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### Strengthening the human right to sanitation as an instrument for inclusive development

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**Publication date**

2018

**Document Version**

Other version

**License**

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**Citation for published version (APA):**

Obani, P. C. (2018). *Strengthening the human right to sanitation as an instrument for inclusive development*. [Thesis, externally prepared, Universiteit van Amsterdam].

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## **Chapter 2. Research Methodology and Theoretical Framework**

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### **2.1 INTRODUCTION**

This chapter presents the research methodology and theoretical framework of this thesis. First, I expound on the ontological and epistemological basis of my research (see 2.2). On the basis of the systematic literature review I conducted during the proposal writing phase of my research, I formulated a research design that involves a combination of methods from law and the social sciences. For my data collection, I relied on systematic literature review (see 2.3.1), case study, including interviews and household surveys (see 2.3.2). Further, I analysed the data through content analysis (see 2.3.3), and legal reasoning and argumentation (see 2.3.4). Also based on the outcomes of my preliminary systematic literature review while writing my research proposal, I draw from multi-level governance (see 2.4.1) and legal pluralism (see 2.4.2) to specifically evaluate the performance of the HRS, with inclusive development (ID) (see 2.4.3) as the guiding norm. In Section 2.5 I elaborate on my conceptual framework and how I synthesize my research methods and main theories to address my research questions. The chapter ends with an explanation of the ethical considerations (2.6) guiding my conduct of the research.

### **2.2 ONTOLOGY AND EPISTEMOLOGY**

The problem of poor sanitation services is one that affects multiple facets of human existence and has been researched by scholars from different disciplines who often adopt either a disciplinary or multidisciplinary approach with minimal integration of methods or knowledge from other relevant disciplines (see 1.3). Given the myriad drivers, actors, and instruments from law, social sciences, and natural sciences that converge in sanitation governance, this thesis adopts an interdisciplinary approach to investigate the drivers of poor sanitation services *vis-à-vis* a variety of human rights, humanitarian law and non-human rights principles, instruments and indicators for sanitation governance that co-exist both *de facto* and *de jure* to affect access to and allocation of sanitation services in the real world. To achieve this, I draw on my interdisciplinary academic background to identify multiple methods of knowing that are suited to my research questions (see 2.3). I also rely on institutional analysis to identify aspects of the multiple disciplines that are relevant to addressing my research question (see 2.4).

I operationalize my interdisciplinary perspective through: (a) designing my research questions to reflect the multiple disciplinary perspectives integrated in my research; (b) combining theoretical underpinnings and qualitative and quantitative research methods or mixed methods that are drawn from otherwise distinct disciplines, including law, international relations/international development studies, natural sciences, and economics in my conceptual framework (see 2.3 and 2.4); and (c) alternating between internal and external points of views to better understand the complex interactions between the natural and social sciences (McKay 2014 distinguishes between the use of the internal and external points of view by positivists and empirical legal theorists). In my research, I found both the internal and external points of view to be complementary and applying the two enabled me to better understand the interactions between human rights, humanitarian law and other non-HR principles, instruments, and indicators that are relevant for sanitation governance, thereby enriching my institutional analysis.

### **2.3 DATA COLLECTION AND ANALYSIS**

This section explains the methods I used for my data collection and analysis: (a) systematic literature review (see 2.3.1), (b) case study (see 2.3.2), (c) content analysis (see 2.3.3), and (d) legal reasoning and argumentation (see 2.3.4).

#### **2.3.1 Systematic Literature Review**

I conducted a systematic literature review to ascertain the current state of knowledge about the research focus. This informed the research problems (see 1.2), gaps in scientific knowledge (see 1.3), research questions (see 1.4), focus and limits of this research (see 1.5), the thesis structure (see 1.6), and the research methodology and theoretical framework presented in this Chapter. It is also through the literature review that I uncover the drivers of poor sanitation services and various contestations over the meaning and economic characteristics of sanitation (see Chapter 3), and principles and instruments (see 2.5.1) and indicators (see 1.3.3) for sanitation governance from different disciplines (see Chapters 3, 4, 5, 6 and 7). My findings from the literature review substantiate my content analysis (see Chapters 4 and 5), case study results (see Chapter 8), and recommendations for redesign (see Chapter 9).

The publications I reviewed include peer-reviewed journal articles, books, and grey literature including official reports and communications (containing important empirical data on access

to sanitation at multiple levels of governance and the principles applied by key actors for sanitation governance) from especially the legal literature but also complemented by the non-legal literature which I sourced through scholarly databases.<sup>5</sup> I used different combinations of keywords/concepts focused on the human right to sanitation principles, instruments, and indicators; the Sustainable Development Goals on sanitation and relevant indicators; and the human right to sanitation in humanitarian situations (see Annex E) to obtain an extensive data set to support my evaluation of HRS instruments and non-human rights instruments for sanitation in the case study and in relation to the global development agenda (see Chapters 4, 5, 6, 7, 8 and 9). The literature collected was then short-listed to ensure relevance for addressing my research questions.

### **2.3.2 Case Study**

Legal research traditionally consists of analysing the conventional sources of law recognised by positivist theory, and relying on secondary sources like the academic literature where necessary for an elucidation of primary sources of law like treaties and national laws. It mainly involves desk study and emphasises the content of the law as it is. This does not offer an opportunity to explore the performance of the HRS and the drivers (see 3.4) which affect access to sanitation on the ground. As a result, I had to adapt some social science methods for empirical legal research, including a case study with interviews and field visits (Epstein & Martin, 2014). I use a layered single case study design to gather in-depth information on the performance of HRS instruments at the national and sub-national levels of governance. The case study enables me to localise the HRS and demonstrates that the instruments required to advance the HRS differs from one setting (like formal settlements), to another (like informal settlements or humanitarian situations) because of the operation of a different set of drivers in each setting (see 3.4). Despite the criticism that a single case study is not generalizable and lacks external validity (Easton, 2010), the findings from a single case study can be generalizable and contribute to theory formation (Woodside, 2010; Yin, 2014), and is appropriate for researching complex subjects (Creswell, 2012).

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<sup>5</sup> This includes Google Scholar, Science Direct, Scopus, Wiley Online, and the online library search functions of the University of Amsterdam and IHE Institute for Water Education.

### *Selection of the case*

The problem of poor access to infrastructure like sanitation services that often characterise developing countries makes it important to investigate the operationalization of the HRS in such settings. Urban settlements in many developing countries also embody spatial, individual, and group inequities in access to sanitation, despite interventions by states and non-state actors (World Health Organization [WHO] & UNICEF, 2015). I therefore selected Nigeria, a developing country, for my case study, to illustrate the evolution and performance of the HRS. Within Nigeria, there also exist a variety of principles and instruments for sanitation governance which offers a good case for analysing the effects of pluralism (see 2.4.2) in sanitation governance. Furthermore, there is an increasing tendency towards liberalisation in the current sanitation reforms in various states across Nigeria which is actively shaping the trajectory of the sanitation sector and influencing the policy arena for the implementation of the HRS as a predominantly social and relational norm. A second element of my case study was the household surveys I conducted within Benin City, Nigeria. I chose Benin City partly because its sanitation governance institution is representative of the sanitation governance architecture in many cities across Nigeria. Additional factors which I considered in selecting my case study include my understanding of the official and local languages, personal affiliations, and prospects of accessing the necessary information for my research.

### *Steps followed in conducting the case study*

I followed three preliminary steps to design my case study. First, I assessed whether a case study approach was appropriate. Next, I selected an appropriate case, Nigeria. I then developed my research design based on a desk study, before proceeding to data collection from the field. In selecting my case study, I was careful to choose a jurisdiction that offered a wide range of drivers of poor sanitation services to assess the performance of the HRS. Although Nigeria is only one among many countries with poor access to sanitation services, I selected it for my case study for three main reasons, namely: (a) Nigeria ranks low in the human development index and therefore offers a good case to investigate many of the challenges which low and middle income countries may face in implementing the HRS; (b) is experiencing rapid urbanisation and humanitarian crises (resulting from insurgency, flooding, drought, and ethnic conflicts); and (c) failed to meet the MDGs target for sanitation, even though it met the target for water (see 8.2.3).

Having selected my case study, I proceeded to conduct a desk study to ascertain the legal framework for the HRS in Nigeria. Many of the national and local laws on sanitation in Nigeria are not digitally available and I had to travel to various parts of Nigeria in order to access hard copy materials for my analysis. I also analysed current state of knowledge on the HRS in Nigeria through desk study. Most of the available literature was grey-literature on sanitation governance instruments published by NGOs like WaterAid, international financial institutions like the World Bank, and project reports by regulatory agencies like the Ministry of Water Resources. I reviewed the academic literature on the HRS written by lawyers and other disciplines (see 1.3). The available peer-reviewed academic literature covering Nigeria provided useful insights on waste management practices and challenges but did not address the implementation/performance of the HRS in Nigeria and the effects on ID. It was therefore also important to embark on a field study to be able to address the research questions (see 1.4) in the context of the case study.

It was necessary for me to conduct expert and stakeholder and expert interviews because the information on the HRS in Nigeria is not readily available in the literature. Information was collected through a number of interviews with government officials, political leaders, NGOs, communities, and other relevant parties. I conducted 47 semi-structured interviews with water, sanitation and hygiene (WASH) and governance experts, government officials, NGOs, and the media, at different levels of governance. Further details of the interviewees (excluding names), including their professional backgrounds and the level of governance country of residence are coded in Annex G. I identified my interviewees using a combination of purposive sampling and snowball sampling to reduce the potential for bias in purposive sampling and the risk of omitting key interviewees by solely relying on snowball sampling. The majority of my interviewees (n=41) were selected through purposive sampling, and I used work experience in the sanitation sector, expertise in sanitation governance and policy processes for instance based on academic publications, and gender, disciplinary, and geographic diversity as my selection criteria. The additional interviewees (n=6) were selected based on referrals from other interviewees. I conducted the interviews in three phases from 2013 until 2014. The interviews lasted between 1 and 2 hours each, covering questions pertaining to: a) the impacts of HRS norms and instruments, b) the drivers of lack of universal access, and c) human rights and non-human rights instruments that can potentially address the identified drivers.

At the local level, I selected 450 households in Benin City through random area sampling. The selected households were administered questionnaires containing open and close ended questions about the definition and status of access to sanitation, knowledge of good sanitation and hygiene practices, the quality of services based on HRS standards, the instruments for sanitation governance, and the drivers of poor sanitation services (see 3.4). Of all the questionnaires administered, a total of 254 questionnaires were retrieved and utilised in this research. The background information on the respondents is presented in Annex H. I also validated the data from the household survey through my personal observation of sanitation governance in Benin City and three other cities across Nigeria: Port Harcourt, Abuja, and Lagos. It was not possible to administer a significant number of questionnaires to households in humanitarian situations and informal settlements because most declined to participate in the survey due to physical safety, psychological, and legal concerns (especially in the informal settlements), as well as other personal reasons that they may not have disclosed. Nonetheless, I interviewed humanitarian actors, local leaders, experts and other stakeholders for informal settlements. I also visited 2 camps for internally displaced persons fleeing from the Boko Haram insurgency in the North Eastern part of Nigeria (see 8.2.2). Data from the expert and stakeholder interviews and household survey were analysed within my conceptual framework and triangulated with the result of the literature review and content analysis. This provided some insight into gaps in knowledge about HRS performance in Nigeria and also some generalizable results that were useful in developing my final recommendations and conclusions.

### **2.3.3 Content Analysis**

I analysed the content of laws and policy documents to identify: (a) contestations over the meaning and economic character of sanitation across multiple levels of governance, (b) the drivers of poor sanitation services, (c) the principles of the HRS and how they are operationalised within the HRS institution through instruments, (d) other non-human rights principles and instruments for sanitation governance, (e) the operation of legal pluralism, and (f) the components of inclusive development.

Content analysis comprises the set of procedures used for collecting and organising information obtained from any sign vehicle (any form of communication that carries a meaning) in a standardised format (Krippendorff, 2013). This allowed me to make inferences about the characteristics and meaning of the information contained in any sign-vehicle

including recorded materials, and supports replication (Stemler, 2001; United States General Accounting Office [US GAO], Program Evaluation and Methodology Division, 1996). Content analysis is also suitable for determining the major trends in a society as well as to observe any changes in the trend or in the meaning of concepts as they are used in different texts (Aburdene, 2007; Carley, 1993; McLellan & Porter, 2007; Naisbett & Aburdene, 1990). In my thesis, it showed how sanitation is defined and how sanitation governance principles have emerged from various levels of governance and are operationalised through instruments, the underlying social factors which have shaped the evolution process, and trends for future evolution.

There are two main methodological limitations of content analysis; the process of coding and counting is not appropriate for: (a) identifying latent contents, (Altheide & Schneider, 2013) and (b) distinguishing between legal opinions, sources, or other variables that carry unequal weight (Babbie, 2012). The first limitation does not pose a challenge because my research is primarily concerned with the main principles of sanitation governance and not latent content. I avoid the second limitation by expressly applying the traditional methods/tactics of legal reasoning and argumentation (see 2.3.4) during codification.

I followed five main steps to conduct my content analysis. First, I defined the recording units for my analysis based on my literature review. This resulted in: (a) three categories of drivers (economic, social, and environmental); (b) three categories of principles based on the three main components of ID (economic/relational, social, and ecological); and five categories of instruments (regulatory, economic, management, and suasive, including technologies) that operationalize the principles. The drivers, principles, and instruments contained in the literature were then coded accordingly. Next, I identified and coded additional principles and instruments contained in the laws, policy documents and governance texts at multiple levels of governance, from international to local, also taking into consideration the legal status (binding, persuasive, or non-binding) of each of the documents. This resulted in an additional category of instruments: administrative instruments. I then updated my coding scheme accordingly and conducted additional rounds of review to ensure that all the drivers, principles, and instruments covered in the literature and/or laws, policy documents and governance texts had been captured and coded. The information was then ploughed back into my conceptual framework for further analysis.

### 2.3.4 Legal Reasoning and Argumentation

I further analysed my laws, policy documents and governance texts through the application of legal reasoning and argumentation methods (see Table 2.1). The legal reasoning process involved reasoning by analogies, applying the doctrine of precedents, and inductive and deductive reasoning (Cook 2001; Farrar and Dugdale 1990). It enabled me to identify and compare the legal status of each of the laws, policy documents and governance texts that I analysed. I then applied an intuitive legal argumentation process, based on my training as a lawyer to methodically deploy arguments built on legal rules in order to resolve the legal angles to the theoretical problems (Hanson 2003).

For instance, in order to analyse the legal basis for the HRS at various levels of governance, I first relied on the literal meaning of the words contained in the document I was analysing. Where this led to absurdity, I proceeded to interpret the provisions in such a way as would promote the intentions of the legislature (golden rule of statutory interpretation)<sup>6</sup> by relying on both internal aids of statutory interpretation like the title of a statute,<sup>7</sup> preamble,<sup>8</sup> headings,<sup>9</sup> marginal notes,<sup>10</sup> interpretation sections,<sup>11</sup> and provisos;<sup>12</sup> and external aids like the Interpretation Act or other equivalent law.<sup>13</sup> I also crosschecked with the relevant literature to ensure reliability.

<sup>6</sup> *Becke v Smith* (1836) 150 ER 724 at 726; *Coutts & Co. v IRC* (1953) 2 WLR 364 at 368; *Awolowo v Federal Minister of Internal Affairs* (1962) LLR 177.

<sup>7</sup> *Okeke v A.G. Anambra State* (1992) 1 NWLR Pt. 215, p. 164; *Agbara v Amara* (1995) 7 NWLR Pt. 410, p. 712.

<sup>8</sup> *I.R.C. v Pemsel* (1891) AC 531 at 542 per Lord Halsbury; *Opeola v Opadiran* (1994) 5 NWLR Pt. 344, p.368 SC; *Okeke v A.G. Anambra State* (1992) 1 NWLR Pt. 215, p. 164; *Osawe v Registrar of Trade Unions* (1985) 1 NWLR Pt. 4, p. 755 SC.

<sup>9</sup> *Lawal-Osula v Lawal-Osula* (1993) 2 NWLR Pt. 274, p. 158 CA; *Ondo State v Folayan* (1994) 7 NWLR Pt. 354, p.1 SC.

<sup>10</sup> *Yabugbe v COP* (1992) 4 NWLR Pt. 234, p.152 at 171; *Oloyo v Alegbe* (1983) 2 SCNLR 35 at 37; *UTC Nig Ltd v Pamotei* (1989) 2 NWLR Pt. 103, p.244 SC.

<sup>11</sup> *Board of Custom & Excise v Barau* (1982) 10 SC 48; *Utih v Onoyuvwe* (1991) 1 NWLR Pt. 166 SC; *Ejoh v IGP* (1963) All NLR 248.

<sup>12</sup> *Abasi v State* (1992) 8 NWLR Pt 260, p. 383; *Nabham v Nabham* (1967) All NLR 51; *NIPC Ltd v Bank of West Africa* (1962) 1 All NLR 551.

<sup>13</sup> *Ibrahim v JSC* (1998) 14 NWLR Pt. 584, p. 1SC; *Osadebay v A.G. Bendel State* (1991) 1 NWLR Pt 169, p. 525 SC.

Table 2.1 Steps and some data sources for legal reasoning and argumentation

<i>Steps</i>	<b>Some data sources</b>	<b>Legal reasoning tactic</b>	<b>Contribution to the research</b>
1. <i>Analyse key international law sources</i>	International human rights treaties with provisions on sanitation; General Comments & Resolutions of UN bodies	Apply the Rome Statute of the International Criminal Court 1998 (to analyse sources of international law) and Vienna Convention on the Law of Treaties 1969 (for treaty interpretation)	Determine the legal status and normative content of the HRS in international law
2. <i>Analyse national human rights institutions, laws and policy provisions</i>	WaterLex publication on National Human Rights Institutions; law databases	Various rules of statutory interpretation; external & internal interpretation aids	Understand the evolution of HRS in national laws and policies
3. <i>Analyse constitutional provisions</i>	National Constitutions	Investigate constitutional convergence	Understand the evolution of HRS in national constitutions
4. <i>Analyse court decisions</i>	WaterLex publication on court cases worldwide involving the human right to water and sanitation	Judicial precedents; analogies; inductive and deductive reasoning	Understand the evolution of the HRS principles in court cases

Applying the literal rule allowed me identify explicit sources of the HRS for further analysis. In the absence of express recognition of HRS, applying the golden rule also highlighted implicit recognition of the HRS in various sources of law, and the principles and instruments for sanitation governance contained in laws, policy documents, and other governance texts. Other rules that I applied for my analysis include the *ejusdem generis* rule, that where particular words are followed by general words, the general words are to be limited to the same kind or class as the particular words;<sup>14</sup> *noscitur a sociis* to the effect that where the meaning of a word is doubtful it was interpreted with reference to the context in which it appeared.<sup>15</sup> I also had to read the whole provisions as a further check to ensure that my interpretation was consistent with the objective(s) of the document when considered as a whole.<sup>16</sup>

<sup>14</sup> *Tillmans & Co. v S.S. Knustford* (1908) 2 QB 385; *Nasr v Bouari* (1969) 1 All LNR 35; *A.G. Cross River State v Esin* (1991) 6 NWLR Pt. 197, p. 365 CA.

<sup>15</sup> *F.C.S.C. v Laoye* (1989) 2 NWLR Pt 106, p. 652 SC; *Okeke v AG Anambra State* (1992) 1 NWLR Pt. 215, p. 164.

<sup>16</sup> *A.G. Bendel State v A. G. Federation & 22 Others* (1982) 3 NCLR 1 SC; *Ishola v Ajiboye* (1994) 6 NWLR Pt. 352, p. 506 SC; *Fasakin v Fasakin* (1994) 4 NWLR Pt. 304, p. 597 SC.

## **2.4 MULTI-LEVEL INSTITUTIONAL ANALYSIS, LEGAL PLURALISM AND INCLUSIVE DEVELOPMENT**

This section discusses the theoretical basis for my analysis, including: (a) multi-level governance theory (see 2.4.1), legal pluralism (see 2.4.2), and inclusive development (see 2.4.3).

### **2.4.1 Multi-Level Governance of the Human Right to Sanitation**

The HRS institution and indeed sanitation governance generally is composed of norms, principles, and instruments that operate at multiple levels of governance. In order to understand the performance of the HRS at different levels of governance, and interactions with non-HRS norms/principles for sanitation governance given pluralism, I have drawn on Multi-Level Governance (MLG) theory. MLG essentially refers to an arrangement for making decisions which engages multiple interdependent but politically independent actors, both public and private, “at different levels of territorial aggregation in more-or-less continuous negotiation/deliberation/ implementation, and that does not assign exclusive policy competence or assert a stable hierarchy of political authority to any of these levels” (Schmitter, 2004, p.49).

The theory was first developed within the European Union (Marks, 1992), and is useful when analysing government processes and the changes in decision-making processes in cases of declining state sovereignty (Piattoni, 2010). Nonetheless, as State sovereignty and centralisation of government become increasingly outmoded globally, especially in the context of supra-nationalism, due to new challenges that traverse administrative boundaries, and because of the new emerging concepts of legitimacy, there are also new forms of solidarity emerging to replace traditional models such as state-society and state-solidarity, as well as new connections emerging between the different actors at different levels (Piattoni, 2010). As a result, multi-level governance has become increasingly prevalent, also outside the European Union where it first emerged, as a concept for analysis of government processes and reflection on the changes in decision-making processes in many cases where state sovereignty is diminishing (Piattoni, 2010). This is particularly relevant for my thesis because state sovereignty and centralisation of government are increasingly becoming outmoded in addressing development challenges like poor sanitation; the result is an emergence of new forms of solidarity and new connections between actors at different levels (Piattoni, 2010).

The literature distinguishes MLG Type I (focused on direct links between the different levels of governance) from MLG Type II (focused on multiple links between the levels (Piattoni, 2010)). For my research question, it is more relevant to understand the direct links between MLG in operationalizing the international HRS and its performance in addressing the sanitation challenge across multiple levels of governance. I therefore focus on the direct links between multiple levels of governance: international, regional, national, and sub-national; that is, Type I MLG theory. The structure of international human rights has similar weaknesses as MLG, particularly: lack of coordination between different policies and sub-systems, and the challenges of legitimating and ensuring compliance (Enderlein, Wälti & Zürn, 2010). The application of MLG theory therefore enables analyses of the HRS governance framework, contributing to input legitimacy (political equality) and output legitimacy (policy implementation). Although the analyses conducted were primarily qualitative, this was complemented with quantitative data from official reports and the case study. The outcome is integrated in the recommendations for redesign of HRS instruments where necessary, to avoid the weaknesses of global multi-level governance in the policy implementation process (see Chapter 9).

#### **2.4.2 Legal Pluralism in Human Right to Sanitation Governance**

Given that the HRS operates alongside other HR, as well as non-HR norms for sanitation governance at different levels, I also draw on legal pluralism theory for my analysis. A legal rule is an oral or written statement that guides human conduct, and the infringement of which may result in compulsory or discretionary action being taken to enforce its observance (Hanson, 2003). Rules often contain value statements and may be prescriptive, normative, or facilitative where they stop, guide, or allow certain actions, respectively (Hanson, 2003). Generally, legal rules are issued through formal State authorised procedures and enforced through the appropriate formal institutions in specific contexts. Nonetheless, there are situations in which multiple sets of rules become applicable to the same actors or in the same jurisdiction, either as a result of historical evolution (Farran, 2006), or a shift from government to governance (Gupta & Bavinck, 2014) leading to legal pluralism.

Legal pluralism is defined as “the co-existence *de jure* or *de facto* of different normative legal orders within the same geographical and temporal space” (Quane, 2013, p.676). Legal pluralism could be *de jure*, where co-existing multiple legal orders and their linkages are formally recognised by the State, in order to enhance the efficiency and effectiveness of the

formal justice system; (Quane, 2013) or *de facto*, where the State does not recognize non-state or informal legal orders, but may implicitly allow their operation (Quane, 2013; McGoldrick, 2009). The literature investigates legal pluralism as the outcome of: (a) the historical evolution of legal systems (Farran, 2006); (b) interactions between traditional systems and other legal systems (Benda-Beckmann, 2001) within any given state (International Council on Human Rights Policy [ICHRP], 2009a), or jurisdiction (Tamanaha, 2011; Twining, 2009); (c) fragmentation of the international legal order (Koskeniemi & Leino, 2002); sometimes distinguishing between legal pluralism occurring at the horizontal level (multiple rules operating within the same level of governance) and the vertical level (multiple rules operating across different levels of governance (Conti & Gupta, 2014; Gupta & Bavinck, 2014; Obani & Gupta, 2014b).

There is an increasing scholarly focus on legal pluralism in surface (Prakash & Ballabh, 2005), groundwater governance (Conti & Gupta, 2014), and the human right to water and sanitation (Obani & Gupta 2014b). In the area of human rights especially, the literature links legal pluralism to principles of equity and justice in the operation of formal and informal legal orders in the sense that legal pluralism “may reflect a pragmatic response to resource or other constraints that are perceived to impede a population’s right of access to justice” (Quane, 2013, p.677). The legal literature further analyses interactions between international human rights standards and other formal and informal legal orders (ICHRP, 2009a; Nelson, 2010); the role of States in managing the outcomes of such interactions and the importance of protecting individual rights in the process (Quane, 2013; Nelson, 2010), and specific tools for addressing the challenges of pluralism in implementing the human right to water and sanitation (Obani & Gupta, 2014b).

In my thesis, I apply legal pluralism to analyse: (a) the different definitions of HRS in laws and policies, (b) the different principles for sanitation governance within the HRS and other non-HR governance frameworks, and (c) the quality of the relationships and the intensity of the interactions between the HRS and other existing legal rules, both across multiple levels of governance (vertical pluralism) and within my case study (horizontal pluralism) (see 6.6.2, 7.4.2 and 8.6.2). I do this using four heuristic types (competition, indifference, accommodation, and mutual support), as developed by Bavinck and Gupta (2014) and applied by Obani and Gupta (2014b). Competition occurs where there are strong tensions between the HRS and other rules for sanitation governance in a given context. Indifference

exists where the various rules, including the HRS, are technically applicable within a given context but there is no overlap in their operation in practice. Accommodation highlights the recognition of the HRS alongside other rules for sanitation governance and some degree of coadaptation between the various rules, but minimal institutional integration. Mutual support reiterates a strong positive relationship between the HRS and other rules for sanitation governance in any given context.

### **2.4.3 Inclusive Development as the Overarching Norm for Evaluating the Human Right to Sanitation**

A fundamental reason behind the HRS is to provide sanitation services to the most vulnerable and poor in order to enhance their ability to live their lives in dignity, and to participate in development processes. Scholars further propose that the HRS can address environmental sustainability simultaneously (for instance, Feris, 2015) and that addressing the challenges of the poor inevitably requires renegotiating the political context (for instance, McGranahan, 2013). Since the concept of inclusive development (ID) calls for social, ecological and relational inclusiveness (see Gupta, Pouw & Ros-Tonen, 2015), I adopt ID as an overarching or guiding norm for the HRS in my thesis. For the purpose of clarity, I use norms in my thesis to include principles, values or ideals that dictate the appropriate standards of behaviour within an institution or any governance structure (Finnemore & Sikkink, 1998).

The evolution of the concept of development is traceable to the 1940s when development economists were preoccupied with post-war recovery and State intervention aimed to balance the goal of industrialization and full employment without compromising on economic productivity, in other words balancing competing social and economic goals. In the 1960's the need to ensure that all citizens could enjoy some basic aspects in democratic societies led to the adoption of economic, cultural, and social rights and political and civic rights, respectively, in the International Covenant on Economic, Social and Cultural Rights 1966 and the International Covenant on Civil and Political Rights, 1966.

By the 1970s, environmental issues also gained prominence in development discourse which led to the emergence of the concept of sustainable development, focused on reconciling social and economic development and environmental protection, for the benefit of both the present and future generations (Schrijver, 2008).<sup>17</sup> Subsequent discourses however tend to focus on a

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<sup>17</sup> Gabčíkovo-Nagymaros Project (Hungary v. Slovakia), Judgment, ICJ Reports 1997, pp. 7–84.

combination of the social, economic, and environmental pillars of sustainable development rather than integrating all three.

On the one hand, discourses and theories on social movements (Escobar, 2012), participatory development (Cornwall & Scoones, 2011), and the entitlements, capabilities and freedom (Sen, 2011) mainly focus on social and economic equity. On the other hand, other scholars focus on planetary boundaries (Rockström et al., 2009; Rockström et al., 2009; Steffen et al., 2015), investigations of safe and just ways of achieving human development within the planetary boundaries (Raworth, 2012) focus on environmental issues. These have been merged in the 2015 adoption of the universal Sustainable Development Goals, including those reflected in the United Nations Conference on Environment and Development Agenda 21 (United Nations, 1992), and aim to address both social floors and planetary boundaries.

In particular, since 2010, there has also been a return of the growth and employment discourse through theories like green economy and inclusive growth. Although inclusive growth is easily misunderstood as entailing inclusive development, the former however mainly focuses on economic growth and equal opportunities for the poor (Abosede & Onakoya, 2013; Commission on Growth and Development, 2008; Rauniyar & Kanbur 2010a), but does not fully integrate environmental sustainability which is a key aspect of this thesis. Although ID is also similar to sustainable development, the operationalization of the latter often prioritises economic growth and compromises on social and ecological sustainability and often does not address the politics of inequality or ecological exclusion (Gupta et al., 2015; Gupta & Vegelin, 2016; cf. Voigt, 2009). The Sustainable Development Goals (SDGs) has an inclusive development focus that is inspired by human rights, but it also fails to fully integrate the social, economic and ecological dimensions of development (Arts, 2017). Hence, this thesis employs the inclusive development approach instead but also draws on sustainable development. ID is however less covered in the literature; exceptions to this include Arts, 2017; Bos & Gupta, 2016; Gupta et al., 2015; Gupta & Vegelin, 2016; Rauniyar & Kanbur 2010a, 2010b.

#### ***Definition and components***

ID was first introduced as a strategy for promoting human equity and empowerment and it has been elaborated to encompass social, economic, and environmental equity and empowerment (Gupta et al., 2015; Rauniyar & Kanbur, 2010a). It is “development that includes marginalized people, sectors and countries in social, political and economic

processes for increased human well-being, social and environmental sustainability, and empowerment” (Gupta et al., 2015, p. 546). It has three main components, namely: inclusiveness *per sé* or social inclusiveness, inclusiveness as a relational concept or relational inclusiveness, and ecological inclusiveness (Gupta et al., 2015; Gupta & Vegelin, 2016). Social inclusiveness promotes overall well-being, particularly for the poorest, most marginalised, and most vulnerable people, through capacity building (Fritz, Miller, Gude, Pruisken & Rischewski., 2009), and institutionalising equitable principles, participatory approaches including the use of local knowledge, and non-discrimination (Lawson, 2010). Inclusiveness as a relational concept tackles the direct and underlying drivers of inequitable development (Laven, 2010), including through ensuring the affordability of basic services (Arthurson, 2002). Finally, environmental inclusiveness promotes development within the earth’s carrying capacity and improved human resilience (Crutzen & Brauch, 2016). Though the neo-classical concept of efficiency suggests that the efficient allocation of natural resources would result in sustainable development, the realities show that the uncertainties of time preference and the strong bias in favour of economic growth and the substitution of natural capital, using technology and innovation for instance, results in exclusion and inequities in development (Basu & Shankar, 2015). I therefore adapt the three components of ID in my analytical framework to minimise trade-offs between them.

#### ***Inclusive development assessment framework***

To operationalize ID as the overarching norm for my thesis, I develop a simple framework as an assessment tool for evaluating the performance of the HRS instruments/principles against social and relational, and ecological inclusion (see Figure 2.1). A variety of assessment frameworks exist for analysing urban water and wastewater systems for sustainable development, including non-integrated analysis (Hanley & Spash, 1993; Jeppsson & Hellström, 2002; Rebitzer, Hunkeler & Jolliet, 2003; Tillman, Svingby & Lundström, 1998), and integrated multi-criteria decision making and participatory approaches (Motevallian & Tabesh, 2011), and statistical frameworks (Sahely, Kennedy & Adams, 2005) that are aimed at supporting decision making and policy development. More recently, diverse sustainability assessment approaches have been synthesised based on critical decision-making elements as determined by domain experts, with clear indications of how to move from integrated assessment to sustainability assessment and the practical application for decision making in various contexts (Sala, Ciuffo & Nijkamp, 2015). The foregoing sustainability assessments are generally suitable for assessing the entire system for water and wastewater management

but inappropriate for evaluating specific instruments in isolation of others; this does not fit in with the theme of my thesis. As a result of this, I had to develop a simple ideal typical framework to enable me to evaluate the impacts of HRS instruments at various levels of governance through four quadrants that are based on the social, relational, and ecological components of ID (see Quadrants 1-4). The x axis ranges from ecological exclusiveness (that hampers environmental sustainability) to ecological inclusiveness (that promotes environmental sustainability), and the y axis ranges from social and relational inclusiveness to social and relational exclusiveness. The fundamental argument is that the implementation of HRS through different instruments will take place differently in different contexts leading to different outcomes.

Instruments, including principles, falling into Quadrant 1 (Q1) potentially aggravate social, relational and ecological exclusion; Quadrant 2 (Q2) hamper social and relational inclusion but promote ecological inclusion; Quadrant 3 (Q3) only promote social and relational inclusion without addressing environmental sustainability concerns; those falling into Quadrant 4 (Q4) offer the ideal integration of social, relational and ecological inclusiveness for ID (see Figure 2.1).

The proposed framework is easily adaptable to any choice of sanitation governance instruments, including human rights instruments (see 4.5), humanitarian instruments (see 5.5) and other non-human rights instruments (see 7.5), and across multiple levels of governance, from the international to sub-national levels (see 8.5.6). The results from the framework can be integrated into existing sustainability assessments that address water and wastewater systems. It further has the potential to enrich sustainability assessments by balancing competing social, relational and ecological inclusion in the evaluation of instruments' performance and can be adapted to other development issues beyond water and sanitation. The outcome of the analysis, however, largely depends on how each instrument is formulated and adapted to the prevailing drivers in any given context, and may therefore vary for the same instrument depending on the context and drivers.

### *Application*

I rely on the three components of ID (social, relational and ecological inclusion) to test the performance of HRS instruments at multiple levels of governance (MLG) in Chapters 5, 6, 7 and 8 of my thesis. To operationalize this, I merge social and relational inclusion along the y-

axis of my ID assessment framework with two indicators for both components, namely: (i) public participation, defined as improvements in mechanisms for the effective participation for marginalised individuals and groups such as residents of informal settlements and (ii) equitable pricing of services, defined as pricing mechanisms that create a positive incentive for the adoption of sustainable sanitation and hygiene practices while also protecting access to adequate sanitation for the poor and people living in humanitarian situations. Further, I position environmental inclusion along the x-axis of my ID assessment framework with one indicator: (i) sustainable sanitation system, defined as a combination of sanitation infrastructure and services which ensures the safe management of all waste streams with minimal negative impacts on the ecosystem and vulnerable groups.

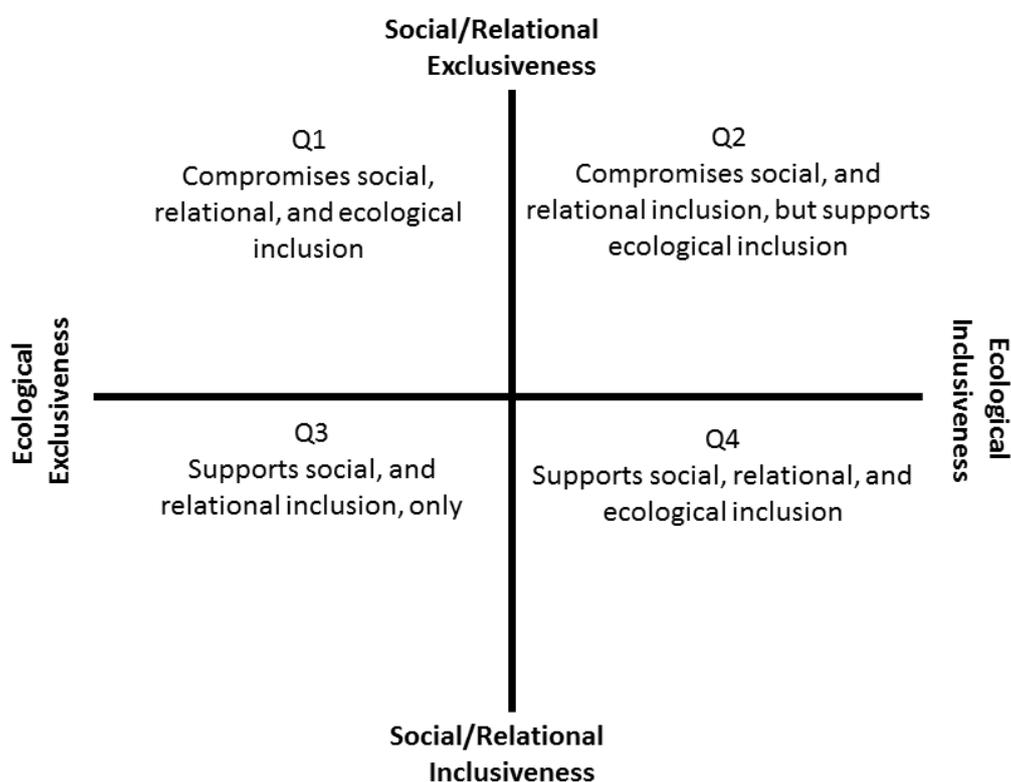


Figure 2.1 Inclusive development assessment framework (Adapted from Obani & Gupta, 2017)

## 2.5 CONCEPTUAL FRAMEWORK AND INTEGRATED ANALYSIS

This section explains my conceptual framework (see 2.5.1), and how I conducted my integrated analysis (see 2.5.2).

### 2.5.1 Conceptual Framework

The terms conceptual framework and theoretical framework have been used interchangeably in the literature, while some authors rely on one of both terms (Green, 2014; Maxwell, 2012). One perspective is that theoretical framework is the appropriate term when research is based on a single theory, while conceptual framework applies when research is guided by different theories or findings (Parahoo, 2006). A second slightly different perspective is that a conceptual framework consists of different concepts built into a theory, and where the framework is based on concepts it is a conceptual framework; if it is based on theories, it is a theoretical framework (Fain, 2017). Despite the confusion over the meaning of conceptual framework *vis-à-vis* theoretical framework, a conceptual framework is a useful guide that identifies the researcher's world view of the research topic and defines their assumptions and preconceptions (Lacey, 2010). Having already identified the theories I apply in my research (see 2.4), I now illustrate the conceptual framework for my research in order to explain the key concepts I use and how they relate to each other.

As mentioned earlier, I am adopting an institutional approach to evaluating the HRS. Institutions are “sets of rules, decision-making procedures, and programs that define social practices, assign roles to the participants in these practices, and guide interactions among the occupants of individual roles” (Young 2002, p. 5). To achieve my institutional analysis of the HRS, I adapt the framework for the institutional analysis of environmental regimes that was developed by the International Human Dimensions Programme's Project on the Institutional Dimensions of Global Environmental Change (IDGEC) (Young, 2002; IDGEC, 2005).

The IDGEC framework was developed to understand when and why specific instruments are able to change the behaviour of specific actors, given the context and drivers that influence a problem, and therefore helps to understand how these instruments can be improved. It consists of six elements: (a) institutions, (b) instruments flowing from the institutions, (c) the impact of instruments on actor's behaviour given (d) institutional drivers, (e) the impact of changed behaviour on the resource performance and social wellbeing, and (f) instrument and institutional redesign. In my thesis, adapting the framework enables me to: (i) understand the workings of HRS institutions and instruments at multiple levels of governance; (ii) evaluate the effect of the HRS instruments on actors given the drivers of poor sanitation services; and (iii) propose a redesign of HRS instruments based on an analysis of which instruments work and which do not work in achieving ID in the context of my case study (see Chapter 9). The

multi-level institutional analysis provides useful insights into areas of convergence and divergence in the implementation of HRS across various levels of governance.

In adapting the IDGEC framework, I first identify the laws, policies, programmes or plans that are identified in the literature as part of HRS institutions. Next, in the theoretical chapters of my thesis (3-7) I analyse the principles, instruments and indicators which emerge from my content analysis and literature review and weigh the performance of instruments against the overarching norm of ID. This lays the background for analysing the impact of the instruments on human behaviour in my case study, given the drivers of poor sanitation services, and the outcomes on ID. My framework maintains six elements, similar to the IDGEC's: (a) institutions, (b) instruments, (c) actors, (d) drivers, (e) institutional performance, and (f) redesign.

First, institutions cover the HRS institutions and I apply Type 1 MLG in my analysis. Second, instruments cover both HRS instruments and complementary instruments from other fields like humanitarian law *inter alia*. Third, I identify the drivers of poor sanitation based on the literature (see 3.4) and my case study (see 8.2.4). Fourth, I analyse whether the existing sanitation governance instruments address the state of poor sanitation services being experienced by the various actors, given the drivers. By evaluating the performance of HRS instruments I indirectly also address institutional challenges in the realization of the HRS. Fifth, in analysing institutional performance I use both legal pluralism (to evaluate the relationship between HRS and other discourses/frameworks for sanitation governance) and my inclusive development assessment framework (to assess the impact of HRS on ID). Sixth, based on my assessment of which instruments work and which do not work in my case study, I suggest redesign. The redesign element of my conceptual framework aims to improve coherence between the HRS and ID.

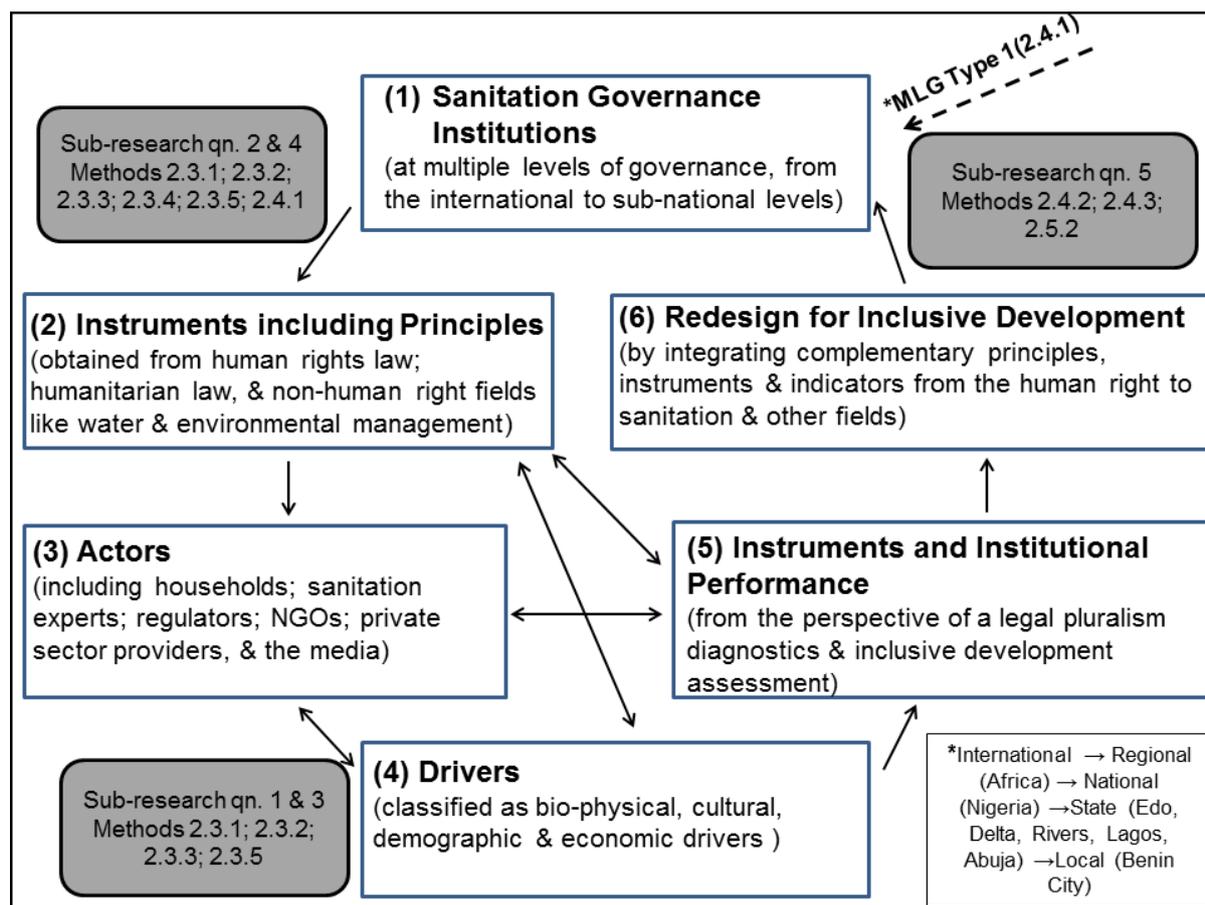


Figure 2.2 Conceptual framework outlining sub-research questions, theories and data collection methods

### *Instruments*

In my conceptual framework, I classify various “techniques of governance, which, one way or another, involve the utilization of state resources, or their conscious limitation, in order to achieve policy goals” (Howlett & Rayner 2007, p.2) as instruments (see Box 2 in Figure 2.2). Instruments are used by government authorities “in attempting to ensure support and effect or prevent social change” (Vedung 1998, p.21). Majoor and Schwartz (2015) also argue that instruments can be employed by private non-State actors as well, and that in urban settings both private and public governance instruments interact and governance instruments operationalize public policy objectives. The functionalist or instrumentalist literature view instruments as neutral, rational, pragmatic, and technical. Conversely, political sociologists stress that instruments are neither rational nor purely technical but instead reflect the balance of power (Kassim & Le Galès, 2010), the relationship between the government and the citizen, and notions of social control and how to affect it (Kassim & Le Galès, 2010; Lascoumes & Le Galès, 2007; Majoor & Schwartz, 2015).

Instruments can be categorized based on: (a) the mechanisms or resources which the instruments apply to, (b) the purpose of the instruments, (c) the mode of application, or (d) the impact of the instruments (Majoor & Schwartz, 2015). I categorise instruments in my thesis on the basis of the mechanisms which the instruments apply because this allows me to easily integrate the wide variety of instruments that are applied by human rights practitioners and other sanitation experts in my analysis. The classification also shows that actors from different fields also tend to apply instruments that fall within the same categorisation and therefore shows further opportunities for resolving any tensions in the operations of the instruments and improving complementarity and the positive effects of pluralism.

On the basis of the mechanisms employed, I identify five categories of instruments: (a) regulatory, including administrative rules and binding policies, (b) economic, (c) suasive, (d) management, and (e) technological instruments. Economic instruments may also be part of regulatory instruments, which complicates differentiating between these two types of instruments. Regulatory instruments either compel or prohibit certain types of behaviours and include: (i) laws, (ii) administrative rules, (iii) policies, (iv) technical standards, (v) permits and licensing procedures, and (vi) liability systems like threat of prosecution to recover punitive damages.

Economic instruments induce behavioural changes through market signals, or financial incentives or disincentives and include: (i) property rights governing ownership and use of goods and services, (ii) fiscal instruments like taxes, (iii) market creation instruments like tradable quotas, (iv) charge systems like tariffs and connection fees, (v) deposit refund systems, and (vi) financial instruments like subsidies and grants (Rivera, 2002; Vedung, 1998).

Suasive instruments influence behaviours through persuasive mechanisms like: (i) education and awareness trainings, (ii) award schemes, (iii) product certification and labelling, (iv) corporate reporting requirements, and (v) disclosure requirements (Vedung, 1998).

Management instruments generally involve self-regulation and voluntary management processes by private actors (Rivera, 2002). I adapt this classification of management instruments to also include participatory instruments which directly involve the potential users in the production, operation or maintenance of sanitation goods and services, like Community-Led Total Sanitation (CLTS).

Further, the delivery of sanitation services requires some form of physical infrastructure/technology like toilets, sewers, and sludge management systems. Therefore, in Chapter 3, I analyse the technologies for improved sanitation (see 3.5). Nonetheless, technological instruments are often necessary for implementing other types of instruments for sanitation governance that I analyse in Chapters 5, 6, 7, and 8. For instance, an economic instrument like progressive pricing (see 5.5.2) would require appropriate technology for measuring the amount of services actually used.

The literature further distinguishes between the strengths and weaknesses of each of these instruments (Majoor & Schwartz, 2015) and links the capacity of authors and ability to use a mix of instruments (Howlett, 2000). Building on this, I investigate the variety of HRS and non-HRS instruments that are employed by both States and private/non-State actors for sanitation governance, as they affect the realisation of the HRS. I consider the instruments to be value laden and I therefore further investigate the underlying principles in each of the instruments and link these with the three components of ID.

### *Principles*

The legal literature distinguishes principles from legal rules. Legal rules are legal norms to the extent that they are definitive commands which apply to defined circumstances or relationships and do not offer a general standard of judgement (Joaquín & Muñiz, 1997). Legal principles, on the other hand, are norms with general application irrespective of specific legal facts or circumstances and command the utmost compliance possible (Alexy, 2000). Hence, legal principles as basic norms reflect the general standard of judgement or basic understandings in any given society. Similarly, in the governance literature norms are defined as the “standard of appropriate behaviour for actors with a given identity” and it is the collection of norms, rules and practices that define the structure of governance institutions (Finnemore & Sikkink, 1998, p.891).

At the international level, a principle can have different meanings or connotations, including: (a) a source of international law,<sup>18</sup> (b) any relevant rule of international law that is to be taken into account in the relations between parties,<sup>19</sup> and (c) “a part of the evolving rules of international law” (de Sadeleer, 2002, p.237). And at the national level, some national constitutions like India’s and Nigeria’s distinguish between fundamental rights that are

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<sup>18</sup> Statute of the International Court of Justice of 1945, article 38(1)(c).

<sup>19</sup> Vienna Convention of the Law of Treaties of 1969, article 31(3)(c).

protected through legal remedies, and Directive Principles of State Policy (which often include provisions relating to adequate standard of living, health, education, environment and other similar subjects that ordinarily fall within the scope of the International Covenant on Economic, Social and Cultural Rights of 1966) that are not enforceable in court but are nevertheless fundamental to policy making and governance.

In my analysis, I consider principles as the norms with general application which are contained in various sources of law (see 4.4) and which are operationalised through governance instruments. I therefore focus on the principles that are reflected in sanitation governance instruments and shape the structure of the institutions at multiple levels of governance. I also link each principle with the pillar of sustainable development which it is most closely related to (economic, environmental or social). Annex F expounds on the coding criteria I used for analysing the principles. Positioning principles as my unit of analysis serves two main purposes. First, it highlights the underlying plural values that influence the structure of sanitation governance institutions and thereby improves the quality of my analysis. Second, it indicates existing and potential areas of convergence and tensions in the instruments applied by various actors.

Nonetheless, I do not specifically focus on the principles for wastewater treatment or sanitation infrastructure as this falls outside the scope of my expertise and research focus and limits (von Sperling, 2007). Rather, I analyse the principles that underpin the regulatory, economic, suasive, and management instruments for sanitation governance, emerging from my literature review, content analysis and case study. I classify the resulting principles according to their sources into three main groups dealt with in separate chapters: (a) human rights principles derived from human rights law (see Chapters 4 and 5), (b) humanitarian principles derived from humanitarian law (see Chapter 6), and (c) non-human rights principles for sanitation governance which includes principles that do not directly emerge from either human rights or humanitarian law (see Chapter 7).

### 2.5.2 Integrated Analysis

As mentioned earlier, I used mixed methods to address my research questions within my conceptual framework. First, I applied systematic literature review and content analysis to identify the key elements of the HRS and sanitation governance institutions at different levels of governance, from international to local using the MLG Type 1 approach. This informed my analysis of institutions at multiple levels of governance, from the international to national and subnational levels during peacetime (see Chapter 5) and in humanitarian situations (see Chapter 6) (Box 1 in Figure 2.2). Further, I analysed: (a) the contestations over meaning (see 3.2, 4.2, 5.2, and 8.2), and (b) evolution of sanitation governance institutions (see 4.3, 5.3, 7.2, and 8.3).

I also used literature review and content analysis to identify the key principles, instruments, and indicators emerging from human rights, humanitarian law, and other non-human rights governance frameworks that are commonly applied for sanitation governance at multiple levels of governance (see Box 2 in Figure 2.2). In addition to the outcome of literature review and content analysis, I incorporated the opinions of experts, and other key actors working in the sanitation sector that I obtained through interviews. This enabled me to fill the gaps in the scholarly literature and integrate principles/instruments that exist *de jure*. From the foregoing, I compiled a comprehensive dataset of sanitation governance laws and principles (2.3.2) which I also linked to actors' behaviours (see Box 3 in Figure 2.2), particularly in the context of the case study (see Chapter 8).

Next, I analysed the interactions between the instruments (see Box 3 in Figure 2.2), drivers (see Box 4 in Figure 2.2), and actors' behaviours (see Box 3 in Figure 2.2). I also analysed the characteristics of the instruments/principles at multiple levels of governance, by adapting the four legal pluralism heuristic types and assessing their impacts on the three components of ID using the ID assessment framework discussed earlier (see 5.5, 6.5, 7.4, and 8.5). My case study (see Chapter 8) afforded me the opportunity to observe the operation of drivers at the national and sub-national levels. It also highlighted new drivers that are not captured in the scholarly literature and additional principles emerging from laws, policy documents, and the informal legal order. The foregoing formed the basis for my recommendations for redesign (see Chapter 9).

## 2.6 ETHICAL CONSIDERATIONS

For my PhD, I was affiliated with both the University of Amsterdam and IHE Institute for Water Education situated in Delft, Netherlands while my research was funded by NUFFIC's Netherlands Professional Fellowship (NFP). Further, I received funding for part of my field research from the Tertiary Education Trust Fund, Nigeria. In the course of my PhD research, I have presented part of my research findings at international conferences and always included my affiliations and funding sources in my presentations. I have also published part of my research findings in peer-reviewed papers/book chapters and I always provided details of my affiliations and funding sources. My interactions with sanitation and governance experts at the conferences I attended, as well as review comments on my papers/book chapters influenced my research design, particularly my choice of humanitarian situations as one of the three contexts for analysing the performance of the HRS. Analysing humanitarian situations eventually strengthened my analysis of the HRS and proposals for redesign by introducing new sanitation governance instruments and principles for ID.

My research design and all the steps were carried out with due consideration of the University of Amsterdam AISSR PhD Guide, including the ethical rules for research involving humans such as through obtaining prior informed consent from the respondents, maintaining confidentiality and anonymity for the respondents, and keeping the results of the interviews and surveys confidential.<sup>20</sup> Specifically, before the commencement of each interview and household survey, I provided each respondent with an official letter introducing me as a PhD researcher affiliated with the University of Amsterdam and the UNESCO-IHE Institute for Water Education, and informed them about the purpose of the research and their role as respondents. For the corporate bodies interviewed, I submitted my letter of introduction to the organisational heads and obtained their formal approval before scheduling an interview. Similarly, for individuals, I presented my letter of introduction in person and I obtained their verbal consent to participate in the interview/survey before administering my questions.

I did not use electronic recording devices because most interviewees declined while citing the sensitive nature of some of the information they were providing. Nonetheless, all the interviewees agreed to note taking. I continually assured each interviewee/respondent of anonymity and the confidentiality of the process and outcomes during the

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<sup>20</sup> AISSR Ethical Procedure and Questions

interviews/administration of questionnaire. To ensure confidentiality and protect the respondents' identities, I have presented the outcomes in my thesis without any direct reference to the names of the individuals, households, or communities involved (see Annexes D and E).