

Introducing an Administratively Feasible Environmental Tax System in Ethiopia

Abstract	328
Introduction	329
I. Environmental Regulatory Enforcement and Tax Administration Authorities	335
A. Environmental Management and Taxation Overview....	335
B. Federal Environmental Regulatory Authorities	337
1. Ministry of Environment, Forest and Climate Change of Ethiopia (MEFCCE)	337
2. Ministry of Water, Irrigation and Electricity of Ethiopia (MWIEE)	340
C. Addis Ababa Administration Environmental Regulatory Authorities	341
1. Addis Ababa Environmental Protection Authority (AAEPA).....	341
2. Addis Ababa Water and Sewerage Authority (AAWSA).....	343
3. Addis Ababa Cleanliness Administration Agency (AACAA).....	343
4. Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO)	344
D. Public-Private Partnership (PPP)	344
E. Tax Administration Systems	347

* Ph.D. researcher in Tilburg School of Law, the Netherlands, and Assistant Professor in Mekelle University School of Law, Addis Ababa, Ethiopia. Contact information: M.T.Gebregiorgs@tilburguniversity.edu.

† This research was conducted under the supervision of Professor Dr. Jonathan Verschuuren (TSL, Tilburg University). It was financed by the Netherlands Organisation for International Cooperation in Higher Education (Nuffic), under grant no. NICHE/ETH/020.

	1. Ethiopian Revenues and Customs Authority (ERCA).....	347
	2. Addis Ababa Revenue Authority (AARA).....	347
II.	Solid Waste Collection and Transportation.....	348
	A. Municipal Solid Waste Collection Service	348
	B. Hazardous Solid Waste Transport and Disposal Permit System	349
	C. Private Organizations	351
	D. Addis Ababa Administration Solid Waste Tax Collection System	352
	1. Addis Ababa Cleanliness Administration Agency ...	352
	2. Addis Ababa Water and Sewerage Authority (AAWSA).....	352
	3. Addis Ababa Revenue Authority.....	353
	4. Addis Ababa Bureau of Trade and Industry Development (AABTID).....	354
III.	Landfill Taxes and Services	355
	A. Existing Landfill Service: Repi Landfill	355
	B. Upcoming Landfill and Transfer Stations	357
IV.	Sewage Sludge, Sewer, and Sludge Cake Management.....	358
	A. Septic Tank and Latrine Sewage Sludge Dislodging Services	358
	B. Sewer Service.....	360
	C. Sewer and Sludge-Based Waste Water Treatment and Disposal.....	362
	1. Existing Waste Water Treatment and Disposal	363
	2. Waste Water Treatment and Reuse Sub-Processes Under Construction	366
	D. Sludge Cake Treatment and Disposal	367
V.	Industrial Effluent Treatment and Disposal.....	369
	A. Federal Effluent Permit System	370
	B. Effluent Tax Collection System	372
VI.	Addis Ababa Administration Emission Tax Permit System..	373
	Conclusion.....	374

ABSTRACT

This Article examines the administrative feasibility of introducing an environmental tax system in the Addis Ababa City Administration (AAA) of Ethiopia. Research supports four findings regarding the difficulty of introducing such a system. First, waste collection, sludge

dislodging services, and sewer services in Ethiopia are lacking. Second, while there is a somewhat effective tax collection system for solid waste, landfill, and sludge taxes, there is not an effective tax collection system for sewer, effluent, and emission taxes. Third, municipal and hazardous solid waste, sludge cake, industrial effluent treatment, and disposal systems are less environmentally friendly than sewer and sludge-based waste water treatment and disposal systems. Lastly, while there is an operating permit system for sewer use and overt hazardous solid waste transportation and disposal, there is no active permit system for covert hazardous solid waste, effluents, and emissions. Based on these findings, it is concluded that solid waste, landfill, sludge, and sewer taxes are somewhat administratively feasible to implement in Ethiopia, but effluent and emission taxes are not.

INTRODUCTION

The polluter-pays principle relies on national institutions that are entrusted with environmental protection¹ to manage² environmental³ taxes.⁴ Environmental taxes are not as expensive to administer and implement as a command and control regime, which limits the amount of residuals that each actor generates.⁵ The use of environmental taxes can be “described as an evolution in

¹ U.N. Conference on the Human Environment, *Declaration of the U.N. Conference on the Human Environment*, ¶¶ 13–17, U.N. Doc. A/CONF.48/14/Rev.1 (June 16, 1972).

² M.T. Gebregiorgis, *What are the Instrumental Roles of the Introduction of Environmental Tax in the Realisation of the Polluter-Pays Principle under the Federal Jurisdiction of Ethiopia*, SOUTH AFRICA J. ENVTL. L & POL’Y 22 (2016).

³ U.N. Conference on Environment and Development, *Rio Declaration on Environment and Development*, ¶ 16, U.N. A/CONF.151/26/Rev.1 (vol. I), annex I (Aug. 12, 1992) [hereinafter *Rio Declaration*].

⁴ See, e.g., M.N. Murty, *Market Based Instruments for Pollution Abatement in India*, in ECONOMICS OF ENVIRONMENT AND DEVELOPMENT 129 (Pushpam Kumar ed., 2005); SUSAN WOLF & NEIL STANLEY, WOLF AND STANLEY ON ENVIRONMENTAL LAW 24457 (6th ed. 2014); EUROPEAN ENVTL. AGENCY, ENVIRONMENTAL TAXES: IMPLEMENTATION AND ENVIRONMENTAL EFFECTIVENESS 17 (David Gee ed., 1996); Andrew Jordan, Rüdiger K.W. Wurzel & Anthony R. Zito, ‘New’ Instruments of Environmental Governance: Patterns and Pathways of Change, 12 ENVTL. POL. 3, 13 (2003).

⁵ See Jordan et al., *supra* note 4, at 4; Nathalie Chalifour, Maria Amparo Grau-Ruiz & Edoardo Traversa, *Multilevel Governance: The Implications of Legal Competences to Collect, Administer and Regulate Environmental Tax Instruments*, in HANDBOOK OF RESEARCH ON ENVIRONMENTAL TAXATION 249, 253 (Janet E. Milne & Mikael Skou Anderson eds., 2012).

environmental management,”⁶ and its operation relies on an effective fiscal administration.⁷ Thus, its design “should be simple, both to administer and to comply with,” and it must be administratively feasible.⁸

Simply put, environmental taxes are just like other taxes, and their administration should be carried out by the tax authorities according to standard tax procedure. In practice, their administration may not be possible without a certain know-how possessed only by environmental authorities. Accordingly, environmental taxes should function as part of the tax system by environmental authorities and tax authorities working closely together towards a common goal.⁹ However, problems arise when different levels of government are responsible for designing and applying tax expenditures. Hence, distributing power to different levels of government will only work if there is loyal cooperation and mutual trust.¹⁰

Regardless of how power is distributed, problems of implementation can arise. These problems are due to administrative complexity, inconsistencies within the existing legal framework, and design flaws involving a “mismatch between the type of instrument chosen and the nature of the problem targeted.”¹¹ The fact that environmental policies usually originate and elaborate in different settings means that designs and assessments are inundated with contradictions and duplications. So, when interventions are required to fix these problems, there must be cooperation and coordination

⁶ JEAN-PHILIPPE BARDE, OECD DEVELOPMENT CENTRE, ECONOMIC INSTRUMENTS IN ENVIRONMENTAL POLICY: LESSONS FROM THE OECD EXPERIENCE AND THEIR RELEVANCE TO DEVELOPING ECONOMIES 3 (Doc. OCDE/GD(93)193, 1994), <http://www.oecd-ilibrary.org/docserver/download/754416133402.pdf?expires=1519155351&id=id&accname=guest&checksum=F3A881E066FC329520E0626AB86582C6>.

⁷ James Alm & H. Spencer Banzhaf, *Designing Economic Instruments for the Environment in a Decentralized Fiscal System*, 26 J. ECON. SURVS. 177, 188 (2012).

⁸ *Id.* at 187–88.

⁹ Chalifour et al., *supra* note 5, at 271.

¹⁰ Pedro M. Herrera Molina, *Design Options and Their Rationales*, in HANDBOOK OF RESEARCH ON ENVIRONMENTAL TAXATION 85, 98–99 (Janet E. Milne & Mikael Skou Anderson eds., 2012); interview with Tsegai Brhane, Ph.D. in Envtl. Law, Mekelle U. Sch. of Law of Eth. in Mekelle, Eth. (June 10, 2014); interview with Mekete Bekelle, Assistant Professor in Envtl. Law, Addis Ababa U. Sch. of Law of Eth. in Addis Ababa, Eth. (Apr. 17, 2014); interview with Taddese Lencho, PhD in Tax Law, Addis Ababa U. Sch. of Law of Eth. in Addis Ababa, Eth. (Apr. 12, 2014).

¹¹ David O’Connor, *Applying Economic Instruments in Developing Countries: From Theory to Implementation*, 4 ENV’T & DEV. ECON. 91, 92 (1998).

from all parties.¹² However, since “institutions form and adapt slowly, in the process of investing in certain norms, values, and cultures,”¹³ the phased implementation of environmental tax should offer institutions a grace period for learning and adjusting to the new rules.¹⁴

Lastly, from the outset, environmental tax “must be backed up by governmental monitoring and enforcement.”¹⁵ Ethiopia is committed to developing a national environmental liability and compensation regime.¹⁶ Ethiopia also introduces incentives and disincentives to discourage practices that hamper the sustainable use of natural resources and the prevention of environmental degradation and pollution.¹⁷

According to early research, Ethiopia has given recognition to the distributive and incentive roles of environmental tax.¹⁸ Additionally, the legal viability of introducing new environmental taxes are contingent on the gradual phasing in and restructuring of existing environmental taxes.¹⁹

In Ethiopia, both the federal and state government have the duty to enforce and respect the right to live in a clean and healthy environment.²⁰ Due to these responsibilities, all city governments in Ethiopia have a duty to introduce a sanitary service provision tax²¹

¹² Chalifour et al., *supra* note 5, at 263–64.

¹³ Jordan et al., *supra* note 4, at 20.

¹⁴ O’Connor, *supra* note 11, at 92–107.

¹⁵ Alm & Banzhaf, *supra* note 7, at 192; *see also* BARDE, *supra* note 6, at 51.

¹⁶ *See Rio Declaration*, *supra* note 3, ¶¶ 7–13.

¹⁷ Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia (Amendment). Article 4(33)(1)(k), Proclamation No. 803/2013, Negarit Gazette, Year 19, No. 61. [hereinafter DPDEOFDREA]; Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia. Proclamation No. 691/2010, Negarit Gazette, Year 17, No. 1 [hereinafter DPDEOFDRE]; Federal Environmental Protection Organs Establishment Proclamation. Article 6(12), Proclamation No. 295/2002, Year 9, No. 7 [hereinafter FEPOEP]; *see also* FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA, ETHIOPIA’S CLIMATE-RESILIENT GREEN ECONOMY: GREEN ECONOMY STRATEGY 198 (2014).

¹⁸ Gebregiorgs, *supra* note 2, at 14–15, 18–24.

¹⁹ M.T. Gebregiorgs, *How Legally Viable is the Introduction of Environmental Tax in the Implementation of the Polluter-Pays Principle under the Federal Jurisdiction of Ethiopia*, L. ENV’T & DEV. 41 (2018) (unpublished manuscript, on file with author).

²⁰ FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, arts. 13 § 1, 92 § 1–4.

²¹ *Id.* at art. 100(2); Addis Ababa City Government Financial Administration Regulation. Article 2(6), Proclamation No. 39/2011, Addis Negarit Gazette, Year 3, No.

and ensure integrated municipal waste management.²² They also have to provide public goods that the private sector will not, or cannot, provide.²³ Simultaneously, city governments shall collect money from its citizens only when authorized by law.²⁴

City governments must establish an environmental agency²⁵ and, where possible, should design its tax structure to provide incentives for environmentally desirable activities and disincentives for actions that damage the environment.²⁶ The benefits of agency intervention should equal or outweigh the costs of the agencies planning, monitoring, and enforcement of its policies.²⁷ However, currently, rather than encouraging environmental conservation, the design of the

33 (*see* the definition of Fees and Charges); *see also* A Regulation of Revenue Authority of Addis Ababa City Administration. Article 2(5), Proclamation No. 17/2009, Addis Negarit Gazette, Year 1, No. 17 [hereinafter AARAR]; A Proclamation to Provide for Financial Administration of Addis Ababa City Government. Article 17, Proclamation No. 16/2009, Addis Negarit Gazette, Year 2, No. 1 [hereinafter AAFAP]; The Federal Government of Ethiopia Financial Administration Proclamation. Article 17, Proclamation No. 648/2009, Negarit Gazette, Year 15, No. 56 [hereinafter FGEFAP].

²² City governments in Ethiopia are bound to internalize their social cost in the provision of municipal waste management by and through the implementing environmental taxes. Federal Pollution Control Proclamation, Article 5(1), Proclamation No. 300/2002, Negarit Gazette, Year 9, No. 12 [hereinafter FPCP]; ENVIRONMENTAL POLICY OF ETHIOPIA § 3.7(c) (1997) [hereinafter EPE]; Addis Ababa City Government Revised Charter Proclamation. Article 2(4) Proclamation No. 361/2003, Addis Negarit Gazette, Year 9, No. 86 [hereinafter AACGRCP] (*see* the definition of “Municipal Service”); Waste Management, Collection and Disposal Regulation of the Addis Ababa City Administration Government Regulation. Article 2(2), Proclamation No. 13/2004, Addis Negarit Gazette, Year 2, No. 29 [hereinafter AAWMCDR] (*see* the definition of “Sanitary Service”); *see also* Solid Waste Management Proclamation. Article 4, Proclamation No. 513/2007, Negarit Gazette, Year 13, no. 13 [hereinafter SWMP].

²³ MINISTRY OF NATURAL RESOURCES DEVELOPMENT AND ENVIRONMENTAL PROTECTION, NATIONAL POLICY ON NATURAL RESOURCES AND THE ENVIRONMENT: NATIONAL CONSERVATION STRATEGY VOLUME II, §§ 1.5, 3.6.2 (1994) [hereinafter NCS II].

²⁴ FGEFAP, *supra* note 21, at art. 10(1); AAFAP, *supra* note 21, at art. 10(1); AACGRCP, *supra* note 22, at arts. 52, 58(1).

²⁵ FEPOEP, *supra* note 17, at art. 14.

²⁶ NCS II, *supra* note 23, § 3.6.2; FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA: MINISTRY OF WATER RESOURCES ETHIOPIAN WATER SECTOR STRATEGY 5 (2001) [hereinafter EWSS]; FEDERAL ENVIRONMENTAL PROTECTION AUTHORITY OF ETHIOPIA BALANCED SCORECARD § 2.1 (2012-2016) [hereinafter FEPAE BSC]; MINISTRY OF FINANCE AND ECONOMIC DEVELOPMENT OF ETHIOPIA, BALANCED SCORECARD 13, 33 and 39 (2011-2015) [hereinafter MFEDE BSC]; *see also* FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA: MINISTRY OF WATER RESOURCES, ETHIOPIAN WATER RESOURCES MANAGEMENT POLICY, (2001) §§ 1.3(3), 2.2.5(B)(1)–(2) (2001) [hereinafter EWRMP]; *see also* REVENUE AND CUSTOMS AUTHORITY OF ETHIOPIA, BALANCED SCORECARD 10 (2011-2015) [hereinafter RCAE BSC].

²⁷ NCS II, *supra* note 23.

Ethiopian tax system seems to fulfil a singular purpose: raising revenues.²⁸ While the Ethiopian Revenues and Customs Authority (ERCA) is by no means the sole player in tax administration, recent tax administration reform has concentrated the power of taxation within that entity.²⁹

Because there are many government bodies involved in tax administration in Ethiopia, there are concerns of disorganization and conflicts of jurisdiction.³⁰ The pollution control system is suffering from a lack of coherence, consistency, and coordination.³¹ There are conflicts of interest and duplications of effort in the environmental standard formulation, Environmental Impact Assessment (EIA) review, and the permit and monitoring system.³² Ethiopia has serious deficiencies in sanitation, landfill, sewage infrastructures, and its rivers are serving as open sewers for untreated industrial waste.³³ The

²⁸ Taddese Lencho, *The Ethiopian Tax System: Excesses and Gaps*, 20 MICH. ST. INT'L L. REV. 327, 328 (2013); interview with Tsegai Brhane, *supra* note 10; interview with Belete Ahmed, Research, Drafting & Training Team Leader & Deputy Pub. Prosecutor, Revenue & Customs Auth. of Eth., Addis Ababa, Eth. (May 3, 2014); interview with Yirgalem Eshetu, Core Process Owner, Pol'y Study & Population Affairs Core Process, Addis Ababa Bureau of Finance and Econ. Dev., Addis Ababa, Eth. (Oct. 6, 2015); interview with Atkilt Gebrezgabiher, Addis Ababa Revenues & Customs Branches' Support & Follow-up Directorate, Director, Addis Ababa, Eth. (Oct. 6, 2015).

²⁹ Taddese Lencho, *supra* note 28, at 351.

³⁰ *Id.* at 352.

³¹ Tsegai Brhane, *Industrial Pollution Control and Management in Ethiopia: A Case Study on Almeda Factory and Sheba Leather Industry in Tigray National Regional State* (Feb. 25, 2015) (unpublished Ph.D. dissertation, University of Warwick) (on file with University of Warwick Publications Service).

³² Interview with Tesfaye Yakob, Env't, Health & Safety Standard Dev. Team Leader, Ethiopian Standards Agency, Addis Ababa, Eth. (June 30, 2014); interview with Mehari Wendmagegn, Compliance Monitoring & Evaluation Directorate Director, Ministry of Env't, Forest & Climate Change of Eth., Addis Ababa, Eth. (Apr. 10, 2014); M.T. Gebregiorgs, *Administrative Powers of the Federal Environmental Protection Authority of Ethiopia in the Protection of the Environment: The Law and the Practice* (2010) (unpublished M.A. thesis, University of Addis Ababa) (on file with author).

³³ Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia, (Civil File No. 64902, Federal First Instance Court, Feb. 21, 1999); EPE, *supra* note 22, § 1.2; U.N. Conference on Sustainable Development, *National Report of Ethiopia*, 64 (2012) [hereinafter Rio+20]; MINISTRY OF ENV'T, FOREST AND CLIMATE CHANGE OF ETHIOPIA: ASSESSMENT ON INDUSTRIAL POLLUTION AND THEIR ENVIRONMENTAL, ECONOMIC AND SOCIAL IMPACT (2014) [hereinafter MEFCCE AIPEESI]; ENVTL. DEV. ACTION-ETH., SOCIAL IMPACT ASSESSMENT OF KOSHE DUMP SITE CLOSURE AND RECLAMATION PROJECT 4 (2012) [hereinafter SIAKDSRCP]; BELES ENGINEERING P.L.C., ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF WASTE WATER TREATMENT PLANT AND SEWER LINE EXPANSION AND REHABILITATION IN THE KALITI CATCHMENT xii (2013) [hereinafter

inadequacy of public-private partnerships (PPPs) impedes the progress of waste management.³⁴ These realities show that Ethiopia as a whole, and the AAA in particular, can only do so much in administering taxes that help protect the environment.

This research assesses a topic for which there is scarce literature, addressing the principles involved in matching environmental problems with levels of government and their tax regimes.³⁵ In addition, the unique governmental and environmental circumstances within Ethiopia must be understood prior to designing and applying any environmental tax.³⁶ Such an understanding will facilitate the design and administration of feasible environmental taxes. This article seeks to fill the lack of empirical research on environmental tax within Ethiopia and further the understanding needed for the implementation of an effective environmental tax policy there.

The research in this Article shows that introducing an environmental tax is administratively feasible when five critical conditions exist. The first is conformity between state and federal environmental policy and tax policy on environmental standards, EIAs, permits, regulations, municipal waste management, and tax mandates. The second condition is that environmental governance must accommodate PPPs. The third condition is that federal and state governments must empower solid waste, landfill, sludge, sewer, effluent, and emission tax collection systems. The fourth is the existence of effective and environmentally friendly treatment and disposal for municipal and hazardous solid waste, sludge cake, industrial effluent, as well as sewer and sludge-based waste. And lastly, the fifth condition is the existence of a permit system for hazardous solid waste transportation and disposal, sewer use, effluent disposal, and emission release.

This Article is organized into six major parts. Part I identifies all federal, and Addis Ababa Administration (AAA) agencies at play in

ESIA WWTPSLER KC]; AGENCE FRANCAISE DE DEVELOPPEMENT & ADDIS ABABA CITY GOVT., SOLID WASTE MANAGEMENT STRATEGY AND INSTITUTIONAL REPORT 1 (2013) [hereinafter AFDD/AACG SWMSIR]; M.T. Gebregiorgs, *The Role of Public Interest Litigation in the Protection of the Environment of Ethiopia: The Law and the Practice*, Mekelle University Cultural Landscapes of Ethiopia Conference Proceedings (2015); Tsegai Brhane, *supra* note 31 (unpublished Ph.D. dissertation).

³⁴ Camilla Louise Bjerkli, *Governance on the Ground: A Study of Solid Waste Management in Addis Ababa, Ethiopia*, 37 INT'L J. URB. REG'L RES. 1273 (2013); AFDD/AACG SWMSIR, *supra* note 33, at 12.

³⁵ Chalifour et al., *supra* note 5, at 250.

³⁶ *Economic Instruments*, *supra* note 17, at 12.

the environmental protection, waste management and taxation sector in the AAA. This part also explores existing possible areas for government agencies to engage in PPPs to provide for more environmentally proactive and administratively efficient infrastructure projects. Next, Part II describes existing public and PPP organizations for municipal and hazardous solid waste collection, transport, and fee arrangements in Addis Ababa. The part then identifies challenges with tax collection systems that are preventing effective administration of solid waste programs. Part III explores existing challenges to the current operation of the Repi Landfill in Addis Ababa. The section also identifies the opportunity to limit environmental pollution through the installation of bio-gas capture and energy technology to reduce landfill emissions and its eventual, planned closure. Then, Part IV reports on sewage sludge, sewer, and sludge cake management organizations in Addis Ababa. Here, too, there is an opportunity for the AAA to enhance revenue and investment strategies to provide for improved environmental service coverage to citizens, and for improved environmental practices in the collection, transport, treatment or disposal of waste. In Part V, issues and potential solutions to enhancing environmentally friendly industrial effluent treatment and disposal program, effectuated by the AAA are discussed. Finally, Part VI briefly reports on the current challenges facing the administrative feasibility of designing and implementing a GHG emissions tax program in the AAA's jurisdiction.

I

ENVIRONMENTAL REGULATORY ENFORCEMENT AND TAX ADMINISTRATION AUTHORITIES

A. Environmental Management and Taxation Overview

In Ethiopia, natural resource and environmental management activities are required to be integrated laterally across all sectors and vertically among all levels of government organizations.³⁷ Ethiopia is committed to fostering a system that avoids conflicts of interests and

³⁷ EPE, *supra* note 22, §§ 2.3(p)–(s); FEDERAL ENVIRONMENTAL PROTECTION AUTHORITY OF ETHIOPIA BUSINESS PROCESS REENGINEERING § 1.2.1 (2010); FEPAE BSC, *supra* note 26, § 1.7; RCAE BSC, *supra* note 26; MINISTRY OF WATER, ENERGY AND IRRIGATION OF ETHIOPIA BALANCED SCORECARD §§ 1.3.2, 1.4 (2011-2015); MFEDE BSC, *supra* note 26.

duplications of efforts by assigning responsibilities to separate organizations for environmental and natural resource development and management. The environmental governance in Ethiopia has two wings: (1) environmental and natural resource development and management; and (2) environmental protection, regulation, and monitoring. It aims to exploit the existing institutions to the maximum extent while minimizing cost.³⁸

The federal government sets the minimum threshold of environmental standards, and states have the duty to ensure, at the minimum, the implementation of the federal standards.³⁹ The federal government in Ethiopia is mandated to enact specific laws to utilize and conserve land and other natural resources.⁴⁰ It has the duty to administer and enact specific laws of the waters linking two or more states or crossing Ethiopia's national boundaries.⁴¹ States must administer natural resources in accordance with the federal laws. In this way, Ethiopia practices fiscal federalism.⁴² Fiscal federalism is a process of devolving fiscal decision-making power across multi-levelled governments.⁴³ While local governments are better situated to address issues that fall within their jurisdiction, the federal government is better positioned to address issues that have significant national effects.⁴⁴

Subject to Ethiopia's federal and state powers of taxation, the federal and state entities must share revenue under this arrangement, and they have the duty to bear their respective financial burden.⁴⁵ In

³⁸ EPE, *supra* note 22, §§ 5.1(c)–(d)(iv).

³⁹ FPCP, *supra* note 22, at arts. 6(1)–(4); FEPOEP, *supra* note 17, at art. 15(2); The Addis Ababa City Government Executive and Municipal Service Organs Re-establishment Proclamation. Article 9(1), Proclamation No. 35/2012, Addis Negarit Gazette, Year 4, No. 35, [hereinafter AAEMSORP].

⁴⁰ FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, art. 55 § 2(a).

⁴¹ *Id.* at arts. 51 § 11, 55 § 2(a).

⁴² *Id.* at art. 52 § 2(d).

⁴³ Abu Girma Moges, *An Economic Analysis of Fiscal Federalism in Ethiopia*, 10 NE. AFRICAN STUD. 111 (2003); Abu Girma Moges, *Fiscal Federalism in Theory and Practice*, 5 ETH. E-J. RES. & INNOVATION 6 (2013); Luiz R. De Mello Jr., *Fiscal Decentralization and Intergovernmental Fiscal Relations: A Cross-Country Analysis*, 28 WORLD DEV. 365 (2000).

⁴⁴ Alm & Banzhaf, *supra* note 7, at 196–97; Molina, *supra* note 10, at 88.

⁴⁵ FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995 arts. 51 § 10, 52 § 2(e), 55 §§ 11, 94(1), 95–99; THE HOUSE OF FEDERATION OF THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA, THE FEDERAL BUDGET GRANT DISTRIBUTION FORMULA 70, 118 (2012/13–2016/17); *see* AACGRCP, *supra* note 22, at art. 53 (explaining the equivalence between taxing and spending power as an indicator of

addition, they have the duty to ensure that any tax is related to the source of revenue that is taxed;⁴⁶ and, they must ensure that the tax does not adversely affect the relationship between the federal government and regional states.⁴⁷ Thus, the fiscal framework of Ethiopia ensures that the introduction of federal and state revenue instruments are consistent with their governmental mandates and fiscal needs.⁴⁸ In addition, according to early research, the scope of environmental tax is legally viable to reflect the degree of Ethiopia's environmental and fiscal federalism and the absence of legal room in the design of Ethiopia's environmental and fiscal federalism for environmental tax-based unfair competition and a race to the bottom.⁴⁹

B. Federal Environmental Regulatory Authorities

1. Ministry of Environment, Forest and Climate Change of Ethiopia (MEFCCE)

The Ministry of Environment, Forest and Climate Change of Ethiopia (MEFCCE) has the duty to enforce federal environmental policies and laws as well as spearhead the assurance of environmental protection.⁵⁰ Implementation of the federal policies and laws must be done without wasting resources.⁵¹ Where necessary, the MEFCCE may delegate part of its obligations to other federal and regional organizations.⁵²

The MEFCCE mandates environmental standards to the states.⁵³ However, a state may implement its own standard, on the condition

the true degree of autonomy of local governments); Frans Vanistendael, *Legal Framework for Taxation*, in 1 TAX LAW DESIGN AND DRAFTING 50 (Victor Thuronyi ed., 1996).

⁴⁶ FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, arts. 96–100 § 1; Taddese Lencho, *supra* note 28, at 340.

⁴⁷ FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, art. 100 § 2; Taddese Lencho, *supra* note 28, at 340, 346; *see also* Fasil Nahum, CONSTITUTION FOR NATION OF NATIONS: THE ETHIOPIAN PROSPECT 36, 200 (1997).

⁴⁸ Gebregiorgis, *supra* note 19, at 21.

⁴⁹ *Id.* at 18–20.

⁵⁰ EPE, *supra* note 22, § 5.3(c); DPDEOFDRE, *supra*, note 17, at art. 10(1)(b); FEPOEP, *supra* note 17, at art. 5.

⁵¹ DPDEOFDREA, *supra* note 17, at art. 4(33)(1)(f).

⁵² DPDEOFDRE, *supra* note 17, at art. 10(7), FEPOEP, *supra* note 17, at art. 6(24).

⁵³ FEPOEP, *supra* note 17, at art. 6(7); FPCP, *supra* note 22, at art. 6(1)(e).

that it is not less stringent than the MEFCCE's.⁵⁴ The Ethiopian Standards Agency (ESA) also mandates minimum Ethiopian national standards⁵⁵ by recognizing standards published by national, regional, or international standardization bodies.⁵⁶ Subsequently, stakeholders must develop their respective derivative standards.⁵⁷

In practice, the MEFCCE has independently approved the Standards for Industrial Pollution Control in Ethiopia, which was adopted by the federal institutions, regional states, and the AAA.⁵⁸ Thus, the standard formulation mandate of the MEFCCE overlaps with the mandate of the ESA, leaving it susceptible to a duplication of efforts.⁵⁹

The MEFCCE has a duty to establish a federal EIA system for projects that are subject to licensing, execution, and supervision by a federal agency or likely to produce trans-regional impacts. It is

⁵⁴ FPCP, *supra* note 22, at art. 6(4); FEPOEP, *supra* note 17, at art. 15(2); AAEMSORP, *supra* note 39, at art. 9(1).

⁵⁵ Ethiopian Standards Agency Establishment Council of Ministers Regulation. Article 5(1), Proclamation No. 193/2010, Negarit Gazette, Year 17, No. 13.

⁵⁶ *Id.* at art. 6(3).

⁵⁷ Tesfaye Yakob, *supra* note 32; Emission Waste Tax Focus Group discussion with Mehari Wendmagegn, Compliance, Monitoring, and Evaluation Director, Ministry of Env't. & Forest of Eth., Addis Ababa, Eth., (July 5, 2014); Emission Waste Tax Focus Group discussion with Girmaye Teshome, Compliance Monitoring Expert, Ministry of Env't. & Forest of Eth., Addis Ababa, Eth., (July 5, 2014); Emission Waste Tax Focus Group discussion with Tesfaye Yakob, Env't., Health and Safety Standard Dev. Team Leader, Eth. Standards Agency, Addis Ababa, Eth., (July 5, 2014); Emission Waste Tax Focus Group discussion with Adugna Mekonnen Beyene, Deputy Manager, Addis Ababa City Gov't Env't. Protection Authority, Addis Ababa, Eth., (July 5, 2014); Emission Waste Tax Focus Group discussion with Tamene Mengistu, Env't. Pollution Inspector, Addis Ababa City Gov't Env't. Protection Authority, Addis Ababa, Eth., (July 5, 2014).

⁵⁸ FEDERAL STANDARDS FOR INDUSTRIAL POLLUTION CONTROL IN ETHIOPIA (2011) [hereinafter FSIPCE]; interview with Hailelassie Sebhata, Gen. Manager, Addis Ababa City Gov't Env't. Protection Authority, Addis Ababa, Eth., (Mar. 27, 2014); interview with Adugna Mekonnen, Deputy Manager, Addis Ababa City Gov't Env't. Protection Authority, Addis Ababa, Eth., (Apr. 1, 2014); interview with Meseret Mengiste, Env't. Awareness & Pollution Inspection Team Leader, Addis Ababa City Gov't Env't. Protection Authority, Addis Ababa, Eth. (Apr. 7, 2014); interview with Asamnew Tekleyowhans, Legal Affairs Officer, Addis Ababa City Gov't Env't. Protection Authority, Addis Ababa, Ethiopia (May 2, 2014); interview with Adugna Mengste, Env't. Safeguards Team Leader, Ministry of Industry of Eth., Addis Ababa, Eth. (July 7, 2014); interview with Kifle Alemayehu, Director of Water Utilisation, Permit & Admin. Directorate, Ministry of Water, Irrigation and Electricity of Eth., Addis Ababa, Eth. (July 3, 2014); interview with Zewdu Tefera, Legal Affairs Directorate Director, Ministry of Water, Energy & Irrigation of Eth., Addis Ababa, Eth. (Apr. 2, 2014); Emission Tax Focus Group Discussion, *supra* note 57.

⁵⁹ Interview with Tesfaye Yakob, *supra* note 32; interview with Mehari Wendmagegn, *supra* note 32; Emission Tax Focus Group Discussion, *supra* note 57.

responsible for evaluating and monitoring the implementation of its EIA study and environmental management plans, respectively.⁶⁰ Nevertheless, in practice, the Ministry of Water, Irrigation and Electricity of Ethiopia (MWIEE)⁶¹ and Ministry of Industry of Ethiopia (MIE)⁶² are reviewing the portions of the EIA that fall under their jurisdiction.

Since the power to review Environmental Impact Assessment Study Report has been delegated to institutions that have a conflict of interest in the review, and because the decision to delegate the duty was based on the decision of the Council of Ministers of Ethiopia, it is vulnerable to substantive and procedural ultra-virus, proceeding “beyond one’s legal power or authority.”⁶³ This is because the delegation of the power to review EIAs to the MWIEE and the MIE allows them to review their own projects; thus, creating a conflict of interest.

When projects are subject to federal licensing, execution, and supervision, or when they are likely to produce trans-regional impacts, they are subject to the MEFCCCE’s permit, regulation, and audit system.⁶⁴ Additionally, the MEFCCCE must ensure, monitor, and evaluate the adequacy of hazardous and municipal waste management and disposal systems.⁶⁵ In executing these responsibilities, the MEFCCCE is subject to the Office of the Federal Auditor General of Ethiopia’s environmental performance audit, pursuant to its

⁶⁰ DPDEOFDREA, *supra* note 17, at arts. 4(33)(1)(b)–(e); FEPOEP, *supra* note 17, at arts. 6(4)–(5); Federal Environmental Impact Assessment Proclamation. Article 14, Proclamation No. 299/2002, Negarit Gazette, Year 9, No. 11 [hereinafter FEIAP].

⁶¹ The Environmental Impact Assessment and Social Development Office of the MWIEE must review the EIA of water, irrigation and energy projects. FEPAE BSC, *supra* note 26; Letters of Delegation of the Power to Review Environmental Impact Assessment to Sectoral Institutions, ENVIRONMENTAL IMPACT ASSESSMENT SOCIAL IMPACT TO MINISTRY OF INDUSTRY [hereinafter FEPAE LDPR EIA SI]; interview with Getnet Fetene, Senior Monitoring & Evaluation Expert in Evtl. Impact Assessment & Soc. Dev. Off., Ministry of Water, Irrigation & Electricity of Eth., Addis Ababa, Eth. (Dec. 19, 2015).

⁶² The Ministry of Industry of Ethiopia’s Environmental Safeguards Team is delegated to review the EIA of proponents that fall in its domain and issues unconditional or conditional approval or rejects the proposed project. FEPAE LDPR EIA SI, *supra* note 61; Gebregiorgs, *supra* note 32, at 51; interview with Adugna Mengste, *supra*, note 58.

⁶³ Gebregiorgs, *supra* note 32, at 83.

⁶⁴ FEPOEP, *supra* note 17, at art. 6(5); FEIAP, *supra* note 60, at art. 14; Prevention of Industrial Pollution Council of Ministers Regulation. Articles 5, 13, Proclamation No. 159/2008, Negarit Gazette, Year 15, No. 14 [hereinafter PIPCMR].

⁶⁵ FPCP, *supra* note 22, at arts. 4(1), 5(2) & 5(4).

establishment laws.⁶⁶ Possible conflicts of interest arise between states that have vested interests in trans-regional issues in the administration of trans-regional projects since the authority to regulate and permit such projects in the AAA is assigned to only one state's environmental regulatory organization, the Addis Ababa Environmental Protection Agency (AAEPA).

2. *Ministry of Water, Irrigation and Electricity of Ethiopia (MWIEE)*

The Ethiopian Constitution enables,⁶⁷ the Ministry of Water, Irrigation and Electricity of Ethiopia (MWIEE) to ensure compliance of water projects with federal laws⁶⁸ and manage water resources permits.⁶⁹ To ensure the highest social and economic benefits, the MWIEE is responsible for the planning, management, and protection of Ethiopia's water resources.⁷⁰ For example, the MWIEE may issue permits for the release of treated waste into water resources and may collect effluent charges from permit holders,⁷¹ prepare directives and standards, and determine the way water users utilize water resources.⁷² Under the Ethiopian Federal Water Resources Management Proclamation, the MWIEE may also delegate part of its mandates to other government bodies.⁷³ Currently, the MWIEE has

⁶⁶ The Office of the Federal Auditor General of Ethiopia relied on the International Organization of Supreme Audit Institutions Working Group on Environmental Auditing, as a source of international auditing standards. Office of the Federal Auditor General Establishment Proclamation (Amendment). Articles 4, 5(5) & 16(3), Proclamation No. 669/2010, *Negarit Gazette*, Year 16, No. 22; OFFICE OF FEDERAL AUDITOR GENERAL, PERFORMANCE AND ENVIRONMENTAL AUDIT MANUAL: AUDITORS GENERAL CAPACITY AND ENHANCEMENT PROJECT (2006); *see* interview with Paulos Zerihun, Performance Audit Director, Off. of Fed. Auditor Gen. of Eth., Addis Ababa, Eth. (Oct. 2, 2015) (explaining that the Office of Federal Auditor has developed the Federal Performance Audit and Environmental Audit Manual, and audited the MEFCCE two times).

⁶⁷ FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, art. 51(11).

⁶⁸ DPDEOFDRE, *supra* note 17, at art. 10(1)(b).

⁶⁹ Ethiopian Federal Water Resources Management Proclamation. Article 2(19), Proclamation No. 197/2000, *Negarit Gazette*, Year 6, No. 25, art. 2(19) [hereinafter EFWRMP] (defining "water resource management" as "activities that include water resources development; utilization, conservation, protection and control").

⁷⁰ *Id.* at arts. 6(3), 8(1).

⁷¹ *Id.* at arts. 13, 22(1)–(2); Ethiopian Water Resources Management Regulation. Article 3, Proclamation No. 115/2005, *Negarit Gazette*, No. 305, art. 32(1) [hereinafter EWRMR].

⁷² EFWRMP, *supra* note 69, at art. 8(1).

⁷³ *Id.* at art. 8(2); DPDEOFDRE, *supra*, note 17, at art. 10(7).

delegated its effluent regulatory power for trans-regional and national water bodies in the AAA to the AAPEA.⁷⁴

C. Addis Ababa Administration Environmental Regulatory Authorities

1. Addis Ababa Environmental Protection Authority (AAEPA)

Subsequent to its duty to establish an independent environmental agency that regulates and protects the environment,⁷⁵ the AAA has tasked the Addis Ababa Environmental Protection Authority (AAEPA) to ensure adherence to federal environmental standards, or to its own more-stringent ones.⁷⁶ The AAPEA must review the EIA studies of projects that are not subject to federal licensing and those that are unlikely to result in trans-regional impacts.⁷⁷ The AAPEA has established an EIA Version Coordinator's Office, which evaluates and monitors the implementation of EIA studies and environmental management plans.⁷⁸

The AAPEA has introduced up-to-date instrumental, microbiology, physicochemical, and soil and air environmental laboratories,

⁷⁴ Interview with Kifle Alemayehu, *supra* note 58.

⁷⁵ FEPOEP, *supra* note 17, at art. 15(1).

⁷⁶ The AAPEA has adopted the FSIPCE, *supra* note 58; AAEMSOP, *supra* note 39, at art. 11(1); *but see* Addis Ababa City Government Environmental Pollution Control Regulation. Article 5(2), Proclamation No. 25/2007, Addis Negarit Gazette, Year 4, No. 56 [hereinafter AAEPCL] (setting forth more restrictive environmental standards).

⁷⁷ AARPCR, *supra* note 76.

⁷⁸ FEIAP, *supra* note 60, at arts. 3, 14(2); Addis Ababa City Government Environmental Impact Assessment Regulation. Articles 5(2), 17, Proclamation No. 21/2006, Addis Negarit Gazette, Year 4, No. 48, [hereinafter AAELAR]; interview with Seid Abdela, Env'tl. Impact Assessment Version Coordinator, Addis Ababa City Gov't Env'tl. Protection Authority, Addis Ababa, Eth. (May 7, 2014); interview with Andargachew Getachew, Megenagna Branch Officer, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Jan. 4, 2016); interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, Env'tl. Awareness & Pollution Inspection Officer, Addis Ababa City Government Env'tl. Protection Authority, Addis Ababa, Eth. (Apr. 7, 2014); interview with Senait Asaminew, Env'tl. Awareness & Pollution Inspection Officer, Addis Ababa City Gov. Env'tl. Protection Authority, Addis Ababa, Eth. (Dec. 28, 2015); Melkamu Belachew, Powers and Functions of the Federal Inland Revenue Authority and the Position of the Tax Appeal Commission (2003) (unpublished senior thesis, Addis Ababa University) (on file with the Faculty of Law Library Archives); *see* ADDIS ABABA MINISTRY OF NAT. RES. DEV. & ENVTL. PROT., NAT'L CONSERVATION STRATEGY SECRETARIAT, TRANSITIONAL GOV'T OF ETH., THE CONSERVATION STRATEGY OF ETHIOPIA VOLUME III: INSTITUTIONAL FRAMEWORK AND OPERATIONAL ARRANGEMENTS § 4.2.1(70) (1997) [hereinafter CSE III].

that provide legal oversight of environmental regulations.⁷⁹ Moreover, the AAEPA has environmental inspectors that may require, without a court order, permits or documents upon unannounced requests. The purpose of these random investigations is to collect original samples for laboratory testing to reveal the extent of industrial compliance to the Federal Environmental Standard of Ethiopia.⁸⁰

The AAEPA monitors industries within the AAA based on an audit report of industries, public complaint, and annual license renewal. To this effect, it has started to endorse a memoranda of understanding with investment, trade, and operating permit licensing organizations.⁸¹ Furthermore, the AAEPA grants licenses, permits, and regulates both federal and local industrial, manufacturing, and service delivery organizations.⁸² It also regulates and controls the disposal of industrial residue, by-products, and waste.⁸³ In addition, the AAEPA has a duty to collaborate with the Addis Ababa Cleanliness Administration Agency (AACAA) on the management and disposal of industrial and hospital waste, the preparation of landfills, and the prevention and control of environmental pollution.⁸⁴

⁷⁹ AAEPACR, *supra* note 76, at art. 11; *see* interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; DVD: Researcher's Video Record-Based Observation and Explanation of Addis Ababa Environmental Protection Laboratory and explanation (on file with author) (showing that except for a few parameters and human resource limitation and turnover, the lab is fully operational with interviews with Mesfin Guche, Instrumental Laboratory Expert, Brhanu Ahmed, Micro-Biology Laboratory Expert; Daniel Bogale, Physicochemical Laboratory Expert, Dawit Alemu, Soil Laboratory Expert; Addis Ababa City Government Environmental Protection Authority 2014); interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78.

⁸⁰ AAEPACR, *supra* note 76, at arts. 12, 13(1)(b)–(d), 13(1)(h); *see* Proclamation of the Constitution of the Federal Democratic Republic of Ethiopia. Article 26(3), Proclamation 1/1995, *Negarit Gazetta* (extra-ordinary), Year 1, No. 1 (stating, in part, that public officials may place restrictions on the right to privacy for the protection of health in compelling circumstances); *see also* FPCP, *supra* note 22, at arts. 7–9, 13 (stating, in part, the scope of environmental inspectors' authority, rights to appeal the inspectors' work, and offenses for hindering inspectors); interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78.

⁸¹ MEMORANDUM OF UNDERSTANDING BETWEEN THE MINISTRY OF TRADE OF ETHIOPIA AND ADDIS ABABA ENVIRONMENTAL PROTECTION (June 2013); interview with Senait Asaminew, *supra* note 78.

⁸² PIPCMR, *supra* note 64, at arts. 5, 13; AAEPACR, *supra* note 76, at arts. 14, 15(4), 16–20; *see also* FSIPCE, *supra* note 58 (detailing standards for industrial pollution).

⁸³ AAEMSOP, *supra* note 39, at art. 11(3).

⁸⁴ AAWMCDR, *supra* note 22, at art. 22(3).

Subject to the environmental performance audit of the Office of the Chief Auditor of the AAA,⁸⁵ the AAEPa is expected to undertake an external environmental audit and to appraise the internal audit of industries. Because both the AAEPa and sixty-six percent of the industries in Ethiopia currently fail to undertake an environmental audit, the AAEPa's inspection tools appear to not be functioning as intended.⁸⁶

2. Addis Ababa Water and Sewerage Authority (AAWSA)

Pursuant to the AAA's integrated waste management policy,⁸⁷ the Addis Ababa Water and Sewerage Authority (AAWSA) is required to prepare a master plan for sewerage lines, prepare contract documents, identify financial demands, and improve the liquid waste disposal system in the city.⁸⁸ The AAWSA also holds the exclusive right to provide sewer and sludge services and to install and operate their treatment and disposal system on a fee basis.⁸⁹ Subsequently, the AAWSA is mandated by local proclamation to collect a sanitary service tariff⁹⁰ and to manage its internal and external funds.⁹¹

3. Addis Ababa Cleanliness Administration Agency (AACAA)

The Addis Ababa Cleanliness Administration Agency (AACAA) was established as a means of ensuring integrated solid waste management in Addis Abba.⁹² In accordance with its mandate, the AACAA issues directives, competence certificates, and work permits.⁹³ The agency incorporates alternative service delivery systems, facilitates contract-based payment to public and private

⁸⁵ AACGRCP, *supra* note 22, at art. 26(1).

⁸⁶ MEFCCE AIPEESI, *supra* note 33, at 18; interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78.

⁸⁷ FPCP, *supra* note 22, at art. 5(1); EPE, *supra* note 22, § 3.7(c).

⁸⁸ AAEMSOP, *supra* note 39, at arts. 59(1), (3)–(4), (6).

⁸⁹ Addis Ababa Water and Sewerage Authority Re-establishment Proclamation. Proclamation No. 10/1995, *Negarit Gazetta*, Year 18, No. 3 [hereinafter AAWSARP].

⁹⁰ Regulation to Determine and Collect the Sanitary Service Tariff of the Addis Ababa City Government. Articles 8(1)–(4) Proclamation No. 25/2009, *Addis Negarit Gazetta*, Year 2, No. 25 [hereinafter RDCSSTAACG].

⁹¹ AAWSARP, *supra* note 89, at art. 25.

⁹² AAEMSOP, *supra* note 39, at art. 55(1), (3); FPCP, *supra* note 22, at art. 5(1); RDCSSTAACG, *supra* note 90, at art. 3(2); ADDIS ABABA CLEANLINESS ADMINISTRATION AGENCY SANITATION SERVICE DELIVERY STANDARD 2013/14 [hereinafter AACAA SSDS].

⁹³ AAWMCDR, *supra* note 22, at art. 36.

partners, and has introduced a tariff system that includes a payment function.⁹⁴ The AACAA may also delegate branches of the agency to collect sanitary service charges.⁹⁵

4. *Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO)*

The Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO) was established to oversee Addis Ababa's solid waste transfer stations and re-use and disposal site projects.⁹⁶ It manages the Repi Landfill, and has introduced a solid waste weighbridge. The AASWRDPO has also introduced a landfill service charge and waste-transfer station that it will implement and manage upon approval.⁹⁷ Finally the AASWRDPO has the duty to introduce a "Reduce, Reuse, Recycle, and Recover" system to the landfill, and will facilitate the eventual closure of the landfill in aspiration that the site will serve a more sustainable purpose in the future.⁹⁸

D. Public-Private Partnership (PPP)

The term "public-private partnership" (PPP) stands for the transfer "of a good or a service currently provided by the public sector, either in whole or in part, to the private sector."⁹⁹ PPPs are an ideal way for the public sector to complete infrastructure projects by relying on the private sector's diverse experience, capacity, and affordability.¹⁰⁰

⁹⁴ AAEMSOP, *supra* note 39, arts. 55(5), (9)–(12); RDCSSTAACG, *supra* note 90, at art. 7(5); interview with Dawit Ayele, Gen. Manager, Addis Ababa Cleanliness Admin. Agency, Addis Ababa, Eth. (July 1 2014); interview with Hamere Kebede, Budget & Plan Process Owner, Addis Ababa Cleanliness Admin. Agency, Addis Ababa, Eth. (June 21, 2014 & Oct. 5, 2015); interview with Belaynesh Tegen, Lema Sema Private Solid Waste Collector, in Solid Waste Tax Focus Group Discussion, Addis Abba, Eth. (June 21, 2014).

⁹⁵ AAWMCDR, *supra* note 22, at art. 21(7); AAEMSOP, *supra* note 39, at art. 55(13).

⁹⁶ AAEMSOP, *supra* note 39, at art. 58(1); SWMP, *supra* note 22, at art. 14.

⁹⁷ AAEMSOP, *supra* note 39, at arts. 58(2)–(7).

⁹⁸ AAEMSOP, *supra* note 39, at arts. 58(3)–(6); Solid Waste Tax Focus Group Discussion with Nega Fantahun, General Manager, Addis Ababa Recycling and Disposal Project Office, Addis Ababa, Eth. (June 21, 2014); interview with Alemayehu Neme, Deputy Gen. Manager, City Admin. of Addis Ababa Solid Waste Recycling & Disposal Project Off. Addis Ababa, Eth. (Apr. 16, 2014 & Oct. 7, 2015).

⁹⁹ M. Massoud & M. El-Fadel, *Public-Private Partnerships for Solid Waste Management Services*, 30 ENVTL. MGMT. 621, 621 (2002).

¹⁰⁰ U.N. Conference on Environment & Development, *Agenda 21*, ¶ 27, U.N. Doc. A/CONF.151/26 (Vol. III) (June 1992) [hereinafter *Agenda 21*]; Daniela Parvu & Cristina Voicu-Olteanu, *Advantages and Limitations of the Public-Private Partnerships and the Possibilities of Using them in Romania*, 27E TRANSYLVANIAN REV. ADMIN. SCI. 189,

Indivisible goods, whose benefits cannot be priced, and the principle of exclusion does not apply, are called “pure public goods.” In contrast, “pure private goods” are completely divisible and subject to the principle of exclusion.¹⁰¹ In reality, most goods possess both elements of “publicness” and “privateness.” Thus, it is rare to encounter goods that are purely public or purely private.¹⁰² Applying this reality to distinguish the nature of goods in the market, goods can be classified as “quasi-public” or “quasi-private.” For example, a quasi-public good is neither purely public nor purely private, but is predominately public in nature. Economists argue, and I agree, that the role of the state should be limited to regulating quasi-public goods; leaving the private sector to self-regulate quasi-public goods.¹⁰³

Environmental governance must acknowledge the role of PPPs, and beyond the sole purpose of providing environmental infrastructure and services. Rather, PPPs should be viewed as arrangements where conscientious environmental norms are formulated and replicated.¹⁰⁴ This approach requires the involvement of every level of government to create a framework where a variety of partnerships can develop and be effective.¹⁰⁵

As explained below, Ethiopia is in a position to develop multilevel environmental governance strategies that encourage PPPs to participate in infrastructure service projects. For example, with public participation¹⁰⁶ and a free market economy in mind,¹⁰⁷ Ethiopia is

190–92 (2009); interview with Netsanet Raya, Chief Operation Officer, Kifya Fin. Tech. plc, Addis Ababa, Eth. (June 23, 2014); interview with Dawit Ayele, *supra* note 94; interview with Gemal Rashid, Deputy Gen. Manager Sewerage Disposal, Treatment & Reuse Core Process, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Apr. 2, 2014); interview with Nega Getahun, Legal & Insurance Director, Addis Ababa Water & Sewerage Authority Addis Ababa, Eth. (Mar. 25, 2014).

¹⁰¹ H.L. BHATIA, PUBLIC FINANCE 4 (19th ed. 1998); TOM TIETENBURG & LYNNE LEWIS, ENVIRONMENTAL AND NATURAL RESOURCE ECONOMICS 31 (9th ed. 2011).

¹⁰² BHATIA, *supra* note 101, at 7.

¹⁰³ *Id.* at 8.

¹⁰⁴ Tim Forsyth, *Building Deliberate Public–Private Partnerships for Waste Management in Asia*, 36 GEOFORUM 429, 429 (2005).

¹⁰⁵ Van Dijk Meine Pieter & Tilay Mesfin, *Micro-Privatization of Solid Waste Collection in Addis Ababa*, 32 WATERLINES 154, 156 (2013).

¹⁰⁶ FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, art. 92(4); *Rio Declaration*, *supra* note 3, ¶ 10; EPE, *supra* note 22, §§ 2.2(h), 4.1(e), 4.2, 4.5(d), 5.2(a).

committed to pursuing policies that expand public job opportunities for the unemployed.¹⁰⁸ The country is also committed to a democratic developmental state ideology that calls for government to withdraw services that can be effectively provided by quasi-public markets.¹⁰⁹ This strategy is also pervasive in the country's economic development policy, which emphasizes a minimally intrusive and facilitative role for government.¹¹⁰ In effect, the government provides public goods only where they cannot be provided by the private sector.¹¹¹ Thus, as exemplified by these existing government strategies, Ethiopia may be well-positioned to engage with PPPs to provide quasi-public infrastructure and services.

Currently, the AAA is exploring PPPs for waste management services. The AAA recognized the advantages of PPP-based waste management,¹¹² and it is committed advancing a PPP policy in this sector by providing a time-restricted tax exemption from any profit and customs duties on imports, subsidized government landfills, long-term loans, and free land to participating sanitary service providers.¹¹³ At the moment, PPPs are only partly involved in solid waste collection, sludge dislodging, sludge cake management, Repi Waste Energy, and solid waste tax collection.¹¹⁴

¹⁰⁷ See Trade and Practice Proclamation. Article 3, Proclamation No 329/2003, *Negarit Gazetta*, Year 9, No. 49; MINISTRY OF FIN. & ECON. DEV., GROWTH AND TRANSFORMATION PLAN OF ETHIOPIA: 2010/11-2014/15, at 64 (2010) [hereinafter GTPE I].

¹⁰⁸ FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, arts. 41(6), 90; see GTPE I, *supra* note 107, at 83; NAT'L PLANNING COMM'N, GROWTH AND TRANSFORMATION PLAN II OF ETHIOPIA: 2015/16-2020/21 (2016) (discussing the potential for industries in Ethiopia to generate job opportunities).

¹⁰⁹ ETHIOPIA PEOPLES' REVOLUTIONARY DEMOCRATIC FRONT POLICY MANUAL (2011); interview with Dawit Ayele, *supra* note 94; Mehret Ayenew, *The Growth and Transformation Plan: Opportunities, Challenges and Lessons*, in REFLECTION ON DEVELOPMENT IN ETHIOPIA NEW TRENDS, SUSTAINABILITY AND CHALLENGES 7 (Dessalegn Rahmato, Meheret Ayenew & Asnake Kefale eds., 2014).

¹¹⁰ CSE III, *supra* note 78, § 4.2.

¹¹¹ See NCS II, *supra* note 23, §§ 1.5, 3.6.

¹¹² AAEMSOP, *supra* note 39, at arts. 58(2)–(7).

¹¹³ AAWMCDR, *supra* note 22, at art. 29(1)–(5).

¹¹⁴ Interview with Dawit Ayele, *supra* note 94.

E. Tax Administration Systems

1. Ethiopian Revenues and Customs Authority (ERCA)

The Ethiopian Revenues and Customs Authority (ERCA) must introduce an equitable, efficient, and effective revenue assessment and collection system, while preventing tax fraud and evasion.¹¹⁵ Furthermore, it must support the goal of harmonizing federal and regional tax administration systems.¹¹⁶ To this end, the ERCA may also issue necessary directives¹¹⁷ and enter contracts and international agreements to comply with federal mandates.¹¹⁸

2. Addis Ababa Revenue Authority (AARA)

The Addis Ababa Revenue Authority (AARA) is responsible for setting up an effective tax collection system, and undertaking studies that will inform its recommendation of new revenue sources. Once a new system has been identified, the AARA must also monitor its progress¹¹⁹ to mitigate tax avoidance, evasion, and other illegal activities.¹²⁰ Intergovernmental communication and transparency regarding tax collection practices¹²¹ will be essential to the AARA's ability to successfully execute agreements regarding tax administration.¹²² Moreover, the AARA must collect a sanitary service tariff rate with trade licenses and other taxes.¹²³

The AAA may delegate any or all of the powers of the AARA to an appropriate federal government body.¹²⁴ Accordingly, it has delegated¹²⁵ its power to the ERCA,¹²⁶ and the Addis Ababa Revenues

¹¹⁵ Ethiopia Revenues and Customs Authority Establishment Proclamation. Articles 5–6 Proclamation No. 587/2008, *Negarit Gazette*, Year 14, No. 44.

¹¹⁶ *Id.* at art. 5(5).

¹¹⁷ *Id.* at art. 20.

¹¹⁸ *Id.* at art. 6(16).

¹¹⁹ See AAEMSOP, *supra* note 39, at art. 13; AARAR, *supra* note 21, at arts. 8(1), 9(1)–(7).

¹²⁰ AARAR, *supra* note 21, at art. 8(3).

¹²¹ *Id.* at art. 8(5).

¹²² *Id.* at art. 9(16).

¹²³ RDCSSTAACG, *supra* note 90, at art. 9(1).

¹²⁴ AAEMSOP, *supra* note 39, at art. 13(1).

¹²⁵ The delegation is an extension of the Financial Administration and Revenue Reform Sub-Program and tax harmonization. Interview with Yirgalem Eshetu, *supra* note 28.

¹²⁶ MEMORANDUM OF UNDERSTANDING BETWEEN ADDIS ABABA ADMINISTRATION AND ETHIOPIAN REVENUES AND CUSTOMS AUTHORITY (Sept. 2011) [hereinafter

and Customs Branches' Support and Follow-up Directorate has been established as a liaison office between the AAA and the ERCA.¹²⁷ While the ERCA runs the operations and the AAA covers the cost of liaison office operations, the Addis Ababa Bureau of Finance and Economic Development (AABFED) administers the revenue collected.¹²⁸

II

SOLID WASTE COLLECTION AND TRANSPORTATION

As previously stated in this Article, public-private partnerships (PPPs) allow for public sector providers to transfer the issuance of goods and services, either wholly or partially, to the private sector.¹²⁹ Specifically, PPPs provide an ideal opportunity for the public sector to utilize the advantages of private sector providers' diversity of experience, project capacity, and accounting in completing quasi-public infrastructure projects.¹³⁰ However, for PPPs to be effective, government at all levels must be involved in creating a framework that fosters collaboration.¹³¹ Below, several examples of ongoing or potential PPPs in the governance of solid waste management in Addis Ababa are explored.

A. Municipal Solid Waste Collection Service

Efficient municipal solid waste management¹³² requires regulations based on market standards from private services.¹³³ The AAA is

MUBAAAERCA]; interview with Belete Ahmed, *supra* note 28; interview with Yirgalem Eshetu, *supra* note 28; interview with Atkilt Gebrezgabiher, *supra* note 28.

¹²⁷ Interview with Yirgalem Eshetu, *supra* note 28; interview with Atkilt Gebrezgabiher, *supra* note 28.

¹²⁸ MUBAAAERCA, *supra* note 126; interview with Belete Ahmed, *supra* note 28; interview with Yirgalem Eshetu, *supra* note 28; interview with Atkilt Gebrezgabiher, *supra* note 28.

¹²⁹ Massoud & El-Fadel, *supra* note 99.

¹³⁰ *Agenda 21*, *supra* note 100; Daniela Parvu & Cristina Voicu-Olteanu, *Advantages and Limitations of the Public-Private Partnerships and the Possibilities of Using them in Romania*, 27E TRANSYLVANIAN REV. ADMIN. SCI. 189, 189 (2009), <http://rtsa.ro/tras/index.php/tras/article/download/388/378> (last visited Apr. 15, 2018); interview with Netsanet Raya, *supra* note 100; interview with Dawit Ayele, *supra* note 94; interview with Gemal Rashid, *supra* note 100; interview with Nega Getahun, *supra* note 100.

¹³¹ Van Dijk Meine Pieter & Tilay Mesfin, *Micro-Privatization of Solid Waste Collection in Addis Ababa*, 32(2) WATERLINES 156 (2013).

¹³² SWMP, *supra* note 22, at art. 2(7) (defining solid waste management as "the collection, transportation, storage, recycling or disposal of solid waste, or subsequent use of a disposal site that is no longer").

committed to creating conditions that allow for PPP-based¹³⁴ solid waste collection, transportation, and disposing services.¹³⁵ But, the AAA must also ensure that PPP-based service providers comply with existing environmental regulations. To ensure compliance, the AACAA has enacted regulations for solid waste service providers, regardless of their public- or private-sector status. For example, a person that transports waste to a transfer site or a disposing site with a vehicle must conform with the city-mandated vehicle, instrument, and service standard requirements, such as using vehicles that have the capacity to cover and hold the waste, taking due care not to cause environmental pollution,¹³⁶ and posting the required notices of the type and nature when transporting hazardous waste.¹³⁷ This last requirement for hazardous waste is explored further below.

B. Hazardous Solid Waste Transport and Disposal Permit System

Pursuant to the AAEPAs' delegation of hazardous waste management responsibilities by the MEFCCCE, no person may transport or dispose of hazardous waste without obtaining authorization from the AAEPAs.¹³⁸ The AACAA is required to confirm the quality and classification of hazardous waste, and any person who generates hazardous waste must manage and dump it with due care.¹³⁹

¹³³ See Massoud & El-Fadel, *supra* note 99.

¹³⁴ SWMP, *supra* note 22, at art. 4(1).

¹³⁵ AAWMCDR, *supra* note 22, at art. 17(1); ADDIS ABABA CLEANLINESS ADMINISTRATION AGENCY SOLID WASTE MANAGEMENT POLICY § 6.2.2. (1996) [hereinafter AACAA SWMP].

¹³⁶ AAWMCDR, *supra* note 22, at arts. 8(1)(a)–(b), 18(1); SOLID WASTE COLLECTING CONTRACTUAL FORMAT OF ADDIS ABABA CLEANLINESS ADMINISTRATION AGENCY AND PRIVATE SOLID WASTE COLLECTING ORGANIZATIONS § 5.2.6 (2006) [hereinafter SWCCF AACAA PSWCO]; AACAA SSDS, *supra* note 92, at 12.

¹³⁷ AAWMCDR, *supra* note 22, at art. 13(3)–(4); SWMP, *supra* note 22, at art. 13.

¹³⁸ FPCP, *supra* note 22, at arts. 2(9), 4(1) (defining “Hazardous Waste”); AAWMCDR, *supra* note 22, at art. 13(4); Federal Democratic Republic of Ethiopia, Environmental Protection Authority, Letter to the Addis Ababa Environmental Protection Authority Ref. no. 8 1.1 1089, Date 25 02 2012 [hereinafter FDRE EPA L AAEPAs]; Federal Democratic Republic of Ethiopia Environmental Protection Authority, Letter to the Ministry of Trade of Ethiopia, Ref. No. 8 1.1 2245, Date 08 08 2012 [hereinafter FDRE EPA L MTE]; AAEPAs, *supra* note 76, at art. 2(8).

¹³⁹ AAWMCDR, *supra* note 22, at art. 13(3).

In the AAA, an estimated two-to-four thousand tons of hazardous waste is generated per year.¹⁴⁰ The hazardous waste must be sorted at its source, stored in specific conditions, and managed by private companies employed by the waste producers.¹⁴¹ In practice, two types of hazardous waste transport systems exist: overt hazardous solid waste transportation and disposal, and covert hazardous solid waste transportation and disposal. Overt hazardous solid waste transportation and disposal must obtain the proper permits from “concerned organizations.”¹⁴² After securing the appropriate permits, it is sealed and buried in the Repi Landfill.¹⁴³ On the other hand, covert hazardous solid waste transportation and disposal is often not subject to any permit system.¹⁴⁴ This is because what is transported and disposed of in the Repi Landfill is often a mix of both municipal and hazardous solid wastes.¹⁴⁵ Thus, while there is a functioning permit system for overt hazardous solid waste transportation and disposal, there is not an accurate and enforceable permit system for covert waste.

In the AAA, there are currently 610 household and zoning-based small solid waste collecting organizations that collect 1 m³ per 60 Ethiopian Birr (ETB).¹⁴⁶ The schedule of the AAA instructs small solid waste collecting organizations to work two times a week in solid

¹⁴⁰ AFDD/AACG SWMSIR, *supra* note 33, at 53.

¹⁴¹ *Id.* at 53, 105.

¹⁴² Group discussion with Nega Fantahun, *supra* note 98; interview with Alemayehu Neme, *supra* note 98; interview with Dawit Ayele, *supra* note 94.

¹⁴³ Group discussion with Nega Fantahun, *supra* note 98; interview with Alemayehu Neme, *supra* note 98.

¹⁴⁴ Interview with Dawit Ayele, *supra* note 94; interview with Tadele Demeko, Deputy General Manager, Addis Ababa Cleanliness Admin. Agency, Addis Ababa, Eth. (May 9, 2014 & Oct. 7, 2015); group discussion with Nega Fantahun, *supra* note 98; interview with Alemayehu Neme, *supra* note 98; interview with Ephrem Sisay, Landfill Officer, City Admin. of Addis Ababa Solid Waste Recycling & Disposal Project Off., Addis Ababa, Eth. (May 9, 2014).

¹⁴⁵ AFDD/AACG SWMSIR, *supra* note 33, at 53; SIAKDSCRIP, *supra* note 33, at 10; interview with Dawit Ayele, *supra* note 94.

¹⁴⁶ MEMORANDUM OF UNDERSTANDING BETWEEN ADDIS ABABA CLEANLINESS ADMINISTRATION AGENCY AND ADDIS ABABA WATER AND SEWERAGE AUTHORITY (2011) [hereinafter MUBAACAAAWSA]; ADDIS ABABA CLEANLINESS ADMINISTRATION AGENCY ANNUAL REPORT 7 (2015) [hereinafter AACAA AR 2015]; ADDIS ABABA CLEANLINESS ADMINISTRATION AGENCY, MICRO AND SMALL SOLID WASTE COLLECTING ORGANISATIONS ZONING AND SERVICE DELIVERY DIRECTIVE (2008) [hereinafter AACAA MSSWCOZSDD]; interview with Dawit Ayele, *supra* note 94; interview with Tadele Demeko, *supra* note 144; interview with Seifu Nasir, Res., Awareness, Contract & Legal Admin., Addis Ababa Cleanliness Admin. Agency, Addis Ababa, Eth. (Apr. 8, 2014 & Oct. 5, 2015).

waste collection. Collected solid waste is deposited in 8 m³ “skips” (solid waste containers) at transfer stations. Then, the AACAA’s vehicles transport the waste from the transfer stations to the Repi Landfill.¹⁴⁷ According to the AACAA’s Annual 2015 Report, this system of solid waste collection operated at a 99.8 percent success rate in meeting its waste management plan targets for household-based solid waste collection.¹⁴⁸

C. Private Organizations

There are thirty private solid waste collection organizations that collect 1 m³ per 74 ETB.¹⁴⁹ These organizations are contractually bound to collect municipal solid waste from customers (governmental and non-governmental organizations) and transport it to the Repi Landfill.¹⁵⁰ As a condition of a permit, the private organizations are required to have at least one truck that picks up solid waste containers; or, alternatively, one trash compactor and one truck that picks up solid waste.¹⁵¹ At one point, some private organizations could use open truck solid waste collection because there were not enough waste collectors to meet demand. Currently, after complaints from the public and street sweepers, private waste collectors must now strictly conform to requirements, such as protective covering over solid waste when in transport.¹⁵²

The AACAA 2015 report declared the projected household generated solid waste, and the actual amount collected in AAA¹⁵³ matched nearly perfectly.¹⁵⁴ Nevertheless, between sixty to sixty-five percent of the solid waste was disposed of in the Repi Landfill, and

¹⁴⁷ SWMP, *supra* note 22, at art. 5(2); AACAA MSSWCOZSDD, *supra* note 146, at 3; AACAA SSDS, *supra* note 92, at 4–7; interview with Dawit Ayele, *supra* note 94; interview with Tadele Demeko, *supra* note 144.

¹⁴⁸ AACAA AR 2015, *supra* note 146, at 22–29.

¹⁴⁹ Interview with Seifu Nasir, *supra* note 146; interview with Tadele Demeko, *supra* note 144.

¹⁵⁰ SWCCF AACAA PSWCO, *supra* note 136, §§ 5.2.5–5.2.6.

¹⁵¹ *Id.* § 5.2.1; AACAA SSDS, *supra* note 92, at 22.

¹⁵² Solid waste collecting organizations were given a grace period of six months before they needed to unconditionally conform to the requirements. Interview with Seifu Nasir, *supra* note 146.

¹⁵³ AACAA AR 2015, *supra* note 146, at 4, 25.

¹⁵⁴ *Id.* at 25.

the remaining was dispersed in rivers and open fields.¹⁵⁵ This discrepancy demonstrates that the solid waste collection service is a work in progress and, as recently as 2015, the service is working poorly.

D Addis Ababa Administration Solid Waste Tax Collection System

1. Addis Ababa Cleanliness Administration Agency

The AACAA is expected to, subject to permission from the Addis Ababa Bureau of Finance and Economic Development (AABFED), open a special bank account for the sanitary service charge.¹⁵⁶ The AACAA may also delegate and endorse a memoranda of understanding with the institutions that collect sanitary service tariffs with water bills, trade licenses, and other taxes.¹⁵⁷ The AACAA is expected to ensure that the collected tariff is deposited in its account periodically,¹⁵⁸ arrange for the revenue to be utilized for sanitation objectives,¹⁵⁹ and submit periodic reports of the sanitary service revenue, management, and utilization to the AABFED and other concerned bodies.¹⁶⁰ Consequently, it has opened a special sanitary service tariff in the Commercial Bank of Ethiopia, and signed a memorandum of understanding with the Addis Ababa Water and Sewerage Authority (AAWSA).¹⁶¹

2. Addis Ababa Water and Sewerage Authority (AAWSA)

The AAWSA collects the sanitary service tariff monthly from the city with the customer's water bill.¹⁶² Subsequently, it must identify and summarize the collected sanitary service charge, and timely deposit it into the AACAA's special sanitary service account.¹⁶³ In effectuating its tariff collection system, the AAWSA must also work

¹⁵⁵ AACAA SWMP, *supra* note 135, at 1; AFDD/AACG SWMSIR, *supra* note 33, at 1; *see also* Bjerkli, *supra* note 34, at 1277–78; Researcher's Video Record-Based Observation of AAA (2016) (on file with author) EBS Television Broadcast Apr. 18, 2016 (confirming the dispersal of solid waste in rivers and open fields).

¹⁵⁶ RDCSSTAACG, *supra* note 90, at art. 7(1).

¹⁵⁷ *Id.* at arts. 7(2)–(3).

¹⁵⁸ *Id.* at art. 7(4).

¹⁵⁹ *Id.* at art. 7(6); *see also id.* at art. 3.

¹⁶⁰ *Id.* at arts. 7(4)–(7).

¹⁶¹ Interview with Tadele Demeko, *supra* note 144; interview with Hamere Kebede, *supra* note 94; interview with Seifu Nasir, *supra* note 146.

¹⁶² RDCSSTAACG, *supra* note 90, at arts. 8(1)–(4).

¹⁶³ *Id.* at art. 8(2).

in cooperation with the AACAA, and when necessary, endorse memorandums of understanding with the AACAA (and other concerned agencies) to ensure the efficient collection of the sanitary service tariff.¹⁶⁴ Thus AACAA has endorsed a memorandum of understanding with the AAWSA for the latter to collect the sanitary service tariff on behalf of the AACAA.¹⁶⁵ The AAWSA recently delegated the collection of the tariff to a PPP, model-based Kifya Financial Technology plc.,¹⁶⁶ and the AACAA is racing to create a memorandum of understanding to solidify this agreement.¹⁶⁷

This arrangement of delegation has resulted in an issue of accountability between the AAWSA and the AACAA. That is, the AAWSA has not been computing the sanitary revenue strictly in-line with the sanitary tariff rate.¹⁶⁸ In 2015, the AAWSA deposited only forty percent of the monthly sanitary service tariff in the special bank account of the AACAA, which is estimated to be 151,002,460 ETB.¹⁶⁹ Thus, even though the AAWSA is collecting the sanitary service tariff, it is not depositing the exact amount at the right time. This presents a challenge in accountability in delegating service tariff collections to public *or* private entities.

3. Addis Ababa Revenue Authority

There are two other government organizations authorized by the AACAA to collect the sanitary service tariff, the Addis Ababa Revenue Authority (AARA) and the Addis Ababa Bureau of Trade and Industry Development (AABTID).¹⁷⁰ The AARA must collect sanitary service tariffs with trade licenses, deposit the tariffs in AACAA's special bank account, and report the amount to the AABFED, as authorized under a 2009 Addis Ababa city

¹⁶⁴ *Id.* at art. 8(5).

¹⁶⁵ MUBAAAERCA, *supra* note 126; interview with Tadele Demeko, *supra* note 144; interview with Seifu Nasir, *supra* note 146.

¹⁶⁶ Interview with Netsanet Raya, *supra* note 100.

¹⁶⁷ Interview with Tadele Demeko, *supra* note 144; interview with Seifu Nasir, *supra* note 146; interview with Hamere Kebede, *supra* note 94.

¹⁶⁸ Interview with Tadele Demeko, *supra* note 144; interview with Hamere Kebede, *supra* note 94; interview with Seifu Nasir, *supra* note 146.

¹⁶⁹ MUBAACAAAWSA, *supra* note 146; AACAA AR 2015, *supra* note 146, at 29; interview with Gemal Rashid, *supra* note 100; interview with Tadele Demeko, *supra* note 144; interview with Hamere Kebede, *supra* note 94; interview with Seifu Nasir, *supra* note 146.

¹⁷⁰ RDCSSTAACG, *supra* note 90, at art. 9(3).

proclamation.¹⁷¹ Currently, the AARA has delegated its responsibilities under the proclamation's mandate to the Ethiopian Revenues and Customs Authority (ERCA), and the ERCA has started collecting the environmental related charges.¹⁷² Here, as seen with the AACAA's challenge of accountability with the AAWSA, the AARA and ERCA are failing to properly track the tariffs from collection to deposit in the AACAA's account. For example, from 2011 to 2014, the AARA collected the following sanitary service charges:¹⁷³ 23,640,144.53 ETB in 2011; 46,757,124.29 ETB in 2012; 50,182,617.96 ETB in 2013; and, 43,409,699.69 ETB in 2015.¹⁷⁴ However, neither the AARA nor the ERCA earmarked the deposited sanitary service tariff collected in the AACAA special bank account.¹⁷⁵ Without proper documentation, there is no way to ensure that the funds generated by the tariffs are making it to the AACAA, or otherwise being sued for their appropriated purposes.

4. Addis Ababa Bureau of Trade and Industry Development (AABTID)

The AABTID administers the commercial registry and issues, renews, suspends, and has the authority to cancel licenses for business organizations.¹⁷⁶ It must also, subject to the endorsement of a memorandum of understanding with the AACAA,¹⁷⁷ collect the sanitary service charge of the city based on the registration and renewal of trade licenses, and then deposit those charges in the special bank account of the AACAA.¹⁷⁸ Nevertheless, the AABTID is neither earmarking nor depositing the solid waste charge collected in the special bank account of the AACAA.¹⁷⁹

¹⁷¹ *Id.* at arts. 9(1)–(2).

¹⁷² MUBAAAERCA, *supra* note 126.

¹⁷³ Addis Ababa Micro Tax Payers Sub-Cities Branches (2011-2014) [hereinafter Sanitary Service Spreadsheet]; interview with Hamere Kebede, *supra* note 94.

¹⁷⁴ Sanitary Service Spreadsheet, *supra* note 173 (see the sanitary service charge of 11 months of 2014).

¹⁷⁵ The AARA deposits the solid waste charge collected in the central treasury. Interview with Atkilt Gebrezgabiher, *supra* note 28; interview with Belete Ahmed, *supra* note 28; interview with Tadele Demeko, *supra* note 144; interview with Hamere Kebede, *supra* note 94.

¹⁷⁶ AAEMSORP, *supra* note 39, at art. 21(2)(d).

¹⁷⁷ RDCSSTAACG, *supra* note 90, at art. 10(3).

¹⁷⁸ *Id.* at arts. 10(1)–(2).

¹⁷⁹ Interview with Tadele Demeko, *supra* note 144; interview with Hamere Kebede, *supra* note 94.

Previous research suggests that since multiple public and private organizations are tasked with collecting tariffs and fees for sanitary services,¹⁸⁰ the system is only partially effective.¹⁸¹ However, based on the findings of this Article, it is clear that the organizations failure to properly track and account for the collected money is largely due to the lack of effective administration by the governing agency, the AACAA.

III

LANDFILL TAXES AND SERVICES

A. Existing Landfill Service: Repi Landfill

One potential solution to control landfill spillover in AAA's emerging regulatory environment is a landfill tax. This tax could be levied by weight, volume, or toxicity of contaminants, and the revenue could be used to maintain an ecologically sound waste management system in the city. AAA's primary landfill, the Repi Landfill, and a newer landfill and related transfer stations, are under construction.

In Ethiopia, each urban administration shall, in conformity with federal environmental standards, ensure that solid waste disposal sites are adequately constructed and properly used.¹⁸² Each administration must ensure, subject to environmental auditing,¹⁸³ that all new solid waste disposal site construction and modification has undertaken an Environmental Impact Assessment (EIA).¹⁸⁴

The Repi Landfill is under the ownership and administration of the Addis Ababa Solid Waste Re-use and Disposal Project Office (AASWRDPO).¹⁸⁵ It is thirty-six hectares in size and is in the southwestern part of AAA's jurisdiction, in Nifas-Silk-Lafto Kifile ketema. It is the first landfill in Addis Abba, and it has been in use since 1968.¹⁸⁶ Although it is supposed to use a weighbridge to weigh

¹⁸⁰ Gebregiorgs, *supra* note 2, at 25; Gebregiorgs, *supra* note 19, at 26–29, 41.

¹⁸¹ Each sector is expected to notify AABFED of its revenue sources, which are to be automatically earmarked from the retained revenue. Interview with Yirgalem Eshetu, *supra* note 28. AACAA has started to give notification to all concerned organs. Interview with Tadele Demeko, *supra* note 144.

¹⁸² SWMP, *supra* note 22, at art. 14(1).

¹⁸³ *Id.* at art. 14(3).

¹⁸⁴ *Id.*

¹⁸⁵ Interview with Alemayehu Neme, *supra* note 98.

¹⁸⁶ SIAKDSCRIP, *supra* note 33, at 9–11.

incoming waste between the transfer stations and disposal site, due to technical problems with its weighbridge the solid waste weight is currently measured based on volume, which does not guarantee accuracy.¹⁸⁷

The Repi Landfill is generating pollution. It is a substandard, open air, saturated dump without any effluent treatment or drainage system.¹⁸⁸ Also, since it does not separate municipal and hazardous waste, these wastes are comingled in their disposal.¹⁸⁹ Even though the waste is supposed to be spread, compacted, and covered with soil, the present method of waste disposal is crude, open-dumping: hauling the wastes by truck, spreading and levelling by bulldozer, and compacting by compactor and bulldozer.¹⁹⁰ There is no daily covering with soil, no leachate containment or treatment, no rainwater drain-off, no odor or vector control, no liners, and no gas ventilation.¹⁹¹ Since the proper treatment for the waste is not followed at the Repi Landfill, it is nearly impossible to control its spill-over.¹⁹²

In part, because of these pollution problems, the AAA is closing and reclaiming the Repi Landfill.¹⁹³ At the time of this writing, nineteen hectares of the landfill closed, seven hectares have been given to Cambridge Industries Ltd. Repi Waste Energy, two hectares were allotted to Repi Transfer station, and the remaining eight hectares will be closed soon.¹⁹⁴ Moreover, since AAA installed a landfill gas extraction and burning system that generates bio-gas-based energy, the landfill has reduced twenty-five to thirty percent of

¹⁸⁷ AAEMSORP, *supra* note 39, at arts. 58(2), -(4), -(7); interview with Alemayehu Neme, *supra* note 98; interview with Ephrem Sisay, *supra* note 144.

¹⁸⁸ Rio+20, *supra* note 33, at 64; SIAKDSCR, *supra* note 33, at 4–10; interview with Alemayehu Neme, *supra* note 98; interview with Ephrem Sisay, *supra* note 144; Researcher's Video Record-Based Observation of Repi Landfill, Addis Ababa, Ethiopia (Apr. 16, 2014) (on file with author).

¹⁸⁹ SIAKDSCR, *supra* note 33, at 10; interview with Alemayehu Neme, *supra* note 98; interview with Ephrem Sisay, *supra* note 144; group discussion with Nega Fantahun, *supra* note 98; interview with Dawit Ayele, *supra* note 94; interview with Tadele Demeko, *supra* note 144.

¹⁹⁰ Interview with Ephrem Sisay, *supra* note 144; SIAKDSCR, *supra* note 33, at 10.

¹⁹¹ Interview with Ephrem Sisay, *supra* note 144; SIAKDSCR, *supra* note 33, at 10.

¹⁹² Interview with Ephrem Sisay, *supra* note 144; SIAKDSCR, *supra* note 33, at 10.

¹⁹³ Interview with Alemayehu Neme, *supra* note 98; SIAKDSCR, *supra* note 33, at 5, 47.

¹⁹⁴ Interview with Alemayehu Neme, *supra* note 98; SIAKDSCR, *supra* note 33, at 5, 47.

its carbon emission.¹⁹⁵ This gas extraction, burning, and generation of bio-gas energy has fulfilled the validity, certification, and verification stages of the Clean Development Mechanism-based carbon trading registration of the UNFCCC; and the landfill will, in due course, provide carbon credit.¹⁹⁶

B. Upcoming Landfill and Transfer Stations

Subject to EIA study approval by the MEFCCCE, the AAA is constructing the Sendafa Landfill with five different solid waste cells, along with the Repi, Akaki, and Bole Arabsa Transfer Stations.¹⁹⁷ The Sendafa Landfill is a 136 hectare modern landfill with a twenty-year use period¹⁹⁸ that may be prolonged through the AASWRDPO's Reduce, Reuse, Recycle, and Recover strategy.¹⁹⁹ Since the AAA is within the state of Oromia, which has a special interest in its social services,²⁰⁰ the Sendafa landfill and feeder transfer stations will provide service to eight special zones in the state.²⁰¹ While the existing solid waste treatment and disposal is environmentally unfriendly, this upcoming landfill and the transfer stations are promising.

Another alternative to ameliorate pollution from solid waste would be private landfill services. Currently, there are no private landfills in AAA's jurisdiction. The opportunity for PPPs in expanding landfill services may be a viable option for the AAA to pursue. In effect,

¹⁹⁵ The gas extraction and burning system includes gas monitoring technology that records carbon emissions from the process. COMMUNICATION AFFAIRS BUREAU OF ADDIS ABABA ADMIN., ANNUAL BOOK 150 (2014).

¹⁹⁶ *Id.*; group discussion with Nega Fantahun, *supra* note 98; interview with Alemayehu Neme, *supra* note 98. Some 25%–30% of carbon emissions are reduced when organic solid waste (methane) is burned and bio-gas-based energy is generated than when it is directly released into the atmosphere. Interview with Tedros Abrha Weldemichael, Chemist, Sheba Leather Factory Production Manager, Mekelle, Eth. (Apr. 9, 2016).

¹⁹⁷ Group discussion with Nega Fantahun, *supra* note 98; interview with Alemayehu Neme, *supra* note 98; interview with Getachew Belachew, Env'tl. Impact Assessment Version Officer, Addis Ababa City Gov. Env'tl. Protection Authority, Addis Ababa, Eth. (Dec. 28, 2015); interview with Muhammed Ibrahim, Vice Head & Env'tl. Protection Core Process Leader, Oromia Rural Land & Env'tl. Protection Bureau, Addis Ababa, Eth. (June 27, 2014).

¹⁹⁸ Interview with Ephrem Sisay, *supra* note 144; interview with Alemayehu Neme, *supra* note 98.

¹⁹⁹ Interview with Alemayehu Neme, *supra* note 98.

²⁰⁰ FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA CONSTITUTION, proclamation 1/1995, art. 49 (5).

²⁰¹ Interview with Alemayehu Neme, *supra* note 98.

public landfill services may, through different participatory or transferring methods, be sold to private investors.²⁰²

As for landfill taxes, private solid waste collecting organizations deposit a 4 ETB per 1 m³ landfill charge directly in the Commercial Bank of Ethiopia.²⁰³ This depositing structure could make the administration of landfill taxes in the future more feasible.

IV

SEWAGE SLUDGE, SEWER, AND SLUDGE CAKE MANAGEMENT

A. Septic Tank and Latrine Sewage Sludge Dislodging Services

Sewage from septic tanks and latrines continue to pollute groundwater in AAA, and the patchwork of public and private sludge services creates a situation where many household's sludge is not pumped out in a timely manner. Most liquid waste in AAA is handled by a PPP-based sludge dislodging service.²⁰⁴ Sludge collected from septic tanks or latrines must be capable of being pumped,²⁰⁵ and the maximum accessible distance between the cesspool and the vacuum truck must not be more than forty meters.²⁰⁶

The AAWSA has a special mandate that allows sludge dislodging charges for the use of sludge using vacuum trucks.²⁰⁷ Previously, the AAWSA delivered sludge dislodging services to households for 176 ETB and 500 ETB for institutions per trip. Now, while it provides highly subsidized sludge dislodging service to households, it has handed over sludge dislodging services for institutions to private partners.²⁰⁸ And while there is technically a feasible sewer service

²⁰² AAWMCDR, *supra* note 22, at art. 17(1).

²⁰³ The bank account number is posted in the compound of AACAA. Group discussion with Nega Fantahun, *supra* note 98; interview with Alemayehu Neme, *supra* note 98; interview with Dawit Ayele, *supra* note 94; interview with Tadele Demeko, *supra* note 144.

²⁰⁴ Interview with Gemal Rashid, *supra* note 100; interview with Nega Getahun, *supra* note 100; interview with Solomon Tafese, Addis Ababa Akaki-Kaliti Sub-City Water & Sewerage Manager, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (June 17, 2014).

²⁰⁵ The Addis Ababa Water Supply and Sewerage Disposal Services Regulations. Article 39(1)(b), Proclamation No. 5/1995 (Repealing) Regulations, No. 31/2002, Neg. Gaz., Year 5, No. 1 [hereinafter AAWSSDSRRR].

²⁰⁶ *Id.* at art. 39(1)(a).

²⁰⁷ AAWSARP, *supra* note 89, at art. 16(2)(a); AAWSSDSRRR, *supra* note 205, at art. 39(1).

²⁰⁸ Interview with Gemal Rashid, *supra* note 100; interview with Nega Getahun, *supra* note 100; interview with Gemila Mohammed, Waste Water Treatment and Re-use Process

provision available to households, the AAWSA does not provide sludge dislodging services for them.²⁰⁹ The eligible customers of AAWSA are getting sludge dislodging service within one to four days.²¹⁰

When AAWSA faces an extra demand for its sludge dislodging service, it bargains with its private partners. For instance, in 2014 it collected 176 ETB from its customers and outsourced the extra-load to private sludge dislodging service providers at a peak rate of 600 ETB per trip.²¹¹

The AAWSA may invite, encourage, license, and supervise private investors to participate in the vacuum trucks dislodging service,²¹² and its board determines the conditions to be followed in a PPP agreement of service.²¹³ Subject to environmentally conscious contracts with the AAWSA, private sludge dislodging service providers committed to using the waste water treatment plants of the AAWSA are emerging.²¹⁴

On average, each private sludge-dislodging car services septic tanks or latrines four times a day.²¹⁵ The private service's sludge dislodging service fee is based on the distance (kilometers) to and

Owner, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Jan. 4, 2016); interview with Nuri Muhammed, Waste Water Treatment Case Manager, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth., (Apr. 3, 2014 & Dec. 25, 2015); interview with Tadese Eshete, Kaliti Waste Water Treatment Plant Supervisor, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Mar. 28, 2014); interview with Tilahun Yimer, Kotebe Waste Water Treatment Plant Deputy Case Manager, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Dec. 25, 2015); interview with Solomon Tafese, *supra* note 204.

²⁰⁹ Addis Ababa Water & Sewerage Authority, Sewer Service Delivery Contract Format § 1.3 [hereinafter AAWSA SSDCF]; interview with Andargachew Getachew, *supra* note 78.

²¹⁰ Previously, sludge dislodging service customers were subjected to a much longer waiting period. Addis Ababa Water and Sewerage Authority, Waste Water Treatment and Reuse Sub-Process Annual Report (2015) at 2 [hereinafter AAWSA WWTRSP AR]; interview with Gemila Mohammed, *supra* note 208; interview with Nuri Muhammed, *supra* note 208; interview with Tilahun Yimer, *supra* note 208.

²¹¹ Effluent Tax Focus Group Discussion, Addis Ababa Eth. (June 28, 2014); interview with Nega Getahun, *supra* note 100; interview with Solomon Tafese, *supra* note 204.

²¹² AAWSARP, *supra* note 89, at art. 16(2)(b).

²¹³ AAWSSDSRRR, *supra* note 205, at art. 39(2); AAWMCDR, *supra* note 22, at art. 20(3).

²¹⁴ Addis Ababa Water & Sewerage Authority, Private Sludge Dislodging Service Provision Contract Format [hereinafter AAWSA PSDSPCF]; interview with Gemila Mohammed, *supra* note 208.

²¹⁵ Interview with Gemila Mohammed, *supra* note 208.

from the service site, and is calculated with the prevailing market rate. On average, the charge for each trip for both households and institutions is between 800 and 1,500 ETB.²¹⁶ Since septic pump-out trucks do not access all areas within the AAA's jurisdiction, to service new high-volume customers, sewage from septic tanks and latrines continue to pollute groundwater.²¹⁷ Thus, there is only a partially effective PPP-based sludge dislodging service since the PPP fails to provide affordable service in the entire AAA jurisdictional area.

The AAWSA has eight sludge dislodging service payment branches to facilitate the sludge dislodging charge,²¹⁸ and its customers register and pay a cash receipt service charge that is voucher-based at their respective branch.²¹⁹ Also, adhering to contract law,²²⁰ the payment for the sludge dislodging service charge is taken simultaneously with the service.

B. Sewer Service²²¹

The AAWSA has a special mandate for sewerage system use.²²² Any person (from households to industries) who wants to use the sewer system must conform to federal effluent standards and get a license from the AAWSA.²²³ The AAWSA facilitates the issuance of sewer permits in its eight branches, a service that is subject to contractual agreement and annual renewal.²²⁴ Upon an applicant's receipt of a sewer system license, the AAWSA initiates sewer installation within three meters of the boundary of the applicant.²²⁵

²¹⁶ Interview with Gemal Rashid, *supra* note 100; interview with Nega Getahun, *supra* note 100; interview with Solomon Tafese, *supra* note 204.

²¹⁷ ESIA WWTPSLER KC, *supra* note 33, at xii, 260.

²¹⁸ AAWSSDSRRR, *supra* note 205; Gebregiorgs, *supra* note 2, at 33; Gebregiorgs, *supra* note 19, at 32–41.

²¹⁹ Interview with Gemila Mohammed, *supra* note 208.

²²⁰ Civil Code of the Empire of Ethiopia Proclamation. Art. 2278, Proclamation No. 165/1960, Negarit Gazette, Year 19, No. 2.

²²¹ See the definition of “sewerage service” in AAWSARP, *supra* note 89, at art. 2(21) (“Sewerage Service” means the collection, treatment, and disposal of waste water and sewage).

²²² *Id.* at art. 16(1).

²²³ AAEPKR, *supra* note 76, at arts.7(1)–(2); interview with Zelalem Ketema, Sewer System Monitoring Case Manager, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Jan. 4, 2016); interview with Andargachew Getachew, *supra* note 78.

²²⁴ AAWSA SSDCF, *supra* note 209, at 10.

²²⁵ AAWSSDSRRR, *supra* note 205, at arts. 27(1)–28(1); AAWSA SSDCF, *supra* note 209, §§ 1.1–2.2; interview with Gemila Mohammed, *supra* note 208; interview with Zelalem Ketema, *supra* note 223; interview with Tadese Eshete, *supra* note 208.

The applicant is responsible for constructing waste water facilities and pre-treatment facilities (e.g., conveyance and bulk waste catchment structures).²²⁶ Then the water facilities and sewer line²²⁷ are installed and connected—either where the authority compels the proprietor, or at his or her request.²²⁸ The cost for the construction and installation of the waste water facilities, within the property line up to the public sewer system, is covered by the proprietor.²²⁹

Unless the AAWSA permits otherwise, the connection to the public sewerage system shall be installed by its own crew.²³⁰ Subject to the Waste Water Discharge Standard, the AAWSA shall determine the volume of the waste water discharged into the sewerage system.²³¹ Since its waste water treatment plants are dependent on natural processes, the AAWSA issues permits to industries only if their effluent physicochemical properties conform to the Federal Effluent Standard of Ethiopia.²³² Despite the presence of an operating sewer use permit system, there are still some uncontrolled and illegal connections of sewage to sewer lines.²³³ Even so, the existence of the sewer use permit system is functioning and able to be utilized by those who wish to conform to the law.

In AAA, there are the Kaliti, Akaki and Eastern Sewage Catchments; and, except for a few condominium sewer packages, the centralized sewer systems are available only in the Kaliti

²²⁶ AAWSSDSRRR, *supra* note 205, at arts. 27(3), 28(2), 31; AAWSA SSDCF, *supra* note 209, § 2.3; AAWSARP, *supra* note 89, at art. 2(24) (“Waste Water Facility” means any public or private arrangement, works, structure, appliance or equipment which is made, constructed, installed, or used for the removal, storage, transportation, treatment, disposal, or discharge of any waste water).

²²⁷ AAWSARP, *supra* note 89, at art. 2(19) (“Sewer line” means a series of sewers, including the manhole, if any, along the sewer).

²²⁸ AAWSSDSRRR, *supra* note 205, at arts. 26–28(3); AAWSA SSDCF, *supra* note 209, § 1.3.

²²⁹ AAWSSDSRRR, *supra* note 205, at art. 28(2); AAWSA SSDCF, *supra* note 209, § 1.2.

²³⁰ AAWSSDSRRR, *supra* note 205, at art. 29; AAWSA SSDCF, *supra* note 209, §§ 3.1–3.3.

²³¹ AAWSSDSRRR, *supra* note 205, at arts. 32–33.

²³² Effluent Tax Focus Group Discussion, *supra* note 211; interview with Gemal Rashid, *supra* note 100; interview with Tadese Eshete, *supra* note 208; interview with Nega Getahun, *supra* note 100; interview with Nuri Muhammed, *supra* note 208; interview with Tilahun Yimer, *supra* note 208; interview with Zelalem Ketema, *supra* note 223.

²³³ ESIA WWTPSLER KC, *supra* note 33, at xii.

Catchment.²³⁴ The sewer service is limited to municipal waste that encompasses toilet, shower, and kitchen waste water.²³⁵ Solid materials, oil, petrol, sludge cake, and rain water are strictly prohibited.²³⁶ The sewer service in the AAA, which operates on slope-based gravitation, accounts for only ten percent of the total necessary sewer coverage. Because of the high volume of sewage waste, it is vulnerable to ruptures.²³⁷ Thus, the high volume of sewage waste, and susceptibility to ruptures creates insufficient sewer service in the Kaliti Catchment.

AAWSA sewer customers must pay sewer service fees either by aggregating the cost of service and connection charges in a block payment; or by paying through a six month's voucher-based payment of a nominal sewer connection charge.²³⁸ The sewer service charge has not fully internalized the external costs of operating the sewer service, such as environmental contamination from sewer rupture.²³⁹

C. Sewer and Sludge-Based Waste Water Treatment and Disposal

1. Existing Waste Water Treatment and Disposal

The main objective of the AAWSA Waste Water Treatment and Re-use Sub-Process (WWT RUSP) is the treatment and disposal of

²³⁴ Effluent Tax Focus Group Discussion, *supra* note 211; interview with Nuri Muhammed, *supra* note 208; interview with Tadese Eshete, *supra* note 208; interview with Tesfalem Yifa, Sewerage Dep't: Construction Supervision & Contract Admin. Team Leader, Water, Sanitation Rehabilitation & Dev Project Off. of Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Mar. 22, 2016).

²³⁵ Interview with Gemila Mohammed, *supra* note 208.

²³⁶ AAWSA SSDCF, *supra* note 209, §§ 2.1, 7.4; AAEPDR, *supra* note 76, at art. 7; interview with Nuri Muhammed, *supra* note 208; interview with Tadese Eshete, *supra* note 208; interview with Zelalem Ketema, *supra* note 223; interview with Solomon Tafese, *supra* note 204; interview with Andargachew Getachew, *supra* note 78.

²³⁷ Effluent Tax Focus Group Discussion, *supra* note 211; ESIA WWTPSLER KC, *supra* note 33, at 160; interview with Gemal Rashid, *supra* note 100; interview with Tesfaye Werede, Supervisor of Sewerage System, Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Apr. 3, 2014); interview with Tesfaw Ashagrie, Water Supply & Sanitation Directorate: Env'tl. Specialist & Team Leader, Ministry of Water, Irrigation & Electricity of Ethiopia, Addis Ababa, Eth. (June 19, 2014); interview with Zelalem Ketema, *supra* note 223.

²³⁸ On average the sewer connection charge is 3,000 to 4,000 ETB. Effluent Tax Focus Group Discussion, *supra* note 211; interview with Gemal Rashid, *supra* note 100; interview with Tesfaye Werede, *supra* note 237; interview with Tesfaw Ashagrie, *supra* note 237; interview with Zelalem Ketema, *supra* note 223; interview with Tadese Eshete, *supra* note 208.

²³⁹ AAWSA SSDCF, *supra* note 205; AAWSA SSDCF, *supra* note 209, § 5; Gebregiorgs, *supra* note 2, at 31; Gebregiorgs, *supra* note 19, at 32–40.

sewer waste, sludge-based waste water, and sludge cake.²⁴⁰ At the time of this writing, the AAA is working to expand waste water treatment services by planning and constructing gravitation, primary, and secondary biological-based²⁴¹ treatment plants in Kaliti, Kotebe, Gelan, Mikililand, Ayat Gerji, Bole Homes, and Chefe.²⁴² The existing waste water treatment and disposal structures in the sub-cities of Kaliti, Kotebe, Gelan, Mikililand, Ayat Gerji, and Bole Homes are described in detail, below.

Each day an average of 16,020 to 19,020 m³ of sewer system-based waste water and 19,000 m³ of sludge dislodging-based waste water is treated and disposed of in the natural stabilization pond system of the Kaliti and Kotebe Waste Water Treatment Plants.²⁴³ The Kaliti Waste Water Treatment and Re-use Sub-Process (WWT RUSP) is a lagoon treatment system built in the late 1970s. The system consists of inlet screens and grit chambers, two settling chambers, two rectangular pond systems, slant parallel pond systems, and eight drying beds.²⁴⁴ The system treats and disposes of sludge and sewer-based waste water, subject to manual intake measurement.²⁴⁵ Even though it is currently operating beyond its design capacity, the system is not able to satisfy the needs of the city.²⁴⁶

Sewage enters into the Kaliti WWT RUSP by a gravity sanitary sewer piping system.²⁴⁷ It is first subject to preliminary screening and

²⁴⁰ AAWSA WWTRSP AR, *supra* note 210, at 1; interview with Gemal Rashid, *supra* note 100; interview with Nuri Muhammed, *supra* note 208; interview with Tadese Eshete, *supra* note 208; interview with Tilahun Yimer, *supra* note 208 (stating that waste water constitutes 90% of the sludge transported to the waste water treatment plants).

²⁴¹ AAWSA WWTRSP AR, *supra* note 210, at 1; interview with Nuri Muhammed, *supra* note 208; interview with Tilahun Yimer, *supra* note 208. It is important to note that they have neither tertiary nor chemical treatment schemes.

²⁴² AAWSA WWTRSP AR, *supra* note 210, at 1.

²⁴³ *Id.*; interview with Gemal Rashid, *supra* note 100; interview with Gemila Mohammed, *supra* note 208; interview with Nuri Muhammed, *supra* note 208; interview with Tadese Eshete, *supra* note 208.

²⁴⁴ ESIA WWTPSLER KC, *supra* note 33, at 24–26.

²⁴⁵ At the time of this writing, the flow meter of the Kaliti WWT RUSP lagoon was not operating. Interview with Tadese Eshete, *supra* note 208; interview with Getachew Demeke, Kaliti Waste Water Treatment Plant Biologist, Addis Ababa Water and Sewerage Authority, Addis Ababa, Eth. (Mar. 28, 2014); interview with Tesfalem Yifa, *supra* note 234.

²⁴⁶ ESIA WWTPSLER KC, *supra* note 33, at xii, 24; AAWSA WWTRSP AR, *supra* note 210; interview with Tadese Eshete, *supra* note 208; interview with Nuri Muhammed, *supra* note 208; interview with Getachew Demeke, *supra* note 245.

²⁴⁷ ESIA WWTPSLER KC, *supra* note 33, at 25.

sedimentation. The sewage then flows to the distributing cell which moves the waste water into parallel “A” and “B” stabilization and oxidation ponds.²⁴⁸ The treatment steps are displacement-based.²⁴⁹ At the maximum flow rate, following thirty days of hydraulic retention time in the stabilization ponds, the treated waste water that resides in A4 and B4 maturation ponds²⁵⁰ is released to the redistributing and screw pump. While there, physical, chemical, and biological laboratory tests are undertaken. Later, if the treated waste conforms to environmental standards, it is directly discharged to Small Akaki River. If the waste water does not conform to environmental standards, it is sucked back against gravity to the stabilization ponds for retreatment.²⁵¹

In addition to the Kaliti Waste-Water Treatment Plant Environmental Laboratory Center’s regular appraisal, the AAEPa has the duty to sample the waste water. The waste water samples then undergo environmental standard-based laboratory evaluation and monitoring.²⁵² In practice, since the AAWSA does not have a full-fledged laboratory, a sample must be taken from each waste water treatment plant and tested in the AAEPa’s laboratory.²⁵³ Despite the AAWSA’s recent plan to test ninety biological and physicochemical parameters, the AAWSA could only test sixty-six waste water samples.²⁵⁴ Consequently, the AAWSA’s poor performance in this sample-based test of waste water treatment has seriously affected the waste water treatment performance.²⁵⁵

The thirty-day detention period was designed to process 7,500 m³ per day capacity, but its current intake is about 10,000 m³ per day.²⁵⁶

²⁴⁸ ESIA WWTPSLER KC, *supra* note 33, at 28, tbl.3.3; interview with Getachew Demeke, *supra* note 245.

²⁴⁹ Interview with Getachew Demeke, *supra* note 245.

²⁵⁰ See ESIA WWTPSLER KC, *supra* note 33, at 26; interview with Getachew Demeke, *supra* note 245; interview with Tsigereda Tafese, Kaliti Waste Water Treatment Plant Chemist, Addis Ababa Water and Sewerage Authority, Addis Ababa, Eth. (Mar. 28, 2014).

²⁵¹ See ESIA WWTPSLER KC, *supra* note 33, at 26; interview with Tsigereda Tafese, *supra* note 250.

²⁵² Interview with Getachew Demeke, *supra* note 245; interview with Tsigereda Tafese, *supra* note 250.

²⁵³ AAWSA WWTRSP AR, *supra* note 210, at 5–7.

²⁵⁴ *Id.* at 2.

²⁵⁵ *Id.* at 5–7.

²⁵⁶ Interview with Getachew Demeke, *supra* note 245; interview with Tesfalem Yifa, *supra* note 234.

This discrepancy between designed-for and actual sewage at the Kaliti WWT RUSP diminishes the plant's proper functioning,²⁵⁷ which increases the risk of premature discharge of waste water into the river.

Similar to the Kaliti WWT RUSP, the natural stabilization and lab evaluation process are utilized at the Kotebe WWT RUSP. The Kotebe WWT RUSP was established in 2000.²⁵⁸ It treats 2,000 m³ of waste water per day and disposes of it in the Great Akaki River.²⁵⁹

The WWT RUSP plant operations at Gelan, Mikililand, Ayat, Gerji, and Bole Homes WWT RUSP face similar issues with premature waste water discharge as the Kaliti and Kotebe plants. Each plant discharges treated (and under-treated) waste in the Akaki River.²⁶⁰ The AAWSA's 2015 Waste Water Treatment and Re-use Sub-Process Annual Report, revealed the underperformance of the waste water treatment and disposal plants.²⁶¹ The underperformance of these plants was identified by the AAWSA to be resultant to capacity issues with the natural pond treatment and disposal processes. Specifically, while the waste water that joins Kaliti, Gerji, and Kotebe is above their respective operational capacities, the waste water that joins Mikililand, Gelan and Ayat is below their potential capacities.²⁶² Thus, the inability of the sewer and sludge dislodging system to capture the expected amount of waste water appears to be the primary reason why the waste water treatment and disposal plants are underperforming.²⁶³

²⁵⁷ ESIA WWTPSLER KC, *supra* note 33, at 18 (reporting that waste water escapes from broken sewer pipes and into streams at various locations).

²⁵⁸ Interview with Nuri Muhammed, *supra* note 208; interview with Tilahun Yimer, *supra* note 208.

²⁵⁹ AAWSA WWTRSP AR, *supra* note 210, at 1; interview with Nuri Muhammed, *supra* note 208; interview with Tilahun Yimer, *supra* note 208; Video Recording: Researcher's Video Record-Based Observation of Kotebe Waste Water Treatment Plant, Addis Ababa, Eth. (Dec. 25, 2015) (on file with author).

²⁶⁰ Gelan, Mikililand, Ayat, Gerji, and Bole Homes WWT RUSP treat 3000, 750, 1000, 1500, and 400 m³ of sewer-based waste water, respectively, per day. AAWSA WWTRSP AR, *supra* note 210; interview with Nuri Muhammed, *supra* note 208; interview with Tadese Eshete, *supra* note 208; interview with Tilahun Yimer, *supra* note 208.

²⁶¹ AAWSA WWTRSP AR, *supra* note 210, at 1.

²⁶² *Id.* at 1.

²⁶³ *Id.* at 7.

2. Waste Water Treatment and Reuse Sub-Processes Under Construction

The AAA is currently developing a short-term solution for higher density residential areas that lack access to sewer systems serviced by waste water treatment plants. This solution consists of installing decentralized waste water treatment packages for condominiums in areas lacking mainline sewer connection. The decentralized system can be used until condominium developments are connected to main sewer lines, at which time the temporary system will be dismantled and reinstalled in another area lacking access to a sewer system.²⁶⁴

Another AAA project is the construction of new, and improvement of existing, wastewater treatment systems throughout the city. These projects are organized by phases of implementation and completion. First, the Chefe and Koyifechi WWT RUSP plants are in their final stages of construction, and have waste water treatment capacities of 12,500 and 27,000 m³ per day, respectively.²⁶⁵ Next, the commencement of the Kaliti Waste Water Treatment Plant Expansion and Rehabilitation as well as the Sewer Lines Expansion of Kaliti Sewage Catchment began in 2012.²⁶⁶ The AAA has planned two phases of completion for the Kaliti project, which is expected to run through 2030. To achieve the Kaliti project, the AAA is committed to developing centralized and integrated sewer collection systems, and water treatment plants with an upflow anaerobic sludge blanket reactor based on high-rate trickling filtration systems.²⁶⁷

With the first phase of the Kaliti project underway, the AAWSA began a \$100,000 project to renovate and enlarge the Kaliti WWT RUSP from 7,600 to 100,000 m³ per day.²⁶⁸ The AAWSA's Kaliti plant expansion project is expected to increase the AAA's sewer

²⁶⁴ Interview with Tesfalem Yifa, *supra* note 234.

²⁶⁵ AAWSA WWTRSP AR, *supra* note 210; interview with Nuri Muhammed, *supra* note 208; interview with Gululat Teshome, Env'tl. Team Leader, Water, Sanitation Rehabilitation & Dev. Project Off. of Addis Ababa Water & Sewerage Authority, Addis Ababa, Eth. (Mar. 21, 2016). Chefe WWT RUSP is accompanied by a twenty-two km sewer line development. Interview with Tesfalem Yifa, *supra* note 234.

²⁶⁶ ESIA WWTPSLER KC, *supra* note 33, at 17; interview with Tesfalem Yifa, *supra* note 234.

²⁶⁷ ESIA WWTPSLER KC, *supra* note 33, at 28–31, 160; interview with Tesfalem Yifa, *supra* note 237. It is electromechanical.

²⁶⁸ Interview with Gemal Rashid, *supra* note 100; interview with Tesfalem Yifa, *supra* note 234; interview with Gemila Mohammed, *supra* note 208; interview with Nuri Muhammed, *supra* note 208; interview with Getachew Demeke, *supra* note 245; Effluent Tax Focus Group Discussion, *supra* note 211.

service area from only reaching ten percent of residents in the Kaliti service area to sixty percent.²⁶⁹ In the second phase, a duplicate of the improved Kaliti WWT RUSP will be constructed adjacent to the Kaliti plant. This additional plant is projected to add 100,000 m³ of waste water processing.²⁷⁰ Together, these plants will result in a total of 200,000 m³ of waste water processing per day.²⁷¹ Next, the planned expansion of over eighteen kilometers of main, secondary, and tertiary sewer lines, constructed to improve waste water transport to and within the plants, is under way.²⁷² Additionally, a thirty-kilometer and an eighty-kilometer sewer line was set up in the Kaliti Catchment in 2015 and 2016, and the government has already advertised a bid for the development of sewers in the other catchments.²⁷³ Thus, while the existing sludge and sewer-based waste water treatment and disposal systems present significant environmental concerns, e.g. due to the premature release of undertreated waste water and issues with operational capacity, the Kaliti plant expansion project is an example of the AAA proactively planning to provide better sewer service to residents, while employing more environmentally sound technologies for waste water treatment.

D. Sludge Cake Treatment and Disposal

All forms of sludge should undergo treatment before reuse or discharge into the natural ecosystem.²⁷⁴ At the Kaliti and Kotebe Waste Water Treatment Plants, operators dispose of sludge in a non-compact or land-intensive natural drying bed system.²⁷⁵ The sludge treatment process at Kaliti WWT RUSP begins with the arrival of

²⁶⁹ Interview with Gemal Rashid, *supra* note 100; interview with Tesfalem Yifa, *supra* note 234; interview with Gemila Mohammed, *supra* note 208; interview with Nuri Muhammed, *supra* note 208; interview with Getachew Demeke, *supra* note 245; Effluent Tax Focus Group Discussion, *supra* note 211.

²⁷⁰ ESIA WWTPSLER KC, *supra* note 33, at 33; interview with Tesfalem Yifa, *supra* note 234.

²⁷¹ ESIA WWTPSLER KC, *supra* note 33, at 33; interview with Tesfalem Yifa, *supra* note 234.

²⁷² ESIA WWTPSLER KC, *supra* note 33, at 19; interview with Tesfalem Yifa, *supra* note 234.

²⁷³ Interview with Tesfalem Yifa, *supra* note 234.

²⁷⁴ ESIA WWTPSLER KC, *supra* note 33, at 42.

²⁷⁵ AAWSA PSDSPCF, *supra* note 214, § 7; interview with Nuri Muhammed, *supra* note 208; interview with Nega Getahun, *supra* note 100; interview with Tadese Eshete, *supra* note 208; interview with Tilahun Yimer, *supra* note 208.

trucked sludge from service areas at the sludge lagoons and drying beds of the plant. The lagoons and drying beds were constructed in 1999 with a treatment capacity of 110,000 m³ per year of sludge.²⁷⁶ The truck sludge is dislodged in 8 m³ skips that screen for foreign elements in the sludge and reduces erosion. While the supernatant is decanted from the surface and returned to the plant, the liquid evaporates in the drying ponds of the lagoons, and the sludge cake is removed manually.²⁷⁷ However, in practice, this process of drying and removal is not effectively followed and liquid waste from the drying beds at the plant is being released directly into the Small Akaki River, instead of being returned to the plant.²⁷⁸

The water treatment plants are open for sixteen hours a day, without any volume limitation, to all sludge dislodging service providers.²⁷⁹ Despite a limited drying bed system, solar radiation dries the sludge cake in an average of two months.²⁸⁰ The sludge cake then goes to restricted fields without any treatment and reuse.²⁸¹ In 2015, the AAWSA, with its limited sludge cake managing laborers and loaders, manually disposed of 91,200 m² of sludge cake.²⁸² The proposed Kaliti WWT RUSP plant retrofitting and expansion project includes provisions to rehabilitate the existing sludge drying lagoons to treat digested sludge.

Although the sludge cake treatment and the disposal charge plays an important role in covering some of the costs of the service, confusion remains regarding who must pay the charge.²⁸³ As stated previously, private sludge dislodging service providers are contractually bound to pay a cash receipt voucher-based nominal

²⁷⁶ ESIA WWTPSLER KC, *supra* note 33, at 26.

²⁷⁷ *Id.* at 25; interview with Getachew Demeke, *supra* note 245 (stating that the sludge cake can measure around 7 meters in depth).

²⁷⁸ ESIA WWTPSLER KC, *supra* note 33, at 18; Video Recording: Researcher's Video Record-Based Observation of Kaliti Waste Water Treatment Plant, Addis Ababa, Eth. (Mar. 28, 2014) (on file with author).

²⁷⁹ ESIA WWTPSLER KC, *supra* note 33.

²⁸⁰ Interview with Tilahun Yimer, *supra* note 208; interview with Getachew Demeke, *supra* note 245.

²⁸¹ Effluent Tax Focus Group Discussion, *supra* note 211; interview with Nega Getahun, *supra* note 100; interview with Nuri Muhammed, *supra* note 208; interview with Tadese Eshete, *supra* note 208; interview with Getachew Demeke, *supra* note 245; interview with Tilahun Yimer, *supra* note 208.

²⁸² AAWSA WWTRSP AR, *supra* note 210, at 1–5.

²⁸³ Interview with Tilahun Yimer, *supra* note 208; interview with Getachew Demeke, *supra* note 245.

charge of 200 ETB annually per vehicle to the AAWSA.²⁸⁴ By contrast, the public sludge dislodging vehicles are not subject to payment, although the public service providers collect a charge from service customers.²⁸⁵ Thus, while there is a sludge cake treatment and disposal charging system for privately dislodged sludge, there does not appear to be one for publicly dislodged sludge. For this reason, only the private sludge dislodging service providers pay in this instance.

V

INDUSTRIAL EFFLUENT TREATMENT AND DISPOSAL

While few industries dispose of their treated effluents into the sewer system, the majority of industries dispose untreated effluent into water bodies.²⁸⁶ This is directly at odds with an industrial water user's obligation to install and use a waste treatment method for treating pollution. Industrial users may only discharge the type and volume of treated waste permitted by law.²⁸⁷ Few industries actually install and use waste water pre-treatment facilities.²⁸⁸ In an assessment undertaken in fifty-three industries by the MEFCCE, sixty percent of industries have no treatment technology, and forty percent

²⁸⁴ AAWSA PSDSPCF, *supra* note 214, § 4; AAWSA Board Minute no. 208/1999; interview with Gemal Rashid, *supra* note 100; interview with Nega Getahun, *supra* note 100; interview with Solomon Tafese, *supra* note 204; interview with Tadese Eshete, *supra* note 208; interview with Nuri Muhammed, *supra* note 208; interview with Tilahun Yimer, *supra* note 208; interview with Gemila Mohammed, *supra* note 208.

²⁸⁵ AAWSSDSRRR, *supra* note 205, at art. 39(1).

²⁸⁶ Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia, (Civil File No. 64902, Federal First Instance Court, Feb. 21, 1999); Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia, (Civil File No. 62904, Federal High Court, June 12, 2008); Action for Professionals' Association for the People (APAP) vs. the Federal Environmental Protection Authority of Ethiopia, (Civil File No. 51052, Federal Supreme Court Cassation Division, Dec. 3, 2006); MEFCCE AIPEESI, *supra* note 33; MINISTRY OF INDUSTRY OF ETH., SUMMARY OF REVIEW WORKS ON ENVIRONMENTAL MANAGEMENT PRACTICES OF SELECTED INDUSTRIES IN ETHIOPIA (2014) [hereinafter MIE SRWEMPSIE]; interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; interview with Adugna Mengste, *supra*, note 58; interview with Zelalem Ketema, *supra* note 223; Researcher's Video Record-Based Observation of Akaki River, Addis Ababa, Eth. (June 17, 2014).

²⁸⁷ EWRMR, *supra* note 71, at arts. 12(1)(a)–(b).

²⁸⁸ Effluent Tax Focus Group Discussion, *supra* note 211; MEFCCE AIPEESI, *supra* note 33; MIE SRWEMPSIE, *supra* note 286; interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; interview with Adugna Mengste, *supra*, note 58; interview with Zelalem Ketema, *supra* note 223.

have treatment technology that lacks necessary funding, human resources, or chemicals for testing.²⁸⁹ Thus, besides a few exceptions, the existing industrial effluent treatment and disposal system results in significant pollution to natural water bodies.

A. Federal Effluent Permit System

Prior to issuing an investment, trade, or operating license for any project, a licensing agency should ensure the review of the Environmental Impact Assessment (EIA) study by the concerned organization.²⁹⁰ No person shall release waste²⁹¹ into water resources without having obtained a permit from the supervising body.²⁹² Applications for the discharge of any treated effluent into surface or ground water must be made to the supervising body.²⁹³ In deciding whether to grant or refuse a permit, the body must consider effluent and stream standards.²⁹⁴

The water use permit application process has several procedural steps. First, water use permit applications to the MWIEE must contain basic information such as the location, intended place of use, volume, and method of use.²⁹⁵ Next, MWIEE must issue the permit within sixty days after receipt of the application in instances where the water use proposed does not infringe on any person's legitimate interests or result in harmful effects on the water resource and the environment.²⁹⁶ Although, at the moment, the MWIEE has not yet developed an effluent permit format,²⁹⁷ it must state the detailed information, conditions, and restrictions for effluent generated by the proposed use in the permit form. If the MWIEE rejects an application, it must

²⁸⁹ MEFCCE AIPEESI, *supra* note 33, at 19.

²⁹⁰ FEIAP, *supra* note 60, at art. 3(3); AA EIAR, *supra* note 78, at art. 5(2).

²⁹¹ FEIAP, *supra* note 60, at art. 3(3); AA EIAR, *supra* note 78, at art. 5(2).

²⁹² EFWRMP, *supra* note 69, at art. 11(1) (d); *see also id.* at art. (2)(7) (defining "supervising body" as the Ministry where it pertains to water resources at central level, or any organization delegated by the Ministry pursuant to Article 8(2) of the proclamation).

²⁹³ EFWRMP, *supra* note 69, at arts. 11(1), 13.

²⁹⁴ EWRMR, *supra* note 71, at art. 11(2); FSIPCE, *supra* note 58.

²⁹⁵ EWRMR, *supra* note 71, at arts. 3(a)–(g).

²⁹⁶ EFWRMP, *supra* note 69, at arts. 13(2), 14(1)(a)–(b); *see also id.* at arts. 4, 11.

²⁹⁷ Even though an effluent permission format was proposed by the Licensing and Monitoring Directorate, it was sidelined due to overlap and conflict of interest. Interview with Kifle Alemayehu, *supra* note 58; interview with Zewdu Tefera, *supra* note 63; interview with Tesfaw Ashagrie, *supra* note 237; interview with Zebider Alemneh, Water Supply & Sanitation Directorate: Environmentalist, Ministry of Water, Irrigation & Electricity of Eth., Addis Ababa, Eth. (June 19, 2014).

notify the applicant in writing of the rejection and the reasons for rejection within sixty days after receipt of the application.²⁹⁸

As a condition for the permit, the applicant must follow several requirements for waste treatment. Any person discharging treated waste water has an obligation to install and use a waste treatment method, to discharge only the type and volume of treated waste permitted, and to allow the MWIEE to take a treated waste discharge sample at any time.²⁹⁹ Most industries in AAA currently only use primary treatment technology.

Once issued, a permit holder may seek renewal from the MWIEE at least one month before a permit's expiration date.³⁰⁰ The MWIEE checks for the permit holder's compliance with the conditions, obligations, and restrictions attached to the permit. Upon verifying compliance, the MWIEE renews a treated waste water discharge permit every two years starting from the date of its issuance.³⁰¹ The MWIEE notifies the applicant in writing that the permit is renewed or denied within five days of receiving the renewal application. This decision must be registered and is subject to later variation or rejection.³⁰² A permit shall be presumed void if it is not renewed within the time limit.³⁰³

The MWIEE may suspend or revoke a permit at any time when the holder fails to fulfil their obligations.³⁰⁴ Such modifications can apply to an entire permit or specific parts. The suspension or revocation of treated waste water discharge permits³⁰⁵ often results from failure to comply with the conditions prescribed in the permit³⁰⁶ or fraudulent acts by the permit holder at the time of issuance.³⁰⁷ Subsequently, the MWIEE must register all suspension or revocation decisions.³⁰⁸

While the federal water use permitting system mainly operates under the MWIEE, the AAA has developed a parallel permitting

²⁹⁸ EFWRMP, *supra* note 69, at art. 14(3).

²⁹⁹ EWRMR, *supra* note 71, at art. 12(1).

³⁰⁰ EFWRMP, *supra* note 69, at arts. 15(1)–(2); EWRMR, *supra* note 71, at art.13(1).

³⁰¹ EFWRMP, *supra* note 69, at arts. 15 (1)–(2); EWRMR, *supra* note 71, at art.13(1).

³⁰² EWRMR, *supra* note 71, at arts. 13(3)–(5).

³⁰³ EFWRMP, *supra* note 69, at art. 15(3).

³⁰⁴ *Id.* at art. 17.

³⁰⁵ *Id.*; EWRMR, *supra* note 71, at art. 14.

³⁰⁶ EWRMR, *supra* note 71, at art. 14(1)(a).

³⁰⁷ *Id.* at art. 14(2).

³⁰⁸ *Id.* at art. 14(3).

system for the two major rivers in the jurisdiction: the Big Akaki in East Addis Ababa and the Small Akaki in West Addis Ababa. These rivers drain into the Abasamuel lake to the south,³⁰⁹ which flows to the Awash River.³¹⁰ The AAA's Addis Ababa Environmental Protection Authority (AAEPA) was mandated by the MWIEE to consider the negative impact on water resources, prior permits, and stakeholders when someone requests a permit to discharge.³¹¹ The AAA effluent permit system provides a legal framework for application procedures for permits,³¹² denying or accepting permits,³¹³ determining the duration of permits, and the procedures to renew,³¹⁴ suspend,³¹⁵ or cancel permits.³¹⁶ Furthermore, it has laboratory and environmental inspectors that enable it to undertake effluent standard-based inspections³¹⁷ and evaluations.³¹⁸ Nonetheless, since its effluent audit system is in its infancy,³¹⁹ it has a nominal regulatory role when proponents annually renew their trade licenses.³²⁰ Therefore, the AAEPA does not currently have an operating effluent permit system.

B. Effluent Tax Collection System

The inbuilt area of Addis Ababa is located in the Akaki River basin, which is the major tributary of the Awash River basin. The AAA generates about 49,000,000 m³ of waste water annually, most of which ends up in the rivers and streams flowing through the city.³²¹ Most of the industries are in the Kaliti catchment and are situated along streams that are currently being used as open sewer channels.³²²

³⁰⁹ DPDEOFDRE, *supra*, note 17, at art. 10(7); EFWRMP, *supra* note 69, at art. 8(2); interview with Kifle Alemayehu, *supra* note 58.

³¹⁰ AFDD/AACG SWMSIR, *supra* note 33, at 4.

³¹¹ AAEPDR, *supra* note 76, at arts. 15(4), 16–20.

³¹² *Id.* at art. 16.

³¹³ *Id.* at art. 17.

³¹⁴ *Id.* at art. 18.

³¹⁵ *Id.* at art. 19.

³¹⁶ *Id.* at art. 20.

³¹⁷ Interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; interview with Senait Asaminew, *supra* note 78.

³¹⁸ Interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; interview with Senait Asaminew, *supra* note 78.

³¹⁹ Interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; MEFCCCE AIPEESI, *supra* note 33, at 18.

³²⁰ Interview with Senait Asaminew, *supra* note 78.

³²¹ ESIA WWTPSLER KC, *supra* note 33, at 17.

³²² *Id.* at 18.

Ethiopian law requires parties to pay an effluent tax for discharge permits and their subsequent renewal, alteration, and cancellation.³²³ The MWIEE is authorized to collect these taxes³²⁴ and to mitigate water resource degradation.³²⁵ Permit holders must pay an effluent tax to the MWIEE³²⁶ annually.³²⁷ However, in practice, the effluent tax is not effectively embedded³²⁸ in the law and the MWIEE³²⁹ does not currently have an effective effluent tax collection system.³³⁰

VI

ADDIS ABABA ADMINISTRATION EMISSION TAX PERMIT SYSTEM

At the federal level, the MEFCCCE must formulate and enforce scientific and environmental principle-based gaseous emission standards.³³¹ The MEFCCCE approved air quality standards that specify appropriate air quality levels and emission rates.³³² However, since the MEFCCCE has delegated its permit issuance and renewal mandate for industrial, manufacturing, and service delivery organizations to the AAEPa,³³³ emission permit and renewal mandates in the AAA fall within the domain of the AAEPa.

Under the MEFCCCE, the AAEPa has a duty to issue permits based on the polluter-pays principle and to renew and enforce them in accordance with established gaseous emission standards.³³⁴ When parties request a permit to discharge air pollutants, the AAEPa is expected to consider negative environmental impacts, prior permits, and effects on outside stakeholders.³³⁵ Like the EIA system,³³⁶ the

³²³ EFWRMP, *supra* note 69, at arts. 20(1)(c)–(d).

³²⁴ *Id.* at arts. 20(3)–(4); EWRMR, *supra* note 71, at art. 30.

³²⁵ Gebregiorgs, *supra* note 2, at 33; Gebregiorgs, *supra* note 19, at 30–41.

³²⁶ EFWRMP, *supra* note 69, at arts. 22(1)–(2); EWRMR, *supra* note 71, at art. 32(1).

³²⁷ EWRMR, *supra* note 71, at art. 32(2).

³²⁸ Gebregiorgs, *supra* note 2, at 33; Gebregiorgs, *supra* note 19, at 30–41.

³²⁹ Because the two major rivers in AAA are tributaries of the transnational Awash River, they are subject to the federal effluent tax collection system. AFDD/AACG SWMSIR, *supra* note 33, at 4.

³³⁰ Interview with Kifle Alemayehu, *supra* note 58; interview with Zewdu Tefera, *supra* note 63; interview with Tesfaw Ashagrie, *supra* note 237; interview with Zebider Alemneh, *supra* note 297.

³³¹ FPCP, *supra* note 22, at art. 6(1); PIPCMR, *supra* note 64, at art. 13(1).

³³² FPCP, *supra* note 22, at art. 6(1); FSIPCE, *supra* note 58.

³³³ FDRE EPA L AAEPa, *supra* note 138; FDRE EPA L MTE, *supra* note 138.

³³⁴ PIPCMR, *supra* note 64, at arts. 13(2), 14; AAEPa, *supra* note 76, at art. 15(1).

³³⁵ AAEPa, *supra* note 76, at arts. 15(5)(a)–(c).

AAA's emission permit program provides a legal framework for permit application procedure,³³⁷ granting or rejecting permits,³³⁸ determining the duration of permits, renewing or suspending permits,³³⁹ and cancelling permits.³⁴⁰ Even though the AAEPA has an air laboratory that enables emission standard-based evaluations, it has no air laboratory experts to analyze the results.³⁴¹ Moreover, since the AAEPA has no qualified emission inspectors, emission-based inspections are not conducted.³⁴² Therefore, the AAEPA does not currently have a functioning emission tax permit system.³⁴³

CONCLUSION

This research assessed the administrative feasibility of environmental taxes in implementing a polluter-pays principle in the AAA of Ethiopia. In implementing a polluter-pays principle, this research has shown that while solid waste, landfill, sludge, and sewer taxes are, to some extent, administratively feasible to implement, effluent and emission taxes are not. This Article suggests that implementing administratively feasible solid waste, landfill, sludge, sewer, effluent, and emission taxes in the AAA of Ethiopia is contingent upon the realization of fiscal federalism, an increased reliance on environmental expertise, expansion of public-private partnership, as well as the improvement of existing environmental institutions and infrastructures.

³³⁶ FEIAP, *supra* note 60, at art. 3(3); AAELAR, *supra* note 78, at art. 5(2).

³³⁷ AAEPACR, *supra* note 76, at art. 16.

³³⁸ *Id.* at art. 17.

³³⁹ *Id.* at arts. 18–19.

³⁴⁰ *Id.* at art. 20.

³⁴¹ Effluent Tax Focus Group Discussion, *supra* note 211; interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; Hailelassie Sebhata, *supra* note 58; Adugna Mekonnen, *supra* note 58.

³⁴² Interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78.

³⁴³ Effluent Tax Focus Group Discussion, *supra* note 211; interview with Meseret Mengiste, *supra* note 58; interview with Shimelis Eshetu, *supra* note 78; Hailelassie Sebhata, *supra* note 58; Adugna Mekonnen, *supra* note 58.