – Internationale Tagung des Zentrum für ökonomische und soziologische Studien, Universität Hamburg
31. Mai – 2. Juni 2012	Critical Matter – 3rd International Graduate Conference, Goethe Universität Frankfurt. Beitrag mit Katharina Fritsch: 'Anormal bodies' under Construction – Analysing Viennese Squats

Publikationen

Schlitz, Nicolas / Fritsch, Katharina (2014): Ge(t)räumte Räume. In: Goll, Tobias / Keil, Daniel / Telios, Thomas (Hg.): Critical Matter. Diskussionen eines neuen Materialismus. Münster: edition assemblage, S. 255-271

Schlitz, Nicolas / Fritsch, Katharina (2013): Space Intruders — Analyzing Viennese squats from radical-democratic and biopolitical perspectives. In: Transversal, 10/2011.

Appendix II: Zusammenfassung

Diese Diplomarbeit ist als explorative Fallstudie konzipiert. Sie zeichnet die Konturen einer politischen Ökologie des Mülls im urbanen Indien anhand müllspezifischer Umweltkonflikte in Bangalore und der darin eingeschriebenen gesellschaftlichen Müllverhältnisse nach. Theoretisch verortet sich diese Diplomarbeit innerhalb einer konfliktorientierten urbanen politischen Ökologie, um in weiterer Folge die gesellschaftliche Bedeutung von Müll und dessen Materialität – dessen Kreisläufe, Verteilung, Umwandlungen, Verwertung, Inwertsetzung und Entsorgung – anhand einer abfallspezifischen Adaption des Konzepts der gesellschaftlichen Naturverhältnisse zu konzeptualisieren. Als Vorzeigebeispiel urbaner Sozio-Natur bietet Müll eine privilegierte Perspektive für die Analyse historisch-spezifischer Konturen gesellschaftlicher Naturverhältnisse im urbanen Indien, der darin eingeschriebenen gesellschaftlichen Machtverhältnisse sowie der daraus resultierenden urbanen Umwelten. Dabei zielt diese Diplomarbeit auf die Dokumentation und Analyse der Ursachen, Verläufe und Dynamiken der Konflikte um Müll ab, die sich im Sommer 2012 zu einer '*garbage crisis*' zugespitzt haben. Dafür wurde methodisch, und im Rahmen eines zirkulären Forschungsdesigns, auf die Triangulation qualitativer Methoden der empirischen Sozialforschung sowie eine Kombination aus 'grounded theory coding' mit qualitativer Inhaltsanalyse zurückgegriffen. Diese Diplomarbeit analysiert, wie die sich verändernden Müllströme und Materialitäten von Müll zu verschiedenen und teils widersprüchlichen Modi der gesellschaftlichen Handhabung von Abfällen führten, und in weiterer Folge ökologische Verteilungskonflikte entlang negativer und positiver Charakterisierungen von Müll hervorriefen. Die gleichzeitige Negation der Materialität von Müll und Privatisierung der öffentlichen Abfallverantwortung führte zu spezifischen Formen und Logiken der Entsorgung in Bangalores öffentlicher Müllhandhabung, und ging dabei mit der ungleichmäßigen Belastung bereits marginalisierter Gruppen einher. Dieser Imperative der Entsorgung wurde jedoch einerseits von den marginalisierten Müllarbeiter_innen eines enormen informalisierten Recycling-Sektors konterkariert, die durch das Sammeln von Recycling-Materialien versuchen im urbanen Raum zu überleben. Andererseits war eine breite Allianz von müllspezifischen zivilgesellschaftlichen Organisationen maßgeblich daran beteiligt der 'garbage crisis' überhaupt erst zu jener politischen Reichweite zu verhelfen. Dadurch wird die Frage aufgeworfen, welche Abfall-'Erzeuger_innen', welche Recycling-Akteur_innen, welche marginalisierten Gruppen und welche Abfallmaterialien auf dem Weg zu einem 'modernisierten' Abfallwirtschaftssystem verdrängt, zurückgelassen, ausgeschlossen oder gravierenden Umweltverschmutzungen ausgesetzt werden?

Appendix III: Summary

This diploma-thesis is set out as an explorative case study, tracing the contours of a political ecology of waste in urban India through a focus on waste-related environmental conflicts and entangled '*waste-society relations*' on a downscaled level of Bangalore's urban political ecology and socio-metabolic systems. Situated in the field of *urban political ecology* and framed by a perspective on *environmental conflicts*, the introduced theoretical approach combines a waste-specific adaptation of the concept of societal relations with nature with notions of social metabolism in order to conceptualize waste as material – its circulation, distribution, transformation, (re)valorization and disposal –, and its function in capitalist societies. As a showcase for a 'hybrid entity' of urban socio-nature, waste is offering a suitable perspective for the analysis of historically specific contours of societal relations with nature in urban India, the power relations inscribed therein, and the resulting socio-ecological urban environments. Accordingly, this diploma thesis aims to document and analyze the origins, patterns and dynamics of conflicts around the '*garbage crisis*' unfolding in Bangalore between July and November 2012. Designed as a circular research process, the empirical research was characterized by the triangulation of qualitative methods and gave rise to the analysis of the generated data through a combination of grounded theory coding with qualitative content analysis.

Subsequently, this diploma thesis analyzes how the changing flows and the altered materiality of waste – itself caused by profound changes of India's political economy – gave rise to different and at parts contradictory modes of '*societal handling of waste*', which again caused ecological distribution conflicts in relation with waste's material agency, framed either negatively or positively. The simultaneous negation of waste's materiality and privatization of public responsibility for waste by public authorities in Bangalore resulted in distinct forms of disposability in the public handling of the city's waste and corresponded with the contamination of marginalized communities' environmental health. Yet, this imperative of disposability was also met by an enormous informalized workforce trying to survive in urban space by addressing the negated materiality of waste as resource and recycling material, and a vibrant scene of waste-related civil-society organizations, which has been crucial for the 'garbage crisis' to really unfold its political scope and dimension in 2012 – thereby posing questions such as: which 'generators', which recycling-agents, which marginalized communities and which waste materials are left behind, excluded, contaminated or displaced on the way to a 'modernized' waste management system?