

Clean Water and Sewage Systems in Türkiye 1880-1980

Ecem Doygun



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“Clean Water and Sewage Systems in Türkiye 1880-1980,” a dissertation prepared by Ecem Doygun in partial fulfillment of the requirements for the degree of Doctor of Philosophy from the Atatürk Institute for Modern Turkish History at Boğaziçi University, has been approved on 26 December 2024 by:

DISSERTATION ADVISORS

Professor Nadir Özbek
Atatürk Institute for Modern Turkish History
Boğaziçi University

Professor Şevket Pamuk
Atatürk Institute for Modern Turkish History
Boğaziçi University

COMMITTEE MEMBERS

Associate Professor Irmak Ertör
Atatürk Institute for Modern Turkish History
Boğaziçi University

Associate Professor Kıvanç Karaman
Department of Economics
Boğaziçi University

Associate Professor Sırrı Emrah Üçer
Department of Economics
Yıldız Technical University

Associate Professor Ufuk Adak
Common Courses Department
Altınbaş University

Declaration of Originality

The intellectual content of this dissertation, which has been written by me and for which I take full responsibility, is my own, original work, and it has not been previously or concurrently submitted elsewhere for any other examination or degree of higher education. The sources of all paraphrased and quoted materials, concepts, and ideas are fully cited, and the admissible contributions and assistance of others with respect to the conception of the work as well as to linguistic expression are explicitly acknowledged herein.



Abstract

“Clean Water and Sewage Systems in Türkiye 1880-1980”

Ecem Doygun, Doctoral Candidate at the Atatürk Institute
for Modern Turkish History at Boğaziçi University, 2024

Professor Nadir Özbek and Professor Şevket Pamuk, Dissertation
Advisors

This thesis examines the historical development of clean water and sewage systems within the current borders of Türkiye from 1880 to 1980, emphasizing the critical role of these infrastructures in public health. Although access to clean water and sewage systems is essential to protect public health, these services are unevenly distributed, especially in developing countries with limited economic capacity. From a macro perspective, this study provides the progression of these sanitation systems and investigates socioeconomic disparities in access to these infrastructures at regional, urban, and intra-urban levels in Türkiye.

This dissertation analyzes the clean water and sewage systems in Türkiye in two periods. The first period deals with the transition of these systems from the Ottoman Empire to the early Republican era, covering the late nineteenth century until 1950. During this time, infrastructure investments shifted from an urban focus to a national scale, facilitated by legal regulations. The second period, from 1950 to 1980, focused on investments aimed at addressing regional, urban, and intra-urban inequalities in access to water and sewage infrastructure within the framework of national development policies. The findings indicate a hierarchical prioritization of investments, with clean water infrastructure taking precedence over sewage infrastructure. Additionally, the study reveals that the multivocality of institutions and state capacity influenced infrastructure investments. Regional, urban, and rural disparities in access to these sanitation infrastructures were observed, with western regions—affected by urbanization and industrialization—having relatively greater access than other areas. These findings enhance our understanding of the roots of infrastructure access inequalities and offer valuable insights into their long-term implications.

87,000 words

Özet

“Türkiye’de Temiz Su ve Kanalizasyon Sistemleri 1880-1980”

Ecem Doygun, Doktora Adayı, 2024

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Profesör Nadir Özbek ve Profesör Şevket Pamuk, Tez Danışmanları

Bu tez, 1880’den 1980’e kadar, Türkiye’nin mevcut sınırları içinde temiz su ve kanalizasyon sistemlerinin tarihsel gelişimini incelemekte ve bu altyapıların halk sağlığındaki kritik rolünü vurgulamaktadır. Temiz su ve kanalizasyon şebekelerine erişim, halk sağlığını korumak için elzem olsa da, bu hizmetler özellikle ekonomik kapasitesi sınırlı olan gelişmekte olan ülkelerde eşitsiz bir şekilde dağıtılmıştır. Bu çalışma, temiz su ve kanalizasyon sistemlerinin gelişimini makro bir perspektiften ele alarak Türkiye’de bölgesel, kentsel ve şehir içi düzeylerde bu altyapılara erişimdeki sosyoekonomik eşitsizlikleri incelemektedir.

Türkiye’deki temiz su ve kanalizasyon sistemlerini iki dönem halinde ele almaktadır. Birinci dönem, on dokuzuncu yüzyılın sonundan 1950 yılına kadar olan süreçte, Osmanlı İmparatorluğu’ndan Cumhuriyet dönemine devredilen sistemleri incelemektedir. Bu dönemde altyapı yatırımları, yasal düzenlemelerle kentsel ölçekten ulusal ölçeğe dönüştürülmüştür. İkinci dönem ise 1950 ile 1980 yılları arasında, ulusal kalkınma politikaları çerçevesinde su ve kanalizasyon altyapı yatırımlarına erişimde bölgesel, kentsel ve hatta kent içindeki eşitsizliklere yönelik yapılan yatırımları kapsamaktadır. Bulgular, yatırımların hiyerarşik bir önceliğe göre yapıldığını ve bu bağlamda temiz su altyapısının kanalizasyon altyapısına göre daha öncelikli olduğunu göstermektedir. Ayrıca altyapı yatırımları üzerinde kurumsal çok sesliliğin ve devlet kapasitesinin etkili olduğunu ortaya koymaktadır. Temiz su ve kanalizasyon altyapısına erişimde bölgesel, kentsel ve kırsal düzeyde eşitsizlikler gözlemlenmiştir; kentleşme ve sanayileşmenin etkisi altındaki batı bölgeleri, diğer bölgelere kıyasla bu altyapılara nispeten daha fazla erişim sağlamıştır. Bu bulgular, altyapıya erişimdeki eşitsizliklerin kökenlerini anlamamıza yardımcı olmakta ve uzun vadeli etkilerine dair önemli içgörüler sunmaktadır.

87,000 kelime



Curriculum Vitæ

ECEM DOYGUN

EDUCATION

Ph.D.	Atatürk Institute for Modern Turkish History Boğaziçi University 2024
M.A.	Institute of Social Sciences Department of Economic History Istanbul University 2015
B.A.	Economics Istanbul University 2012

PUBLICATIONS

- Ecem Doygun. "Türkiye’de Temiz Su Sistemleri: İki Dünya Savaşı Arası Dönemde Kurumsal Oluşum ve Gelişim Süreci." In *Değişen Düzen*, 1–31. Istanbul: Efil Yayınları, 2023.
- Ecem Doygun. "İki Taşınma Bir Yangına Bedel." *Toplumsal Tarih Akademi* 1, no. 2 (2023): 111–14.
- Nevin Coşar, Ecem Doygun, and Sevtap Demirci. "The Role of Railways in the Ottoman Empire During the First World War." *Journal of Balkan and Near Eastern Studies* 25, no. 5 (2023): 906–22.
- Ecem Doygun. "Enflasyon Gölgesinde İstanbul 1914-1921." *Journal of Modern Turkish History*, no. 36 (2022): 729–44.

- Ecem Doygun. "19. Yüzyıldan 21. Yüzyıla Suyun İstanbul'daki Dönüşümü." In *İstanbul Su Kültürü*, 227–60. İstanbul: İstanbul Büyükşehir Belediyesi Kültür A.Ş., 2022.

INVITED TALKS

- İSKİ 90 Yıl Belgeseli, 2023.

CONFERENCE PARTICIPATION

- Ecem Doygun. "From Empire to Nation-State: The Transformation of the Urban Water System between 1880–1950." *The Third International NEHT Workshop Environmental Histories of the Ottoman Empire and Turkey*, Vienna, Austria, 2022.
- Özdemir Teke, Burak Ünveren, and Ecem Doygun. "Osmanlı'da Gayrimüslimlere Karşı Ayrımcılık Var Mıydı? 1875 Emlak Tahriri Örneği." *The Eighth International Conference on Economics (IceTea2022)*, Nevşehir, Turkey, 2022.
- Burak Ünveren, Ecem Doygun and Özdemir Teke. "Identity and Real Estate in Ottoman İstanbul." *4th Annual International Conference on Social Sciences (AICSS 2020)*, 18. İstanbul, Turkey, 2020.
- Ecem Doygun. "Birinci Dünya Savaşı Sırasında İstanbul'da Enflasyon ve Etkileri." *Birinci Dünya Savaşı ve Yirminci Yüzyıla Etkileri*, Ankara, Turkey, 2019.
- Ecem Doygun. "Speculation on Food Prices in Turkey during the First World War." *40th International Congress of Military History, World War One 1914–1918*, Varna, Bulgaria, 2015.

RESEARCH EXPERIENCE

- Researcher for "Veri Görselleştirme Tarihsel Politika Analizi ve Tekno-Politik Rejim Geçişleri Türkiye Kıbrıs ve Yunanistanın Karşılaştırmalı bir Analizi" Yıldız Technical University Scientific Research Project (YTÜ BAP), SBA-2024-6210, 2024-2025.
- Researcher for "1874 İstanbul Emlak Tahririnin Kliometrik Bir Analizi" TUBITAK 1001, 645527, 2022-2024.

- Researcher for “1875 İstanbul Kadastro Kayıtlarının Elektronik Veri Tabanı Haline Getirilmesi” Yıldız Technical University Scientific Research Project (YTÜ BAP), SBA-2020-3815, 2020-2021.
- Research Assistant (Yıldız Technical University Department of Economics, 2014- present).

LANGUAGES

- Turkish –Native Speaker
- English – Fluent
- Ottoman Turkish – Reading skills





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Abbreviations and Acronyms

ACP	Asbestos- Cement Pipes
ASKİ	Ankara Su ve Kanalizasyon İdaresi (Ankara Water and Sewerage Administration)
BCA	Cumhurbaşkanlığı Cumhuriyet Arşivi
BOA	Cumhurbaşkanlığı Osmanlı Arşivi
CUP	The Committee of Union and Progress
DP	Demokrat Parti (Democrat Part)
DSİ	Devlet Su İşleri (State Hydraulic Works)
FDI	Foreign Direct Investment
HDI	Human Development Index
HDRO	Human Development Report Office
IMF	International Monetary Fund
İSKİ	Istanbul Su ve Kanalizasyon İdaresi (Istanbul Water and Sewerage Administration)
İZSU	Izmir Su ve Kanalizasyon İdaresi (Izmir Water and Sewerage Administration)
ISI	Import substitution industry
OECD	Organisation for Economic Co-operation and Development
OPEC	Organization of the Petroleum Exporting Countries
PDA	Public Debt Administration
RPP	Republican People's Party
SDGs	Sustainable Development Goals
SIMEL	Su, İnşaat, Elektrik Limited Şirketi (Water, Construction, and Electricity Limited Company)
SPO	State Planning Organization
TEA	Turkish Electricity Administration
UNDP	United Nations Development Programme
WHO	World Health Organization
YSE	Yol, Su ve Elektrik (Road, Water, and Electricity)



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Introduction

This dissertation analyzes the development and distribution of clean water and sewage systems within the present-day borders of Türkiye from 1880 to 1980, tracing a century-long evolution of sanitary infrastructure. It is the first study to provide a comprehensive analysis of the historical and regional inequalities in these systems in Türkiye as a developing country from a macro perspective. As I will show in the following pages, the history of clean water and sewage systems highlights their critical role in shaping socioeconomic development, public health, and state capacity across nations. These systems, essential for safeguarding public health, extending life expectancy at birth, and reducing mortality rates, have often developed unevenly across countries. While developed countries began investing in clean water and sewage infrastructure as early as the mid-nineteenth century, developing nations have faced challenges in expanding access to such systems. As I will argue in this dissertation, The progress of clean water and sewage systems is largely determined by states' financial and technological capacities, leading to significant disparities in access to these basic sanitary systems across countries.

Clean water and sewage systems offer researchers opportunities to analyze and compare various domains—including economic, social, political, and health issues—necessitating a multidimensional approach to

these topics. However, research on this topic has remained quite limited in Türkiye. Historians studying water systems in the Ottoman Empire have often focused on the history of waterways, wells, fountains, and cisterns within a single city, most commonly Istanbul¹ or Izmir².

While these studies have been valuable for understanding the history of water systems, their scope is often quite limited, frequently focusing

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- ¹ Haydar Kazgan and Sami Önal, *İstanbul'da Suyun Tarihi: İstanbul'un Su Sorununun Tarihsel Kökenleri ve Osmanlı'da Yabancı Su Şirketleri* (İstanbul: İletişim Yayınları, 1999); Ecem Doygun, "19.Yüzyıldan 21.Yüzyıla Suyun İstanbul'daki Dönüşümü," in *İstanbul Su Kültürü*, ed. Mesut Gengeç (İstanbul: İstanbul Büyükşehir Belediyesi Kültür A.Ş., 2022), 227–260; Noyan Dinçkal, "Reluctant Modernization: The Cultural Dynamics of Water Supply in Istanbul, 1885–1950," *Technology and Culture* 49, no. 3 (2008): 675–700; Nurçin İleri, "İmtiyazlı Şirketlere Yönelik Şikâyetler: İstanbul Terkos Su ve Tramvay Şirketlerinin Millileştirilmesi," *Toplumsal Tarih Akademi* 2 (2023): 25–51; Nezih R. Aysel, "İstanbul'un Tarihi Su Sistemleri: Kırkçeşme Tesisleri," *Çevre ve Orman Bakanlığı Devlet Su İşleri Genel Müdürlüğü Tarihi Su Yapıları Konferansı Bildiriler Kitabı* (2008); Ömer Mustafa Dönmez, *Bizans'tan Günümüze İstanbul Suları* (İstanbul: Kurtiş Matbaacılık, 2008), 23–40. İSKİ Publications has released a series on the waterways and water foundations of the Ottoman period. See: *Vakıf Su Defterleri Avrupa Yakası Suları 1, İstanbul Su Külliyyatı XXIII* (İstanbul: İSKİ Yayınları no. 40, 2002); *Vakıf Su Defterleri Avrupa Yakası Suları 2, İstanbul Su Külliyyatı XXIV* (İstanbul: İSKİ Yayınları no. 41, 2002); *Vakıf Su Defterleri Avrupa Yakası Suları 3, İstanbul Su Külliyyatı XXV* (İstanbul: İSKİ Yayınları no. 42, 2002); *Vakıf Su Tahlilleri 19 ve 20. Yüzyılda İstanbul Suları, İstanbul Su Külliyyatı XIII* (İstanbul: İSKİ Yayınları no. 26, 2000); *Vakıf Su Defterleri Halkalı Suları 1, İstanbul Su Külliyyatı XXI* (İstanbul: İSKİ Yayınları no. 36, 2001); *Vakıf Su Defterleri Halkalı Suları 2, İstanbul Su Külliyyatı XXII* (İstanbul: İSKİ Yayınları no. 37, 2001); *Vakıf Su Defterleri Kırkçeşme Suları 1, İstanbul Su Külliyyatı XI* (İstanbul: İSKİ Yayınları no. 24, 1999); *Vakıf Su Defterleri Kırkçeşme Suları 2, İstanbul Su Külliyyatı XII* (İstanbul: İSKİ Yayınları no. 25, 1999); Kazım Çeçen ve Celal Koray, *İstanbul'un Osmanlı Dönemi Suyolları* (İstanbul: İSKİ Yayınları, 1999); Sait Öztürk, *Suyu Arayan İstanbul: Vakıf Sular ve Kırkçeşme* (İstanbul: İSKİ Yayınları, 2006).
- ² Erkan Serçe, *Tanzimat'tan Cumhuriyet'e İzmir'de Belediye, 1868-1945* (İzmir: Dokuz Eylül Yayınları, 1998); *İzmir'de Suyun Serüveni* (İzmir: İzmir Büyükşehir Belediyesi, 2017); Ufuk Adak, "Water, Sewage and Sanitation: Infrastructure Projects and Public Health in Izmir in the Late Ottoman Empire," *Journal of Balkan and Near Eastern Studies* 24, no. 2 (2022): 263–284.

on a specific region within a city.³ Most studies have focused on the Ottoman period, with research on water systems in the Republican Era remaining quite limited.⁴ While there are studies focused on water systems at the urban level, there are very few articles addressing sewage systems.⁵ The history of water and sewage systems is primarily derived from urban⁶ and municipal⁷ studies or institutional histories⁸ published by the organizations themselves. Moreover, researchers have recently gained interest in public health and improving sanitary conditions as an emerging study area.⁹ Additionally, the emerging field of environmental

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- ³ Koca Mehmet Kentel, *Assembling Cosmopolitan Pera: An Infrastructural History of Late Ottoman Istanbul* (PhD diss., University of Washington, 2018).
- ⁴ Dinçkal, "Reluctant Modernization," 675–700; İlhami Yurdakul, *Aziz Şehre Leziz Su: Dersaadet (İstanbul) Su Şirketi* (İstanbul: Kitabevi Yayınları, 2010); Ali İhsan Öztürk, *İstanbul Şehir Suyu Hizmetinde Şirketler Dönemi 1881–1937* (İstanbul: İdeal Kültür Yayıncılık, 2018); Asil Kaya, "Erken Cumhuriyet Dönemi'nde İçme Suyu Temininde Kent Yöneticilerinin Rolü: Vali Kazım (Dirik) Paşa ile Belediye Başkanı Dr. Behçet (Uz) Bey Örneği," 4. Uluslararası Su Kongresi, 2–4 Kasım 2017, İzmir, Türkiye.
- ⁵ *Kuruluşundan Bugüne Kadar İller Bankası 1945-1973* (Ankara: Doğu Matbaası, 1973); İlhan Tekeli, "Ankara'da Kanalizasyonun Gelişimi ve Uygulanmakta Olan Büyük Kanalizasyon Projesi," *Ankara Dergisi* 1, no. 2 (Mayıs 1991): 29–56.
- ⁶ Zeynep Çelik, *19. Yüzyılda Osmanlı Başkenti Değişen İstanbul* (İstanbul: Türkiye İş Bankası, 2019).
- ⁷ İlhan Tekeli, *Cumhuriyetin Belediyecilik Öyküsü, 1923-1990*, vol. 4 (İstanbul: Tarih Vakfı Yurt Yayınları, 2009); İlhan Tekeli, İlber Ortaylı, ve Ergun Türkcan, *Türkiye'de Belediyeciliğin Evrimi* (Ankara: Türk İdareciler Derneği, 1978).
- ⁸ *İller Bankası* (Ankara: İller Bankası Genel Müdürlüğü Matbaası, 1981); *Tarih Boyunca İstanbul Suları İstanbul Su ve Kanalizasyon Sorunu* (İstanbul: İSKİ, 1983); *İzmir Büyükşehir Belediyesi, İzmir'de Suyun Serüveni*, prepared by A. Kaya (İzmir: İzmir Büyükşehir Belediyesi, 2017); Eşref Özand, *Ankara Şehri Su Tesisleri 1*, Ankara Sular İdaresi Müdürlüğü Yayın No. 4 (Ankara: Yeni Desen Matbaası, 1967); *Ankara'da Su Altyapısı*, ASKİ Müdürlüğü Yayınları (Ankara: SFN Yayıncılık).
- ⁹ Yeter Can Gümüş İspir, "Altyapıları Görünür Kılmak: Geç Osmanlı İstanbul'unda Tifo, Kolera ve Toplumsal Eşitsizlikler," in *Bitmeyen Hikaye: Küresel Salgın Çağında Tarihe Yeniden Bakmak (Salgın Hastalıklar ve Kamu Sağlığı Pratikleri)*, ed. İsmail Yaşayanlar (İstanbul: Tarih Vakfı, 2022); Burcu Kurt ve İsmail Yaşayanlar, *Osmanlı'dan Cumhuriyet'e*

history has enriched this area by examining the mutual impact of these systems on both nature and human societies.¹⁰

The development of clean water and sewage systems represents a pivotal aspect of the relationship between humans and nature within the framework of environmental history. As I will show in the following pages, throughout history, water resource management has profoundly influenced societies' economic, cultural, and ecological structures. In ancient times, the aqueducts and sewer infrastructures of the Roman Empire supported urban expansion while simultaneously transforming natural water resources and altering ecological balances. During the Middle Ages, the inadequacy of such systems exacerbated environmental pollution and public health crises. With the advent of the Industrial Revolution, rapidly growing cities necessitated more advanced water and sewer systems. Yet, this progress often came at the cost of overexploitation and water resource pollution, leading to ecosystems' degradation.¹¹

Salgın Hastalıklar ve Kamu Sağlığı (İstanbul: Tarih Vakfı Yurt Yayınları, 2017); İsmail Yaşayanlar, "Su, Çevre, Sanayi ve Devlet: Modernleşme Sürecinde Bursa Kentinin Suyunu 'Sihhileştirmek,'" *Toplumsal Tarih Akademi* 2 (2023): 72–89; *Bitmeyen Hikaye: Küresel Salgın Çağında Tarihe Yeniden Bakmak (Salgın Hastalıklar ve Kamu Sağlığı Pratikleri)*, ed. İsmail Yaşayanlar (İstanbul: Tarih Vakfı Yurt Yayınları, 2022). Osman Gümüşçü, "Osmanlı'dan Cumhuriyet'e Geçiş ve Cumhuriyetin İlk Yıllarında Türkiye Halk Sağlığı," *Atatürk Araştırma Merkezi Dergisi* 19, no. 55 (2003): 125–46. Halis Akder, "Forgotten Campaigns: A History of Disease in Turkey," in *Turkey's Engagement with Modernity: Conflict and Change in the Twentieth Century*, edited by Celia Kerslake, Kerem Öktem, and Philip Robins (New York: Palgrave Macmillan, 2010).

¹⁰ Onur Inal ve Yavuz Köse, *İktidar Tohumları: Osmanlı Çevre Tarihi Üzerine İncelemeler* (İstanbul: İletişim Yayınları, 2022); Koca Mehmet Kentel, "Pera'nın Atığı, Kasımpaşa'nın Salgını: On Dokuzuncu Yüzyılın İkinci Yarısında İstanbul'da Kolera Salgınları ve Çevre Adaleti," *Toplumsal Tarih Akademi* 2 (2023): 52–71; Onur İnal, "Tabiat, Tahayyül ve Tahakküm: Erken Cumhuriyet Döneminde İdeoloji, Su ve Ulus İnşası," *Toplumsal Tarih Akademi* 2 (2023): 90–105.

¹¹ Faisal Husain, "Changes in the Euphrates River: Ecology and politics in a rural Ottoman periphery, 1687–1702," *Journal of Interdisciplinary History* 47.1 (2016): 1–25; John R. McNeill, "Observations on the Nature and Culture of Environmental History," *History and Theory* 42, no. 1 (2003): 5–43; Donald Worster, *The Wealth of Nature: Environmental History and the Ecological Imagination* (Oxford: Oxford University Press, 1993).

In the modern era, clean water and sewer systems are critical in ensuring environmental sustainability and public health. These systems provide technical solutions for the conservation and management of water resources while also supporting efforts to achieve environmental justice and maintain ecological balance.¹² However, the environmental impacts of rapid urbanization and industrialization underscore that such infrastructures are more than mere technical solutions. Although water and sewage systems are deeply intertwined with environmental history, this thesis approaches these sanitary infrastructural investments from an economic history perspective.

There is currently no research that comprehensively examines the history of clean water and sewage networks, the regional distribution of investments, and their impact on public health in a continuum spanning from the Ottoman Empire to the Republican period. This study, therefore, aims to fill this gap in the literature by examining regional inequalities in access to clean water and sewage networks in Türkiye between 1880 and 1980. Furthermore, the thesis explores how the development of these systems expanded from urban infrastructure to a national scale within Türkiye's current borders. In doing so, I utilized Ottoman and Republican archives, urban history studies, newspapers, and institutions' archives.

In recent decades, awareness of the critical importance of clean water and sewage systems has grown significantly, driving increased interest in this field among economic historians, international organizations, and media circles. This study contributes to this expanding body of work by offering a comprehensive historical perspective on the evolution and socio-economic impacts of water and sanitation systems in Türkiye.

Since the nineteenth century, although the development of clean water and sewage systems has continued, progress levels have differed among countries. Economic capacity ranks highly in terms of its influence on reshaping societies. However, this does not mean that economic indicators, such as gross domestic product (GDP), fully determine a country's wealth. Over the past three decades, the evaluation of economic progress

¹² Irmak Ertör, "'We Are the Oceans, We Are the People!': Fisher People's Struggles for Blue Justice," *The Journal of Peasant Studies* 50, no. 3 (2023): 1157–1186.

and understanding human rights have broadened to include social, educational, sanitary, and political factors. Amartya Sen's research highlights the essential connection between development and freedom, arguing that individuals require a range of freedoms to achieve higher levels of development.¹³ His research has also significantly influenced Mahbub Ul Haq's Human Development Approach and contributed to the creation of the Human Development Index, which is used to analyze national development levels.¹⁴

The Human Development Index (HDI) was developed to evaluate a country's development based on human well-being and capabilities, focusing on three key dimensions: Gross National Income (GNI) per capita, education, and health. GNI per capita reflects a standard of living measure, while the education dimension includes expected years of schooling for children and the average years of schooling for adults. The health dimension is represented by life expectancy at birth.¹⁵ Recent studies indicate a strong correlation between life expectancy at birth and investments in sanitation, as I detailed later. Thus, it can be said that improvements in a country's water and sewage systems impact life expectancy at birth.

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- ¹³ Amartya Sen defines freedom in five distinct categories: economic opportunities, political freedoms, social facilities, transparency guarantees, and protective security. Although these types of freedom differ from one another, they are interconnected; for instance, political freedoms such as free speech and fair elections can support economic security. Similarly, social opportunities, such as access to education and healthcare, can facilitate economic participation. Sen was awarded the Nobel Prize in Economic Sciences in 1998 for his contributions to welfare economics, particularly his emphasis on integrating human rights into the framework of welfare economics. Amartya Sen, *Development as Freedom* (Oxford: Oxford University Press, 1999), 4–11.
- ¹⁴ Mahbub Ul Haq, *Reflections on Human Development* (Oxford: Oxford University Press, 1995), 46–66.
- ¹⁵ United Nations Development Programme, "Human Development Index," *Human Development Reports*, accessed [29.10.2024], <https://hdr.undp.org/data-center/human-development-index#/indicies/HDI>; Elizabeth A. Stanton, "The Human Development Index: A History," *PERI Working Papers* (2007): 85.

Human deprivations have shifted alongside changing conditions in life, labor, and climate. This change can be tracked through the *Human Development Reports* prepared by the Human Development Report Office (HDRO) within the United Nations Development Programme (UNDP), which has addressed a variety of topics over the years. According to the 2016 Human Development Report, countries categorized into four human development groups had differing priorities related to human development levels. While access to clean water and sanitation ranked among the top three priorities in countries with very high human development, such as Norway, Australia, and Switzerland, countries in other categories did not rank these needs within their top five priorities.¹⁶ As I will argue in this dissertation, it is evident that clean water and sewage systems should be prioritized highly by all countries. Despite international institutions highlighting the importance of access to clean water and sewage systems and increasing awareness of the issue, governments and international organizations have not demonstrated sufficient commitment or capacity to effectively and fairly manage and allocate these resources. Gleick describes the lack of access to clean water as one of the failures of nations, as well as international and local organizations, in twentieth-century development. He further argues that access to clean water should be regarded as a basic human right.¹⁷

In response to intensified debates throughout the 1990s and 2000s, the United Nations General Assembly formally recognized safe and clean drinking water and sanitation as a human right in 2010.¹⁸ In addition, clean water and sanitation have recently become one of the Sustainable

¹⁶ *Human Development Report 2016: Human Development for Everyone*, United Nations Development Programme (New York: UNDP, 2016), 25–75.

¹⁷ Peter H. Gleick, “The Human Right to Water,” *Water Policy* 1, no. 5 (1998): 487–503.

¹⁸ Ban Ki-moon and the United Nations Secretary-General, “The Human Right to Water and Sanitation,” media brief at the United Nations General Assembly, July 28, 2010.

Development Goals (SDGs).¹⁹ Despite advancements in water and sewage systems, disparities persist between countries and even within the same country across different regions and cities. As I will argue in this dissertation, the reasons for these disparities in clean water and sewage systems among countries are rooted in the historical development of infrastructure investments.

This dissertation investigates, for the first time, the types of clean water and sewage systems inherited from the Ottoman Empire into the Republican Era and examines whether regional inequalities in these systems converged by 1980, as well as their impact on public health. Before elaborating my arguments, this introductory chapter begins by outlining the multifunctional roles of clean water and sewage systems in Section (1.1). The second section (1.2) offers literature on disparities in access to these systems between developed and developing countries. The third section (1.3) examines the influence of clean water and sewage systems on life expectancy trends, underscoring their critical impact on public health. The fourth section (1.4) then discusses these systems as a redistribution mechanism in Türkiye. The fifth section (1.5) reviews this study's data sources and archival materials. Finally, the sixth section (1.6) provides summaries of each chapter, offering a guide to the dissertation's structure and key themes.

§ 1.1 Transforming Clean Water and Sewage Systems into a Multifunctional Dimension

Clean water and sewage systems constitute one of the basic needs of human beings. However, the scope of these systems extends beyond this simple definition. The multifaceted role of clean water and sewage sys-

¹⁹ Anik Bhaduri et al., "Achieving Sustainable Development Goals from a Water Perspective," *Frontiers in Environmental Science* 4 (2016): 64; United Nations, "Goal 6: Clean Water and Sanitation," *Sustainable Development Goals*, accessed [29.10.2024], <https://sdgs.un.org/goals/goal6>.

tems can be analyzed through key dimensions. Since the nineteenth century, water and sewage systems have embodied an important relationship between the government and citizens, reflecting shifts in the economic and political conditions of the time. The Industrial Revolution, originating in Britain and spreading to other European countries, transformed water infrastructure into a complex, multifunctional system.²⁰

Water serves primarily for household consumption as part of daily life. However, with the advent of mass production and the development of factories in the nineteenth century, water became a significant input for domestic and industrial use. As the capitalist mode of production expanded from the mid-nineteenth century onward, population density in cities, particularly in industrialized countries, increased significantly due to migration from rural to urban areas.²¹ Mass production and advancements during the Industrial Revolution significantly transformed living and working conditions, especially for the working class. The factory-based production system introduced new lifestyles but often left workers in overcrowded, unsanitary, and unsafe conditions. These urban settings saw widespread waterborne illnesses and increased death rates, a phenomenon referred to as the "urban penalty."²² Consequently, the unhealthy conditions in cities and the lack of sanitary infrastructure compelled governments to invest in essential infrastructure for public health.²³ Britain led the development of clean water and sewage systems,

²⁰ Ernest P. Hennock, "The Urban Sanitary Movement in England and Germany, 1838–1914: A Comparison," *Continuity and Change* 15, no. 2 (2000): 269–296.

²¹ Eric Hobsbawm, *The Age of Empire: 1875–1914* (London: Abacus, 1994).

²² Gerard Kearns, "The Urban Penalty and the Population History of England," in *Society and Health During the Demographic Transition* (1988): 213–236; Nicholas Freudenberg, Sandro Galea, and David Vlahov, "Beyond Urban Penalty and Urban Sprawl: Back to Living Conditions as the Focus of Urban Health," *Journal of Community Health* 30, no. 1 (2005): 1–11; David Cutler and Grant Miller, "The Role of Public Health Improvements in Health Advances: The Twentieth-Century United States," *Demography* 42, no. 1 (2005): 1–22.

²³ John R. Bowlblis, "The Decline in Infant Death Rates, 1878–1913: The Role of Early Sickness Insurance Programs," *The Journal of Economic History* 70, no. 1 (2010): 221–232.

setting a model that would later influence efforts across Europe.²⁴ Investments in clean water and sewage systems were initially distributed unequally among citizens, though these disparities gradually decreased in industrialized countries.²⁵ Once sanitary infrastructure was established in industrialized European nations, modern water, and sewage networks began to spread to peripheral regions, supported by European capital and engineers from the late nineteenth century onward.²⁶

In the Ottoman Empire, modern water and sewage systems were introduced in port cities such as Istanbul and Izmir through foreign water companies established at the end of the nineteenth century.²⁷ There was initially inequality in access to clean water and sewage systems both within cities and between different cities. In contrast to industrialized countries, Türkiye, as a developing country, took longer to reduce inequalities in access to clean water and sewage systems both within cities and between regions. The construction and development of clean water and sewage systems are, in other words, closely linked to a country's economic capacity due to the high costs and technical demands involved. Over time, efforts were made to reduce regional disparities in infrastructure and sanitation investments in Türkiye; however, progress was slow by limitations in state capacity and economic resources. Government efforts to improve clean water and sewage systems help protect against

²⁴ Jonathan Chapman, "The Contribution of Infrastructure Investment to Britain's Urban Mortality Decline, 1861–1900," *The Economic History Review* 72, no. 1 (2019): 233–259.

²⁵ Lionel Kesztenbaum and Jean-Laurent Rosenthal, "Income versus Sanitation: Mortality Decline in Paris, 1880–1914" (2014); Daniel Gallardo Albarrán, *Health and Welfare in Western Europe, 1900–1950* (2016).

²⁶ For details on World Systems Theory, see Immanuel Wallerstein, *The Capitalist World Economy* (New York: Cambridge University Press, 1979); Şevket Pamuk, "Osmanlı Ekonomisinde Bağımlılık ve Büyüme (1820-1913)," 2nd ed. (İstanbul: Tarih Vakfı Yurt Yayınları, 1994); Resat Kasaba, *The Ottoman Empire and the World Economy: The Nineteenth Century* (Albany, NY: SUNY Press, 1988).

²⁷ Ali İhsan Öztürk, *Istanbul Şehir Suyu Hizmetinde Şirketler Dönemi 1881-1937* (İstanbul: İdeal Kültür Yayıncılık, 2018), 52–74; İlhami Yurdakul, *Aziz Şehre Leziz Su: Dersaadet, İstanbul Su Şirketi, 1873-1933* (İstanbul: Kitabevi, 2010).

waterborne epidemics. Additionally, beyond safeguarding public health, these systems offer governments an opportunity to strengthen their legitimacy within society. Thus, I argue that clean water and sewage systems extend beyond mere infrastructure investments, representing multifunctional dimensions.

In conclusion, clean water and sewage systems are vital, multifaceted investments within society. Beyond being household consumption and production inputs, they strengthen the relationship between citizens and the state, providing essential services that enhance governmental legitimacy. These systems also have a significant impact on public health, reducing waterborne illnesses and infant mortality. Moreover, they play a central role in sustainable development by promoting socioeconomic progress, ecosystem health, and human well-being, as highlighted by organizations like the United Nations. Therefore, clean water and sewage systems are more than basic services; they possess a multifunctional dimension.

§ 1.2 Literature Review

Clean water and sewage systems are closely linked infrastructures essential for preventing waterborne diseases and protecting public health. Since the nineteenth century, these sanitary investments have become a priority for governments, which have worked to provide clean water and build sewage systems to support citizens living in unsanitary conditions. However, these efforts did not begin or progress uniformly across all countries. The disparities in access to clean water and sewage infrastructure can be traced back to the nineteenth century when water took on new significance following the Industrial Revolution—not only as a household necessity but also as a critical input for industrial production. As urbanization increased, governments faced growing pressure to invest in infrastructure to meet the rising demand for clean water. This led to the construction of water treatment facilities, pipelines, and distribution networks to ensure a reliable, safe water supply for domestic and industrial needs.

In the nineteenth century, industrialized countries prioritized infrastructure development and expansion. For example, in Britain, there was a notable increase in local public investment: local government spending rose from 17% of total government expenditure in 1790 to 41% by 1890. This increase was largely due to investments in health infrastructure, such as sewage systems, filtered water, and drained streets, financed through taxation.²⁸ The British elite also supported expanding infrastructure as a form of redistribution.²⁹ Millward and Sheard argue that the construction of roads and water supply took precedence in the industrialization and urbanization of England and Wales.³⁰

From the mid to late nineteenth century, clean water and sewage infrastructure investments began to expand across France³¹, Germany³², Sweden³³ and the United States³⁴. These investments were considered a

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- ²⁸ Alessandro Lizzeri and Nicola Persico, "Why Did the Elites Extend the Suffrage? Democracy and the Scope of Government, with an Application to Britain's 'Age of Reform,'" *The Quarterly Journal of Economics* 119, no. 2 (2004): 707–765.
- ²⁹ Daron Acemoglu and James A. Robinson, "Why Did the West Extend the Franchise? Democracy, Inequality, and Growth in Historical Perspective," *The Quarterly Journal of Economics* 115, no. 4 (2000): 1167–1199.
- ³⁰ Robert Millward and Sally Sheard, "The Urban Fiscal Problem, 1870–1914: Government Expenditure and Finance in England and Wales," *Economic History Review* (1995): 501–535.
- ³¹ Lionel Kesztenbaum and Jean-Laurent Rosenthal, "Sewers' Diffusion and the Decline of Mortality: The Case of Paris, 1880–1914," *Journal of Urban Economics* 98 (2017): 174–186.
- ³² More detail about sanitary system in Germany See, Ernest P. Hennock, "The Urban Sanitary Movement in England and Germany, 1838–1914: A Comparison," *Continuity and Change* 15, no. 2 (2000): 269–296; John C. Brown and Timothy W. Guinnane, "Infant Mortality Decline in Rural and Urban Bavaria: Fertility, Economic Transformation, Infant Care, and Inequality in Bavaria and Munich, 1825–1910," *The Economic History Review* 71, no. 3 (2018): 853–886.
- ³³ Jonas Helgertz and Martin Önnersfors, "Public Water and Sewerage Investments and the Urban Mortality Decline in Sweden, 1875–1930," *The History of the Family* 24, no. 2 (2019): 307–338.
- ³⁴ Joseph P. Ferrie and Werner Troesken, "Water and Chicago's Mortality Transition, 1850–1925," *Explorations in Economic History* 45, no. 1 (2008): 1–16.

necessity for meeting the demands of industrialization and urbanization. Infrastructure development played a key role in reducing urban inequality, particularly in densely populated areas with poor living conditions. Although initial infrastructure investments focused on high-income neighborhoods, inequalities in access to water and sewage systems—both within and between cities—diminished significantly in developed countries due to expanding public investments.³⁵

Industrialized countries possessed sufficient economic and technical capabilities to expand clean water and sewage systems, thereby reducing inequality among cities through widespread sanitary investments. However, in developing countries, inequality in infrastructure investments within and between cities persisted longer due to limited financial and technical resources. In the case of Türkiye, modern clean water and sewage systems were implemented in only certain districts of two cities during the late nineteenth-century Ottoman Empire by foreign water companies. This led to disparities both within the same city and between cities. These inequalities in water and sewage systems persisted until the mid-twentieth century, and even into the end of the century, due to limited state capacity and financial constraints.

From the mid-nineteenth to the early twentieth century, developed countries made substantial investments in constructing and expanding clean water and sewage systems, funding these efforts primarily through taxation as a means of redistributing resources for public benefit. This period marked significant advancements in public health infrastructure in these nations. In contrast, when infrastructure investments began to develop in developing countries in the twentieth century, they often initially created inequalities within society, similar to the pattern in developed nations. However, unlike in developed countries, where regional disparities were reduced, inequality in access to clean water and sewage systems persists in developing countries today due to limited financial

³⁵ Lionel Kesztenbaum and Jean-Laurent Rosenthal, “Income versus Sanitation: Mortality Decline in Paris, 1880–1914” (2014).

resources and state capacity. Compared to clean water systems, the development and expansion of sewage systems in these regions progressed even more slowly and were significantly delayed.

§ 1.3 The Impact of Clean Water and Sewage Systems on Life Expectancy Trends

A growing body of literature examines the effects of clean water and sewage systems on life expectancy. Although life expectancy is an average measure, economic historians often use both life expectancy at birth and infant mortality rates to understand variations in longevity between countries. The primary objective of these scholars is to identify the factors responsible for improvements in human lifespan, which has generally increased in both developed and developing countries since the twentieth century. McKeown, for instance, attributes declining mortality rates after 1850 largely to improved nutrition³⁶, while Robert Fogel emphasizes the impact of public healthcare, nutrition, and social programs, such as compulsory and sickness insurance, on the reduction of mortality in Europe and the United States. Fogel also highlights body mass index as a key measure of public health improvement.³⁷ Additionally, the expansion of healthcare services, educational efforts—especially those promoting breastfeeding awareness—and the establishment of social insurance programs in Europe have enriched discussions about infant mortality and life expectancy at birth.³⁸ More recently, researchers have added to this debate by examining the influence of water and sewage systems on life expectancy and infant mortality, recognizing the critical role these infrastructures play in public health outcomes.

³⁶ Thomas McKeown, *The Modern Rise of Population* (London: Arnold, 1976).

³⁷ Robert W. Fogel, *The Escape from Hunger and Premature Death, 1700–2100: Europe, America, and the Third World* (Cambridge: Cambridge University Press, 2004), 1–20.

³⁸ John R. Bowblis, “The Decline in Infant Death Rate, 1878–1913: The Role of Early Sickness Insurance Programs,” *Journal of Economic History* 70, no. 1 (2010): 221–232.

Researchers argue that large-scale investments in water and sewage systems have significantly contributed to declines in disease and mortality rates. Chapman's study, for example, suggests that government investments in sanitation in England between 1861 and 1900 accounted for 18 to 35 percent of the mortality decline. This decline was largely due to increased spending on public goods such as water supplies, sewage systems, and street cleaning.³⁹ Similarly, Cain and Rotella find that in 48 American cities between 1899 and 1929, a 1 percent increase in sanitation expenditures on water supply, sewage disposal, and refuse collection led to an almost 3 percent annual decrease in deaths from typhoid, dysentery, and diarrhea.⁴⁰

In Germany during the late 1870s, urban areas experienced higher mortality rates than rural areas. Daniel Gallardo Albarrán's research shows that public investments in water and sewage systems reduced mortality in Germany by 19 percent between 1877 and 1913.⁴¹ Another critical aspect of these improvements is the effect on infant mortality. In the United States, excess infant mortality in urban areas was 88 percent in 1890, falling to 48 percent by 1900. This decline highlights the impact of infectious diseases on mortality—particularly among infants—and the significant role of clean water and sewage infrastructure in mitigating these risks as cities adopt these technologies.⁴²

In addition to research in developed countries, a growing body of literature also examines the impact of clean water and sewage systems on public health in developing nations. For instance, Kasri and Wibowo examine the privatization of infrastructure investments—including water,

³⁹ Jonathan Chapman, "The Contribution of Infrastructure Investment to Britain's Urban Mortality Decline, 1861-1900," *Economic History Review* (2018): 1-20.

⁴⁰ Louis Cain and Elyce Rotella, "Death and Spending: Urban Mortality and Municipal Expenditure on Sanitation," *Annales de Démographie Historique* 101, no. 1 (2001): 149.

⁴¹ Daniel Gallardo Albarrán, "Sanitary Infrastructures and the Decline of Mortality in Germany, 1877-1913," *GGDC Research Memoranda*, vol. 176 (Groningen, 2018), 2-27.

⁴² Michael R. Haines, "The Urban Mortality Transition in the United States, 1800-1940," *Annales de Démographie Historique* 101 (2001): 33-64.

sewage, telecommunications, and energy—in 48 Muslim-majority developing countries from 2002 to 2011, focusing on its effects on public health.⁴³ Similarly, Galiani, Gertler, and Schargrodsky show that the privatization of water companies in Argentina contributed to an approximately 8 percent reduction in child mortality due to waterborne diseases.⁴⁴

In light of recent scholarship exploring the factors behind rising life expectancy at birth and declining infant mortality, we reexamine national trends. In the late nineteenth and early twentieth centuries, life expectancy showed divergence, with higher rates in Western Europe and Western Offshoots. However, from the mid-twentieth century onward, global life expectancy trends began to converge, with the notable exception of Sub-Saharan Africa. The post-World War II period marked a turning point, as life expectancy in most developing regions, excluding Sub-Saharan Africa, rose rapidly. According to Pamuk's estimates, life expectancy at birth in Türkiye increased gradually by about six years from the nineteenth century to World War I, though he notes that demographic data from the nineteenth century is insufficient for precise estimation. Pamuk estimates that life expectancy at birth in 1820 was approximately 26–27 years, based on trends observed in southern and eastern European countries.⁴⁵

The disappearance of the plague around the eastern Mediterranean in the second quarter of the nineteenth century, along with ship quarantines and a gradual increase in per capita agricultural production—which

⁴³ Rahmatina Awaliah Kasri and Farid Arif Wibowo, "Determinants of Public-Private Partnerships in Infrastructure Provision: Evidence from Muslim Developing Countries," *Journal of Economic Cooperation and Development* 36 (2015): 1–34.

⁴⁴ S. Galiani, P. Gertler, and E. Schargrodsky, "Water for Life: The Impact of the Privatization of Water Services on Child Mortality," *Journal of Political Economy* 113, no. 1 (2005): 83–120.

⁴⁵ Şevket Pamuk, *Uneven Centuries: Economic Development of Turkey since 1820* (Princeton: Princeton University Press, 2018), 41, fig. 2.4, "Life Expectancy at Birth in Turkey and the World, 1820–2010 (years)".

improved nutrition—significantly contributed to the rise in life expectancy in Türkiye. However, wars, population exchanges, and deportations had direct adverse effects on demographics. Life expectancy at birth in Türkiye dropped sharply during World War I, falling to less than 25 years. Shorter and Macura provide a more optimistic estimate of 32–33 years for life expectancy at birth in Türkiye just before World War I. After the 1920s, life expectancy began to increase, reaching 35 years by the mid-1930s and 44 years by 1950. As in most developing countries, the rapid increase in life expectancy at birth in Türkiye indicates a trend of convergence with developed countries since 1950. Life expectancy at birth rose from 44 years in 1950 (45 for women and 42 for men) to 59 years in 1980 (61 for women and 57 for men). According to Pamuk, the decline in infant mortality was a significant factor contributing to the increase in life expectancy in Türkiye.⁴⁶

Several factors contributed to the decline in mortality and the rise in life expectancy. Following the end of the wartime period from the early to mid-twentieth century, economic growth led to higher income levels, allowing for improved nutrition. With increased state resources and capacity, governments prioritized investments in medical facilities and healthcare services over military spending. Alongside the growing numbers of doctors, nurses, and other healthcare personnel, governments launched campaigns against malaria, tuberculosis, and other infectious diseases. Furthermore, advancements in education, maternal awareness, medical knowledge, and birth practices played significant roles in raising life expectancy at birth and reducing infant mortality. This thesis aims to examine whether the development of clean water and sewage systems in Türkiye contributed to increased life expectancy at birth and decreased infant mortality, particularly between 1950 and 1980. While it is evident that these factors collectively contributed to the rise in life expectancy, determining which factor was most influenced remains challenging. This study contributes to the literature by examining the distribution of water and sewage infrastructure in Türkiye, both regionally and within urban

⁴⁶ Ibid., 150–55.

areas, from a macro perspective spanning over a century. Additionally, it considers the development of these infrastructures in Türkiye in the context of institutional progress, drawing on international research that links clean water and sewage systems to improvements in life expectancy at birth.

§ 1.4 Clean Water and Sewage Systems as a Redistribution for Society: The Case of Türkiye

Since the nineteenth century, economic development and urbanization have led states to prioritize the provision of clean water for citizens living in poor sanitary conditions. The construction and expansion of water and sewage systems have varied according to each country's economic capacity. In the Ottoman Empire, the nineteenth-century political economy was characterized by weak public and domestic private sectors, with European companies holding a substantial role through trade, loans, and foreign direct investment.⁴⁷ This thesis proposes that the development of clean water and sewage systems should be analyzed in relation to the state's capacity to shape economic processes and the effects of this capacity on public health and social inequality.

This dissertation examines the development of clean water and sewage systems in Türkiye over a century, analyzing this transformation in two phases: (1) the duality of clean water and sewage systems, and (2) the increased institutional diversity and state capacity from 1950 to 1980, particularly regarding water and sewage infrastructure, reflecting the multivocality of institutions. This approach highlights how state capacity and policy direction shaped the expansion and modernization of clean water and sewage systems in Türkiye.⁴⁸

⁴⁷ Çağlar Keyder, *Türkiye'de Devlet ve Sınıflar* (İstanbul: İletişim Yayınları, 1989).

⁴⁸ Gøsta Esping-Andersen and John Myles, "The Welfare State and Redistribution," in *Social Stratification*, Routledge, 2018, 52–58; Nadir Özbek, "Osmanlı'dan Günümüze Türkiye'de Sosyal Devlet," *Toplum ve Bilim* no. 92 (Bahar 2002): 7–33.

The commodification of water systems originated in industrialized countries and later extended to semi-periphery and periphery regions through European capital and engineers. In the Ottoman Empire, this process began in the late nineteenth century, particularly in port cities with significant economic activity, social mobility, and high-income populations. Traditionally, the Ottoman water supply relied on waqfs, operating on a model of reciprocity within the community. However, as the traditional waqf-based water systems declined, two foreign water companies were established in Istanbul and Izmir to implement modern water systems.

The modern water networks constructed in Istanbul and Izmir created a division among city residents regarding access to clean water. Many residents could not afford the subscription fees and water bills charged by these private companies, which were prohibitively expensive.⁴⁹ Furthermore, the Ottoman Empire lacked the economic and organizational capacity to extend modern water and sewage systems beyond high-income neighborhoods in all parts of the cities. On the eve of the twentieth century, municipal development was limited, and cities were generally unable to provide widespread clean water and sewage systems. While high-income groups in Istanbul and Izmir had access to chlorinated water through foreign-operated companies, the rest of the population relied on traditional water sources. Although water shortages were not a major issue in rural areas with abundant natural sources, the quality and health safety of these sources were questionable. This indicates that company subscribers had access to relatively cleaner water and sewage systems. In contrast, urban residents in large cities faced challenges in accessing clean water due to limited sources. Foreign companies, driven by profit motives, did not expand their services broadly for public benefit. At the same time, the state lacked the capacity and economic resources to fulfill this role adequately.

The duality of the clean water and sewage systems exacerbated inequalities in access to clean water, both among different cities and within

⁴⁹ Kazgan and Önal, *İstanbul'da Suyun Tarihi*, 41–62; Serçe, *İzmir'de Belediye*, 126–128.

urban areas, increasing the risk of waterborne illnesses. Here, the term *duality* refers to both the competition between public and foreign water companies and the resulting disparities among citizens. Examining the historical development of water and sewage systems in the Ottoman Empire reveals a pattern of inequality similar to that in Europe and the United States, where high-income groups were the first to benefit from modern water systems. However, the development of water and sewage infrastructure in the Ottoman Empire did not parallel that of European countries.

Unlike in Europe, where water increasingly served as an industrial input, the Ottoman Empire's water system was limited mainly to household consumption. Kazgan and Önal note that one factor behind the closure of paper mills and textile facilities in Istanbul (Kağıthane) and Bursa was the empire's underdeveloped and costly water systems, which did not support industrial needs.⁵⁰ Consequently, foreign investments in Ottoman water infrastructure were largely confined to household supply, lacking the scope to support industrial production. As a result, water usage in the Ottoman Empire remained focused on domestic or households consumption without expanding into industrial inputs.

The water and sewage infrastructure inherited by the Republic of Türkiye from the Ottoman Empire consisted of outdated, inadequate traditional systems, alongside limited investments by foreign companies concentrated in two cities. This structure—referred to here as the "duality" of water and sewage systems—was incompatible with the republic's mission, as it fostered disparities not only between cities but also within urban areas.⁵¹ In the period from the establishment of the republic until 1950, efforts focused on consolidating all water sources under state control. This shift in ownership of utility networks was part of a broader trend observed in both developed and developing countries, as international capital withdrew investments abroad and newly formed nation-

⁵⁰ Kazgan and Önal, *İstanbul'da Suyun Tarihi*, 29-31.

⁵¹ For a detailed examination of the duality in clean water systems, see Chapter 2. For an analysis of the duality in sewage systems, refer to Chapter 3.

states expanded their authority over utilities within their borders.⁵² This transformation of clean water and sewage systems from localized urban infrastructure to a national scale can be understood as an attempt to establish a redistributive mechanism aimed at reducing inequality in access to essential networks.

I argue that the efforts by municipalities and governments to develop clean water and sewage systems since the early republican period in Türkiye should be viewed as a redistribution policy aimed at equitable access for citizens. Under the Ottoman system, access to clean water and modern sewage systems was largely limited to high-income residents of Istanbul and Izmir. The republican government encouraged foreign water companies to increase sanitary investments and improve water quality, pressing them to expand services to all residents of these cities. Additionally, new legal regulations sought to consolidate responsibility and authority over water systems under municipal control.⁵³ The establishment of the Municipal Bank⁵⁴, further supported this goal, providing municipalities with financial and technical assistance to promote equal access to resources. This national policy signaled the state's intention to transition water infrastructure from a commodified service to a public resource benefiting society as a whole.

The period between 1950 and 1980, marked by the multivocality of institutions involved in expanding clean water and sewage systems, saw an increasing state capacity in Türkiye. After World War II, the Democrat Party came to power, shifting from the previous balanced-budget and strong-currency policies to a liberal economic model centered on agricultural production. Under the Democrat Party, public investments expanded but were often made without a structured plan. A clear policy

⁵² Judith Clifton, Pierre Lanthier, and Harm Schröter, "Regulating and Deregulating the Public Utilities 1830–2010," *Business History* 53, no. 5 (2011): 659–672.

⁵³ 1926 *Sular Hakkında Kanun*, Resmi Gazete, no. 368; 1930 *Belediyeler Kanunu*, Resmi Gazete, no. 1471.

⁵⁴ 1933 *Belediyeler Bankası Hakkında Kanun*, Resmi Gazete, no. 2435.

divergence existed between the Democrat Party and the Republican People's Party (RPP) regarding infrastructure priorities. While the RPP prioritized railway expansion for security, military, and economic reasons, the Democrat Party emphasized developing motorways to better connect urban and rural areas.⁵⁵ However, in the realm of water and sewage infrastructure, both parties shared similar approaches. Neither party made significant policy distinctions in this area, nor did they prioritize water and sewage systems as a defining aspect of their investment agendas.

Clean water networks ranked third among infrastructure priorities—after railways and electricity for the RPP, and motorways and electricity for the DP—while sewage systems were relegated to a lower priority in both parties. In 1960, Türkiye adopted an import-substituting industrialization (ISI) strategy, which became a popular approach for economic development in many developing countries.⁵⁶ This policy shift, combined with a focus on national development, led to increased investment in infrastructure such as motorways, clean water networks, and sewage systems. Institutions like the Bank of Provinces and the State Hydraulic Works supported these efforts by offering financial and technical assistance, functioning as tools of redistribution to ensure broader access to essential services across regions.

The period from the 1950s to 1980 saw a significant increase in rural-to-urban migration in Türkiye, with the urbanization rate rising from 17 percent in 1950 to 44 percent by 1980.⁵⁷ I argue that one reason for the lag in clean water and sewage system development was the previously low urbanization rate. In other words, the relatively low urban population in Türkiye until the 1950s and 1960s allowed the country to tolerate the lack

⁵⁵ İlhan Tekeli and Selim İlkin, “Türkiye’de Demiryolu Öncelikli Ulaşım Politikasından Karayolu Öncelikli Ulaşım Politikasına Geçiş (1923-1957),” in *Cumhuriyetin Harcı*, vol. 2 (İstanbul: Bilgi Üniversitesi Yayınları, 2004), 369–341.

⁵⁶ Oktay Yenal, *Cumhuriyet’in İktisat Tarihi*, (İstanbul: Türkiye İş Bankası Yayınları, 2013), 109-113.

⁵⁷ Pamuk, *Uneven Century*, 212-213.

of modern water and sewage infrastructure. However, the rapid acceleration of migration to urban areas after the 1970s intensified the need for sanitary investments, particularly in major cities. The growth of squatter housing (*gecekondu*—literally, "landed overnight") in large cities created a unique dynamic between migrants and the government. During the 1960s, residents of these informal settlements often accepted the absence of basic public services, such as clean water and sewage systems, in exchange for property rights to their squatter housing and the hope of a better future for their children.⁵⁸

In Türkiye's competitive political landscape, especially from the 1950s onward, conservative parties often promised infrastructure improvements—such as roads, water, and sewage systems—in exchange for citizen votes.⁵⁹ Following the 1960 military coup, the government established the State Planning Organization (SPO) to oversee development plans guiding both the public and private sectors. The SPO was granted authority to determine which sectors would receive support in the industrialization process, including the budgeting and planning of clean water and sewage systems. Between 1950 and 1980, Türkiye's development strategy reflected the global trend of balanced development, prioritizing investment in both industrial and infrastructure sectors.⁶⁰ Clean water projects were included in all five-year development plans, while sewage

⁵⁸ Kemal H. Karpat, *The Gecekondu: Rural Migration and Urbanization* (New York: Cambridge University Press, 1976).

⁵⁹ Ayşe Buğra and Aysen Candaş, "Change and Continuity under an Eclectic Social Security Regime: The Case of Turkey," *Middle Eastern Studies* 47, no. 3 (2011): 515–28; Tekeli and İlkin, *Cumhuriyetin Harcı* 2, 154–170; Kemal H. Karpat, *The Gecekondu: Rural Migration and Urbanization*, 30–40.

⁶⁰ Paul N. Rosenstein-Rodan, "Problems of Industrialisation of Eastern and South-Eastern Europe," *The Economic Journal* 53, no. 210/211 (1943): 202–11; Ragnar Nurkse, "The Theory of Development and the Idea of Balanced Growth," in *Developing the Underdeveloped Countries* (London: Palgrave Macmillan UK, 1971), 115–28; Walt Whitman Rostow, *The Stages of Economic Growth: A Non-Communist Manifesto* (Cambridge: Cambridge University Press, 1990).

systems gained attention primarily in the third and fourth plans.⁶¹ Economic growth until the OPEC crisis supported the expansion of state capacity, strengthening the public sector's role in infrastructure development. Efforts to expand water and sewage systems, initiated in the early republican period and continued by municipalities and the government, should be seen as a redistribution policy aimed at reducing inequalities in access to clean water and sewage systems and then protecting public health.

§ 1.5 A Note of Data and Sources

In addition to a comprehensive review of academic literature on clean water and sewage systems, this dissertation presents, for the first time, a modern history of these systems in Türkiye from a macro perspective. While previous studies have often focused on specific cities or periods, no research has combined the Ottoman heritage with the republican era within Türkiye's current borders. To address this gap, I collected detailed data on various cities to analyze the development of clean water and sewage systems within these borders. In doing so, I examine the unequal distribution of these systems both across regions and within cities in Türkiye over a century, from 1880 to 1980, through the lens of economic history.

The primary source of the documents for my research on the Ottoman Empire was the Presidential Ottoman Archive. (Cumhurbaşkanlığı Osmanlı Arşivleri- BOA). The catalogs that were most useful for my research included the İradeler (İrâde - Şûrâ-yı Devlet and İrade Evkaf), Dahiliye Nezâreti Belgeleri, Vâridât Muhasebesi Defterleri, Şehremâneti Maruzâtı, and Bab-ı Ali Evrak Odası. In addition to using documents from

⁶¹ Devlet Planlama Teşkilatı, *Birinci Beş Yıllık Kalkınma Planı (1963-1967)* (Ankara, 1963); Devlet Planlama Teşkilatı, *İkinci Beş Yıllık Kalkınma Planı (1968-1972)* (Ankara, 1968); Devlet Planlama Teşkilatı, *Üçüncü Beş Yıllık Kalkınma Planı (1973-1977)* (Ankara, 1973); Devlet Planlama Teşkilatı, *Dördüncü Beş Yıllık Kalkınma Planı (1979-1983)* (Ankara, 1979).

the Ottoman Archive, I also utilized various collections from the Republican Archive (Cumhurbaşkanlığı Cumhuriyet Arşivleri- BCA), with the most helpful catalogs being the Nafia Vekaleti and Başbakanlık (Muamelat Genel Müdürlüğü 30-10-0-0 and Kararlar Daire Başkanlığı 30-18-1-1).

In Türkiye, many institutions have influence over water and sewage infrastructure investments. The involvement of various entities, including the Bank of Provinces, the General Directorate of State Hydraulic Works (DSİ), municipalities, and the Ministry of Public Works and Settlement, has both positive and negative effects on the development of clean water and sewage systems. On the positive side, these institutions hold extensive and diverse historical materials. However, this situation presents several challenges both academically and as a researcher. Academically, I will analyze the impact of these institutional dynamics on investments in Chapters 4 and 5. As a researcher, a key drawback is the difficulty in accessing institutional archives, which are spread across different cities. My research required frequent trips to Ankara and İzmir, as well as numerous phone calls and emails to reach nearly all municipalities.

Furthermore, there is also a miscommunication between institutions that cannot be easily overcome, such as the distance between them, which can drain researchers' energy and motivation. After the 1980s and 1990s, clean water and sewage infrastructure investments were organized as special directorates based on municipality in each city such as İSKİ, ASKİ, and İZSU. I made a request to both the Istanbul Municipality and İSKİ to gain permission to access their archives and libraries in order to research clean water and sewage investments from the period prior to 1980. Interestingly, I spent a considerable amount of time between these two institutions because while the Istanbul Metropolitan Municipality claimed to have transferred the necessary archives and documents to İSKİ that were established in 1981, the authorities at İSKİ stated that there were no documents related to water and sewage in their archives related to before 1980. Finally, after a period of 6-7 months, I was fortunate

enough to obtain permission from the Istanbul Metropolitan Municipality to access the documents related to the council and acts of the municipality.

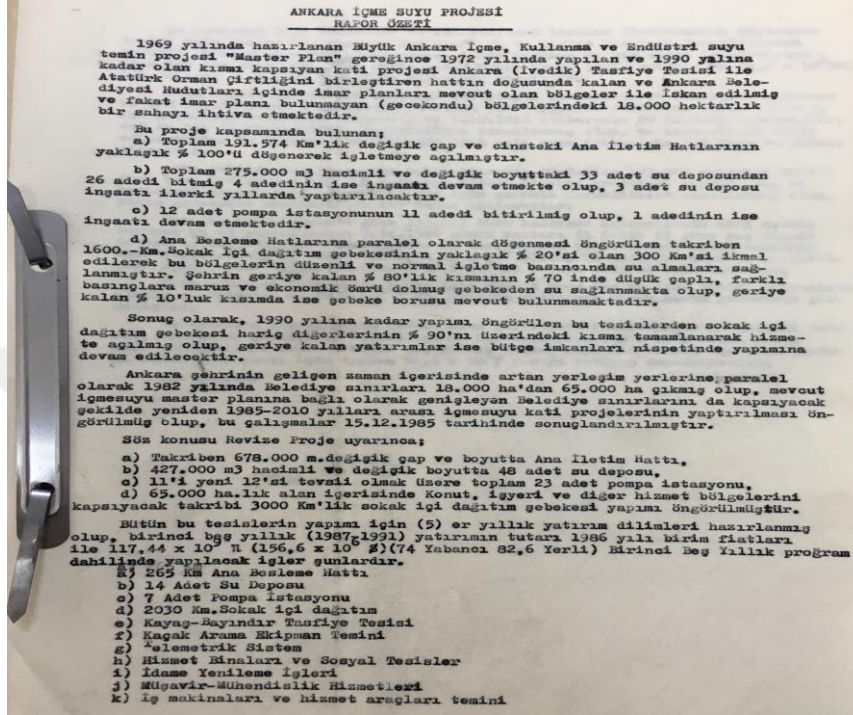
I had a similar experience in Ankara, though with a different outcome. Unfortunately, I was unable to access the municipal archives due to their lack of digitization. Additionally, ASKİ authorities reported that documents and library materials had become unserviceable due to factors such as flood damage and institutional relocations, leading to their disposal. This experience taught me that municipal and institutional archives in Türkiye, which represent the nation's memory, contain a wealth of potentially valuable documents for researchers. However, institutions have often neglected the preservation of these records. During digitization efforts, original documents are sometimes destroyed, as in the case of ASKİ.



Photograph 1.1 Corridors of the ASKİ and cabinets for documents

For instance, during data transfer, an ASKİ authority explained that for the convenience of staff, a policy was implemented to set the subscription date of all pre-1980 subscribers to '1/1/1980.' This means that a citizen who subscribed to water services in 1956 would now appear in the system as having subscribed on 1/1/1980. The decision was reportedly made based on a statute of limitations and staff convenience. The process

of digitization, combined with new legal regulations and frequent relocations, has also contributed to the destruction of archival materials. A staff member in this field described the phrase 'two relocations equal one fire,' capturing the degree of document loss during institutional moves.⁶²



Photograph 1.2 One of the surviving documents in ASKİ

Although some institutions did not have formal archives, the persons in charge allowed me to photograph documents, information on water and sewage projects, and books by former directors, all of which proved invaluable to my research (Photograph 1.2.). Additionally, I analyzed meeting minutes and general assembly resolutions from these institutions. To illustrate long-term trends in the distribution of water and sewage investments, I utilized databases from the Turkish State Planning Organization (SPO), Five-Year Development Plans, and Statistical Records.

⁶² Ecem Doygun, "İki Taşınma Bir Yangına Bedel," *Toplumsal Tarih Akademi* 2 (2023): 111-13.

Moreover, the *Municipal Yearbook* (Belediyeler Yıllığı), a three-volume publication from 1949, offers an in-depth analysis of the demographic, economic, and infrastructural conditions of municipalities across Türkiye. Compiling data from 639 municipalities in 63 provinces, it provides detailed information on population statistics, municipal revenues, public utilities, and infrastructure investments. As a pivotal resource, the yearbook sheds light on the socio-economic dynamics of local administrations in the early Republican era. In my thesis, I utilized this source as a primary reference to examine the historical development of clean water and sewage systems in Türkiye during the early Republican period. I also consulted newspapers, especially *Cumhuriyet* and *Levant Trade*, as well as relevant laws, secondary legislation, and official reports, and engaged in discussions with bureaucrats and civil servants.

§ 1.6 Chapter Summaries

Following the introductory chapter, this dissertation consists of four main chapters and a conclusion. Chapter 2 provides a brief history of clean water systems from the Ottoman Empire to the early republican era within Türkiye's current borders, covering the period from 1880 to 1950. At the end of the nineteenth century, the traditional Ottoman water system became diversified with the introduction of foreign-operated water companies in two cities, creating what I term the "duality" of the clean water system. This chapter examines how and why this duality emerged and explores the transition from a dual system—marked by competition between private companies and public fountains—to the centralization of water policies between the 1930s and 1950. Drawing on studies from both developed and developing countries, I argue that limited investment in water infrastructure in Türkiye during this period stemmed from the confinement of water use primarily to household consumption. Chapter 2 also investigates the relationship between clean water systems and public health in Türkiye. While existing studies have focused on cities or parts of cities, my aim is to analyze the development of clean water and

sewage systems across all Turkish cities, offering a comprehensive perspective. This chapter thus provides historical context for understanding decisions and transformations in water infrastructure from 1950 to 1980.

Chapter 3 presents a history of sewage systems within Türkiye's current borders, from the late Ottoman Empire to the early republican era. Although sewage infrastructure in industrialized countries often developed alongside water systems, a comparable transformation did not occur in developing countries. After discussing theoretical perspectives on sewage systems in both developed and developing contexts, I examine the evolution of sewage infrastructure in Türkiye's urban and rural areas up to 1950. I argue that sewage system development in Türkiye was shaped by the development of clean water infrastructure. To support this, I provide data and maps to analyze the distribution and types of sewage systems commonly found in Türkiye, along with underlying reasons. This chapter also addresses the public health impacts of delays in sewage infrastructure development, offering a framework to understand these systems' significance and the factors influencing their implementation.

In Chapter 4, I examine the institutions that played a critical role in clean water infrastructure investments in Türkiye from 1950 to 1980. Key institutions—including the General Directorate of State Hydraulic Works, the Bank of Provinces, and various municipalities—held authority over water investments across Turkish cities. During this period, the roles and responsibilities of these public institutions evolved rapidly. This chapter assesses whether the involvement of the *multivocality* of institutions had a negative impact on the efficiency and effectiveness of water infrastructure investments. Using data from the archives of the Bank of Provinces, the General Directorate of State Hydraulic Works, and the Turkish Statistical Institute, I analyze the regional distribution of water investments across Türkiye's seven regions from time series perspective. This analysis is complemented by statistical visualizations of investment patterns from 1950 to 1980, offering insights into regional disparities and trends in water infrastructure development.

Chapter 5 examines the delayed development of sewage systems among regions and cities in Türkiye between 1950 and 1980, emphasizing

the influence of migration and urbanization on infrastructure investments. Population growth after the 1950s created an urgent need for adequate sewage systems, yet investments in this area lagged for several reasons. Similar to the multivocality in clean water systems, there were also numerous institutions responsible for their development of sewage systems in Türkiye. I argue that sewage infrastructure development was closely tied to advances in water infrastructure and that sewage systems were more capital-intensive than water systems. Additionally, I propose that *çirkef* waters—wastewater from dishwashing and cleaning—contributed to the slow progress of sewage systems in Türkiye. In contrast to multivocality of institutions in clean water and sewage systems, there was a silence of institutions in rural sewage systems. Furthermore, this chapter investigates whether the delay was primarily due to insufficient funding, limited expertise, a shortage of skilled labor, or reliance on traditional waste management methods. It also explores the roles of key institutions in sewage system development and the characteristics of regions where sewage infrastructure was implemented.

In conclusion, Chapter 6 illuminates the spread of clean water and sewage infrastructure investments in Türkiye from 1950 to 1980. This chapter further examines how the significance of water and sewage infrastructure grew over time in Türkiye and its impacts on public health, particularly concerning waterborne illnesses, infant mortality, and life expectancy at birth. Utilizing records and archives from the Bank of Provinces, Municipalities, the General Directorate of State Hydraulic Works, and the Turkish Statistical Institute, I visualize the distribution of clean water and sewage infrastructure investments across Türkiye. Rather than focusing on urban history or the history of a single institution, this chapter explores the evolution of these investments across Türkiye's seven regions from a time-series perspective. Chapter 6 connects the regional allocation of clean water and sewage systems with public health outcomes, offering a novel contribution to the literature on clean water and sewage systems in Türkiye.

The Transition of Clean Water Systems in Türkiye: From Duality to Nationalization

This chapter provides a historical analysis of clean water systems from the Ottoman Empire through the Early Republican Period, examining how, when, and why the roles of the state and foreign companies shifted over time within Türkiye's current borders. Comparing examples from developed and developing countries assesses why water investments remained limited in Türkiye and why water usage did not extend beyond household consumption. In this context, this study is the first to address regional and urban inequalities in clean water systems across Türkiye from a macro perspective. Analyzing the uneven development of clean water systems across regions and cities in Türkiye from 1950 to 1980 requires data on the distribution of these systems prior to 1950. This chapter will, therefore, establish a foundation for discussing changes in the distribution of clean water systems across Türkiye in Chapter 4 by examining the roots of regional disparities in water infrastructure investments. For this purpose, the time span covered in this chapter begins in the late nineteenth century, with the activities of foreign water companies in the Ottoman Empire, and concludes in 1950.

The chapter has three main arguments. My first argument is that, from the late Ottoman period until 1950, investments in clean water infrastructure remained limited, as they did not extend beyond household consumption. As discussed in Chapter 1, water has a multidimensional role. During the Industrial Revolution, water was used not only for domestic consumption but also as part of the production process. This shift led to increased investments in water infrastructure in industrialized countries. When comparing the development of clean water systems between developed and developing countries, it can be observed that in developed countries, these systems became widely available nationwide by the late nineteenth and early twentieth centuries, in parallel with the expansion of state capacities. Indeed, investments in clean water infrastructure initially began in industrialized countries and subsequently spread from these Western nations to developing countries, such as the Ottoman Empire, facilitated by British, French, and German engineers and companies. In contrast to developed countries, the development of clean water systems in developing countries was gradual and slow. I argue that from the Ottoman Empire through the early Republican period, access to water in Türkiye remained limited to household consumption and could not evolve into a production input.

My second argument is that the water systems inherited by the Republic from the Ottoman Empire were inadequate and unequal, a condition I term the 'duality of the clean water system'. This duality began with the operation of foreign water companies into the Ottoman Empire and persisted until these companies were nationalized during the Republican era. In the Ottoman Empire, traditional water systems comprised sources such as fountains and wells, from which the majority of society met their water needs free of charge. In contrast, foreign water companies concentrated their investments in high-income areas of Istanbul and Izmir, providing paid, chlorinated, and comparatively healthier water to their subscribers. Therefore, the difference between the traditional water system and foreign water companies lies not only in ease of access to water but also in the varying quality of water provided. I describe this complex

structure of foreign water companies and traditional water systems using the concept of the “duality of clean water systems,” as these two systems neither complemented nor substituted one another.

My third argument in this chapter is that the duality within the clean water systems caused inequalities in access to clean water across regions, cities, and even among citizens within the same city in Türkiye. This inequality was inherited from the Ottoman Empire into the Republic. While the Republican regime aimed to create a healthy society with equal opportunities for all citizens, this unequal water system was misaligned with that ideal. Similar to global nationalization trends of public utilities, the process of nationalizing foreign water companies in Türkiye began in the 1930s. Although the duality of the clean water systems ended with nationalization, the development of clean water investments remained slow during the early Republican period, influenced by factors such as wars, the Great Depression, and limited state capacity.

In this chapter, clean water systems are analyzed from two perspectives: urban and rural. The regional distribution of urban clean water systems is examined through water subscription, while rural inequality is illustrated comparatively by assessing the number of drinking fountains. While Istanbul and Izmir emerged as core cities during the Ottoman period, Ankara added to their ranks with the establishment of the Republic. This chapter will examine how, up to 1950, investments in urban clean water infrastructure spread from the core to peripheral cities alongside urbanization. The expansion of clean water systems from urban centers to a national scale served a protective role against epidemics. Although all legal regulations enacted during the early Republican period aimed to reduce this inequality within the country, disparities in clean water infrastructure investments persisted due to limited state capacity and prevailing economic and political conditions.

The organization of this chapter is as follows: After the Literature Review Section (2.1), Section (2.2) examines clean water systems in the Ottoman Empire during the nineteenth century, beginning with a summary of the traditional Ottoman water system. This section also provides a

comparative discussion of clean water systems in both developed countries and developing, peripheral-middle-income countries like Türkiye. Section (2.3) addresses the transition from the duality in clean water systems—marked by competition between private companies and public water systems—to the centralization of water systems between the 1930s and 1950. Section (2.4) provides an overview of Türkiye's urban clean water infrastructure up to 1950, while Section (2.5) analyzes the impact of clean water systems on public health. The chapter concludes with Section (2.6), which offers final reflections on the findings discussed.

§ 2.1 Literature Review

The inadequacy of sanitary (clean water and sewage) infrastructure investments and their impact on public health—particularly infant mortality—have not yet received attention from economic historians in Türkiye. However, there is a growing body of international literature addressing these issues. The historical decline in infant and child mortality in European countries was previously attributed to improved nutrition and a general rise in living standards, as suggested by the McKeown thesis.¹ This explanation, however, has been increasingly questioned. Szreter argued that sanitary reforms, including interventions such as clean water provision and sewage systems, were crucial for public health improvements.² Nathanson, building on Szreter's research, contends that the implementation of health and sanitary investments depends on the style of governance and is more efficient in nations with strong centralization.³

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- ¹ Thomas McKeown, *The Modern Rise of Population* (London: Edward Arnold, 1976).
 - ² Simon Szreter, "The Importance of Social Intervention in Britain's Mortality Decline c. 1850–1914: A Re-Interpretation of the Role of Public Health," *Social History of Medicine* 1, no. 1 (1988): 1–38.
 - ³ Constance A. Nathanson, "Disease Prevention as Social Change: Toward a Theory of Public Health," *Population and Development Review* 22, no. 4 (1996): 609–37.

Recent studies focusing on cities in Europe and the United States highlight the significant impact of sanitary investments, including clean water and sewage systems, on reducing mortality rates.⁴

The development of water and sanitation infrastructure in the nineteenth century brought significant advancements in public health. Preston and Van De Walle demonstrated a marked decline in mortality rates across several French départements as water and sanitation systems were constructed.⁵ Moreover, Kesztenbaum and Rosenthal, using historical data from Paris between 1880 and 1914, showed that the implementation of sewage systems significantly increased life expectancy. Their research underscores the critical role of sanitation infrastructure, alongside clean water, in reducing mortality rates.⁶

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- ⁴ For an up-to-date comprehensive guide to research prospects of the literature, David Cutler and Grant Miller, "The Role of Public Health Improvements in Health Advances: The Twentieth-Century United States," *Demography* 42, no. 1 (2005): 1–22; For Europe, see: Jonathan Chapman, "The Contribution of Infrastructure Investment to Britain's Urban Mortality Decline, 1861–1900," *The Economic History Review* 72, no. 1 (2019): 233–59; Ernest P. Hennock, "The Urban Sanitary Movement in England and Germany, 1838–1914: A Comparison," *Continuity and Change* 15, no. 2 (2000): 269–96; Frances Bell and Robert Millward, "Public Health Expenditures and Mortality in England and Wales, 1870–1914," *Continuity and Change* 13, no. 2 (1998): 221–49; Daniel Gallardo-Albarrán, "Sanitary Infrastructures and the Decline of Mortality in Germany, 1877–1913," *The Economic History Review* 73, no. 3 (2020): 730–57; Richard A. Easterlin, *The Reluctant Economist: Perspectives on Economics, Economic History, and Demography* (Cambridge: Cambridge University Press, 2004), chap. 6; Jeffrey K. Beemer, Douglas L. Anderton, and Susan Hautaniemi Leonard, "Sewers in the City: A Case Study of Individual-Level Mortality and Public Health Initiatives in Northampton, Massachusetts, at the Turn of the Century," *Journal of the History of Medicine and Allied Sciences* 60, no. 1 (2005): 42–72.
- ⁵ Samuel H. Preston and Etienne Van de Walle, "Urban French Mortality in the Nineteenth Century," *Population Studies* 32, no. 2 (1978): 275–97.
- ⁶ Lionel Kesztenbaum and Jean-Laurent Rosenthal, "Sewers' Diffusion and the Decline of Mortality: The Case of Paris 1880–1914," *Journal of Urban Economics* 98 (2017): 174–86.

Similarly, in the early twentieth century, a comparable trend was observed in American cities.⁷ Research by Cain and Rotella emphasizes that urban mortality rates due to typhoid, dysentery, and diarrhea experienced a substantial decline over the first three decades of the twentieth century. This reduction was largely attributed to increased investments by U.S. cities in water supply, sewage disposal, and waste collection.⁸ Moreover, Ferrie and Troesken argue that the mortality rate in Chicago decreased by 60 percent between 1850 and 1925, owing to the expansion of water and sewage infrastructure.⁹ Another study by David Cutler and Grant Miller highlights the significant and cost-effective role of sanitary technologies in the disappearance of the "urban penalty"¹⁰ in the United States.¹¹

Furthermore, Marcella Alsan and Claudia Goldin have demonstrated that advancements in water and sewage infrastructure accounted for approximately one-third of the reduction in child mortality rates in Massachusetts during the period from 1880 to 1920.¹² In addition to Europe

⁷ Werner Troesken, "The Limits of Jim Crow: Race and the Provision of Water and Sewerage Services in American Cities, 1880–1925," *The Journal of Economic History* 62, no. 3 (2002): 734–72.

⁸ Louis Cain and Elyce Rotella, "Death and Spending: Urban Mortality and Municipal Expenditure on Sanitation," *Annales de démographie historique* 2001, no. 101 (2001): 139–54.

⁹ Joseph P. Ferrie and Werner Troesken, "Water and Chicago's Mortality Transition, 1850–1925," *Explorations in Economic History* 45, no. 1 (2008): 1–16.

¹⁰ The term urban penalty refers to the fact that, during the 19th century, metropolitan regions in both the United States and Europe had higher death rates than rural areas. More details, see Michael R. Haines, "The Urban Mortality Transition in the United States, 1800–1940," *Annales de démographie historique*, no. 1 (2001); Gerard Kearns, "The Urban Penalty and the Population History of England," in *Society and Health During the Demographic Transition* (1988): 213–36.

¹¹ David Cutler and Grant Miller, "The Role of Public Health Improvements in Health Advances: The Twentieth-Century United States," *Demography* 42, no. 1 (2005): 1–22.

¹² Marcella Alsan and Claudia Goldin, "Watersheds in Child Mortality: The Role of Effective Water and Sewerage Infrastructure, 1880–1920," *Journal of Political Economy* 127, no. 2 (2019).

and the United States, Chao et al. examined the long-term effects of public health improvements on human capital in rural China, focusing on renovations in water supply and toilet facilities.¹³ Studies using historical data indicate that the development of sewage and sanitation infrastructure has had a profound and positive impact on public health, particularly in reducing infant mortality rates.

By the early twentieth century, developed countries had made significant progress in clean water infrastructure investments; however, the same level of advancement was not achieved in developing countries.¹⁴ In this context, as I will argue in this dissertation, the historical development of clean water infrastructure in Türkiye holds significant importance. The primary aim of this chapter is to fill this gap by conducting a thorough examination of the clean water systems across various regions and cities in Türkiye from the late nineteenth century to 1950.

§ 2.2 Clean Water Systems in the Ottoman Empire During the Nineteenth Century

2.2.1 *Traditional Water System in the Ottoman Water System*

For centuries, the Ottoman Empire relied on traditional water systems. These systems consisted of mains, cisterns originating from the Byzantine era, conduits, aqueducts, and fountains. Over time, water intake towers, fed by lake and barrage waters, were constructed in response to the

¹³ Liang Chao, Wang Susu, and Sun Tao, "The Long-Term Effect of Public Health on Human Capital: Evidence from Rural China's Renovating Water Supply and Toilets," *Journal of Finance and Economics* 48, no. 7 (2022): 154–68.

¹⁴ Research on the historical development and effects of sewage systems in developing nations is still in its early stages. See, Okke Braadbaart, "Privatizing Water and Wastewater in Developing Countries: Assessing the 1990s' Experiments," *Water Policy* 7, no. 4 (2005): 329–44; Gisele Silva, Nicola Tynan, and Yesim Yilmaz, "Private Participation in the Water and Sewerage Sector: Recent Trends," *Public Policy for the Private Sector* 147 (1998): 5.

growing demand for water.¹⁵ For instance, in Istanbul, water was collected in large reservoirs outside the city and transported through weirs, aqueducts, and mains.¹⁶ The number and location of public fountains were typically determined by the size and distribution of the population.¹⁷

Wells were an important part of the Ottoman Empire's water system. According to the first cadastral survey of Istanbul in 1875, numerous well-holes were found in the gardens of Ottoman homes, although there is limited information regarding their use. The large number of wells suggests that their use was widespread in society, even though the health quality of the well water remains uncertain.¹⁸ Inhabitants of the cities were supplied with water through a distribution network provided by public foundations. Until the early nineteenth century, the qadi was responsible for municipal services. In addition, waqfs played a key role in meeting the basic needs of the population and providing communal services as acts of philanthropy. One of the most important responsibilities of waqfs was

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- ¹⁵ I would like to sincerely thank Yavuz Köse and Onur İnal for their valuable assistance in accessing Noyan Dinçkal's thesis. Noyan Dinçkal, *Istanbul und das Wasser: Zur Geschichte der Wasserversorgung und Abwasserentsorgung von der Mitte des 19. Jahrhunderts bis 1966* (Istanbul und das Wasser: Oldenbourg Wissenschaftsverlag, 2004) 38-100; Filiz Karakuş, "İstanbul'daki Osmanlı Dönemi Tarihi Su Sistemleri'nin İncelenmesi," *Türk Hidrolik Dergisi* 3, no. 1 (2019): 14-30; Sait Öztürk, "Osmanlı Su Yapılarında Vakıfların Rolü: Tesis, Onarım ve Hizmet Giderlerinin Finansmanı," *Vakıflar Dergisi* 50 (2019): 135-157; Ahmet Tabakoğlu, *Osmanlı Dönemi İstanbul Su Tarihi* (İstanbul: Marmara Belediyeler Birliği Kültür Yayınları, 2017).
- ¹⁶ Ecem Doygun, "19. Yüzyıldan 21. Yüzyıla Suyun İstanbul'daki Dönüşümü," in *Su Kültürü*, ed. Mesut Gengeç (İstanbul: İstanbul Büyükşehir Kültür A.Ş., 2022), 227-261; Kazım Çeçen, *İstanbul'un Osmanlı Dönemi Suyolları* (İstanbul, 1999); Zeynep Çelik, *The Impact of Westernization on Istanbul's Urban Form, 1838-1908* (PhD diss., University of California, Berkeley, 1984), 93.
- ¹⁷ For details about fountains, see Örçün Barışta, *İstanbul Çeşmeleri: Azakapı Saliha Sultan Çeşmesi* (Ankara, 1995); Örçün Barışta, *İstanbul Çeşmeleri: Kabataş Hekimoğlu Ali Paşa Meydan Çeşmesi* (Ankara, 1993); Affan Egemen, *İstanbul'un Çeşme ve Sebilleri* (İstanbul, 1993).
- ¹⁸ BOA, ML.VRD.d 3721, 14 Za 1291 (23.12.1874).

ensuring the water supply. Furthermore, the construction and repair of water lines fell within their scope of duties. It can be said that the traditional water system in the Ottoman Empire functioned successfully until the nineteenth century.¹⁹ However, waqfs were unable to maintain and repair taps and waterways due to declining revenues.²⁰ In addition, natural disasters such as floods and earthquakes further damaged the Ottoman water systems, which were already in need of repair.²¹

Transporting water via conduits and aqueducts to the water tanks (*maslak*) and distributing it to mosques, public baths, schools, fountains, and houses required effective institutions or administration. Thus, the Department of Water (*Su Nezaretî*) was established in 1835 to manage the expenses related to the construction, repair, and maintenance of aqueducts and fountains.²² The Supervisor of Water (*Su Nazırı*) was responsible for maintaining and overseeing the bends, while the Supervisors (*Su Yolcuları-Koruyucular*) looked after the aqueducts and water lines. In addition to these supervisors, sergeants (*çavuşlar*) were entrusted with the distribution of water within the city. Furthermore, there was a profession known as *saka*, whose role was to sell drinking water to neighborhoods in urban Ottoman society.²³

The Ottoman Empire underwent significant transformation following the Tanzimat Edict, particularly in terms of institutional arrangements. These reforms affected various sectors, including the military, taxation,

¹⁹ Haydar Kazgan and Sami Önal, *İstanbul'da Suyun Tarihi* (İstanbul: İletişim Yayınları, 1999), 8.

²⁰ Dinçkal, "Reluctant Modernization," 680–682. Haydar Kazgan and Sami Önal, *İstanbul'da Suyun Tarihi*, 8–13.

²¹ Following the 10 July 1894 earthquake in Istanbul, the city's water supply systems and aqueducts were severely damaged, resulting in a halt in the water flow from public fountains. Salih Şahin, *İstanbul'un Su Yolları ve Su Yapılarının Tarihçesi* (İstanbul: İSKİ, Kristal Reklam ve Matbaacılık, 2015), 12.

²² *İstanbul Su Külliyesi, XXVI, Vakıf Su Defterleri, Suyolcu 1 (1717-1925)* (İstanbul: İstanbul Büyükşehir Belediyesi İstanbul Su ve Kanalizasyon İdaresi Genel Müdürlüğü Yayınları No: 43, 2002), 16.

²³ Kazgan and Önal, *İstanbul'da Suyun Tarihi*, 14-19.

education, the judiciary, and provincial administration. Responsibility for the maintenance and repair of taps and waterways was transferred to the *Evkaf Nezareti*. And, the first step toward establishing a modern municipality was taken in 1854 with the founding of the *Şehremaneti* in Istanbul. The district between Pera and Beyoğlu was chosen as a testing ground for municipal services, which remained limited in this part of Istanbul. The municipality in Beyoğlu, known as *Altıncı Daire*, was responsible for services such as street lighting, and cleaning.²⁴

There were changes over time in the institutions to which the *Su Nezareti* was affiliated. Its authority and responsibilities fluctuated between the municipality and the *Evkaf Nezareti* from 1868 to 1908. For instance, the *Su Nezareti*, which was incorporated into *Şehremaneti* in 1869²⁵, was transferred to the *Evkaf Dairesi* in 1879, and later re-integrated into *Şehremaneti*. In 1908, with the beginning of the Second Constitutional Era, it was once again transferred from *Şehremaneti* to the *Evkaf Nezareti*. Afterward, this department was incorporated under the *Miyah-i Vakfiyye Müdürlüğü* and continued its activities until 1926.²⁶

The Ottoman government made efforts to preserve traditional water systems during the nineteenth century. For instance, when a village damaged the waterways and a weir, the government decided to evacuate the village.²⁷ Similarly, the Ottoman government punished individuals who damaged waterways and taps and sought to recover the associated losses.²⁸ Furthermore, the government urged society to report to the po-

²⁴ Mehmet Seyitdanlıoğlu, *Tanzimat Döneminde Belediyeciliğin Doğuşu* (İstanbul: İş Bankası Kültür Yayınları, 2010), 3–5.

²⁵ *İstanbul Su Külliyyatı, XXXIII, Vakıf Su Defterleri, Suyolcu 2 (1871-1921)* (İstanbul: İstanbul Büyükşehir Belediyesi İstanbul Su ve Kanalizasyon İdaresi Genel Müdürlüğü Yayınları No: 50, 2003), 19.

²⁶ Ali İhsan Öztürk, *İstanbul Şehir Suyu Hizmetinde Şirketler Dönemi (1881-1931)* (İstanbul: İdeal Yayıncılık, 2018), 22–24. Öztürk, *Osmanlı Şehrinde Vakıf Suları*, 127–133.

²⁷ BOA., Y.PRK.ŞH, 5/34, 22 Ra 1312 (23.09.1894).

²⁸ BOA., MKT.MHM., 56/380, 31.05.1864.

lice and gendarmerie any *Saka* or other individuals who damaged waterways and taps.²⁹ Despite the government's efforts to preserve the existing water system, records from the *Evkaf and Dahiliye Nezareti* indicate that repair requests for waterways and taps were often not fulfilled.³⁰

Repair requests for waterways and fountains were reported to the *Evkaf Nezareti* and *Dahiliye Nezareti*.³¹ These requests came from foundations, institutions³², and individuals³³, with records available in the archives. These documents reveal that traditional water systems were outdated and inadequate not only in Istanbul but also in other cities by the mid-nineteenth century.³⁴ Besides its insufficiency, it was a controversial issue how healthy the available traditional water systems were. The Bacteriological Laboratory (*Bakteriyolojihan-e-i Şahane*), established in the garden of *Mekteb-i Tıbbiye-i Şahane* in 1894, was an institution to protect public health (*Sihhat-ı Umumiye*) against cholera, diphtheria, and other epidemics.³⁵ In addition, one of the laboratory's duties was to analyze drinking water. However, there is very limited quantitative evidence

²⁹ BOA., DH.İ.UM, 19/1, 20 M 1339 (4.10.1920).

³⁰ BOA., Y.MTV.14/14, 15 Ca 1301 (13.03.1884).

³¹ For the request related to the repair of damaged waterways around Sultan Beyazıt, see: BOA, MF.MKT, 2/142, 14 Ca 1289 (20.07.1872). For the request submitted to the Ministry of Foundations (*Evkaf Nezareti*) regarding the waterways in the Davutpaşa area, see: BOA, MF.MKT, 5788, 28 Ca 1319 (12.09.1901). For the repair of waterways around Aksaray, see: BOA, İ.EV., 8/46, 24 C 1312 (23.12.1894). For the repair of waterways in the Eyüp region, see: BOA, DH.MKT, 106/3, 06 S 1313 (29.07.1895).

³² For the application to *Evkaf Nezareti* regarding the Ebu Suud Efendi Foundation's charity works and waterways repairs, see: BOA, İ.EV, 8/44, 21 C 1312 (20.12.1894).

³³ Antuan Alyon requests water supply from *Evkaf Nezareti* due to the lack of water in his home. See: BOA, MB.İ., 2/142, 14 Ca 1289 (20.07.1872).

³⁴ There is a request for the repair of waterways in Izmir to be funded by the *Evkaf Nezareti*. See: BOA, DH.İD., 41/21, 05 L 1331 (07.09.1913).

³⁵ Nuran Yıldırım and Hakan Ertin, "1893-1895 İstanbul Kolera Salgınında Avrupalı Uzmanlar ve Osmanlı Devleti'nde Sağlık Modernizasyonuna Katkıları," *Anadolu Kliniği Tıp Bilimleri Dergisi* 25 (2020): 88.

regarding clean drinking water in the nineteenth-century Ottoman Empire. This topic will be discussed in the following chapters.

2.2.2 *Water Systems in the Developed World and its Influence on the Ottoman Empire*

European countries and the Ottoman Empire experienced profound economic, political, and social changes during the nineteenth century. The Industrial Revolution, which began in Britain, transformed other Western European nations. Industrialization led to mass production and the expansion of trade between industrializing European economies and the rest of the world. Hobsbawm notes that the price boom, the construction of railways, and communication facilities such as the telegraph had a positive impact on international trade.³⁶

The growing international trade between industrializing European countries and the Ottoman Empire created a need for infrastructure. During the century from the 1820s to World War I, the traditional structures of the Ottoman Empire were confronted by the growing political, military, and economic power of Western countries, driven by the mass production of manufactured goods, technological advancements, and the unprecedented growth of international trade. The Ottoman Empire responded to these challenges with reform efforts, beginning in the military field and later extending to central administration, taxation, the judiciary, and education.³⁷ The grand viziers of the empire argued that European-style institutional reforms were the only way to save the empire. Consequently, high-level officials during the Tanzimat period (1839–1876) made efforts to implement these reforms to unify the empire, with

³⁶ Eric Hobsbawm, *The Age of Empire, 1875-1914* (London: Abacus, 1995), 20–60.

³⁷ Erik Jan Zürcher, *Modernleşen Türkiye'nin Tarihi* (İstanbul: İletişim Yayınları, 2014), 13–29; Şevket Pamuk, *Osmanlı Ekonomisinde Bağımlılık ve Büyüme* (İstanbul: Tarih Vakfı Yurt Yayınları, 2005), 1–11.

the support of European countries. The first steps toward modern municipalism in the Ottoman Empire also began during this period, but the influence of municipalism remained quite limited.³⁸

The growing economic relations between industrializing European countries and peripheral regions became diversified through trade and foreign direct investments in areas such as railways, sanitation, ports, and financial institutions. Foreign direct investment (FDI) played a significant role in integrating these regions into the capitalist economy. The Ottoman Empire lacked the experience, finances, and technology to construct railroads, ports, and other infrastructure. As a result, basic infrastructure projects were funded partly by public funds but mostly through European capital.³⁹ While the largest share of foreign capital was allocated to railroad and port construction, a smaller proportion was invested in water systems.

Modern water systems emerged in European cities during the nineteenth century under the influence of industrialization. Water was not only used for household consumption but also as a key factor in production in industrialized countries. It was an essential input for steam engines and played a role in mass production through machinery. At the beginning of industrialization, workers lived in poor conditions in the suburbs, which led to increased disease and death. City life was dirty and dangerous for urban dwellers due to overcrowding, the absence of sewage systems and fresh drinking water, and the spread of illness—referred to as the 'urban mortality penalty'.⁴⁰ Thus, these countries focused on the construction and development of their water and sewage infrastructure. The centralization of water systems began in industrialized Western nations and later spread to peripheral middle-income countries, such as the

³⁸ Mehmet Seyitdanlıoğlu, *Tanzimat Döneminde Belediyeciliğin Doğuşu* (İstanbul: İş Bankası Kültür Yayınları, 2010), 3–5.

³⁹ For more information, Çağlar Keyder, *State and Class in Turkey: A Study in Capitalist Development* (London: Verso, 1987), 25–48; Pamuk, *Osmanlı Ekonomisinde Bağımlılık ve Büyüme, 1820–1913*, 80–100.

⁴⁰ Dora L. Costa, "Health and the Economy in the United States from 1750 to the Present," *Journal of Economic Literature* 53, no. 3 (2015): 540–45.

Ottoman Empire, through English, French, and German engineers and companies via build-operate-transfer agreements.⁴¹

Improvements in the quality of drinking water played a significant role in public health in high-income countries, such as France, Sweden, the United States, and the United Kingdom. Notably, urban mortality related to waterborne diseases decreased in these countries from the late nineteenth to early twentieth centuries. However, waterborne illnesses like diarrhea remain prevalent in many developing countries⁴², as they have been unable to renovate their water systems or invest in clean water infrastructure.

There is almost no quantitative evidence regarding urban and rural mortality rates in the Ottoman Empire during the nineteenth century. However, it can be estimated that urban mortality rates in the industrializing countries of Western Europe were higher than those in the Ottoman Empire for several reasons. In industrializing countries, rural-to-urban migration driven by factory employment in mass production placed significant pressure on urban sanitation infrastructure. Mortality rates in cities increased sharply due to poor living conditions experienced by workers. High population density also caused to the elevated urban mortality rates. Therefore, during the early nineteenth century, living in metropolitan areas such as London and Hamburg may have been more dangerous than in cities like Istanbul, Izmir, and Salonika in terms of waterborne illnesses.

The industrialization process in urban areas of the Ottoman Empire remained limited. Furthermore, the level of urbanization in the Ottoman Empire between the 1830s and the First World War did not see a significant increase. In 1890, the largest cities in the empire, based on the pop-

⁴¹ Kazgan and Önal, *İstanbul'da Suyun Tarihi*, 41-52; Ali İhsan Öztürk, *Osmanlı'dan Cumhuriyet'e İmtiyaz Usulüyle Yürütülen İstanbul Belediye Hizmetleri: (Yap-İşlet-Devret Uygulaması): (1852-1964)* (İstanbul: İstanbul Büyükşehir Belediyesi Kültür AŞ Yayınları, 2010).

⁴² Sonia R. Bhalotra et al., "Urban Water Disinfection and Mortality Decline in Developing Countries," NBER Working Paper no. 23239, working paper, 2017, 2-45.

ulation of the main towns, were Istanbul, Izmir, Salonica, Trabzon, Antalya, Tarsus, Samsun, and Mersin, respectively.⁴³ Although İzmir, Salonica, Edirne, Antalya, and Trabzon were major cities, their population densities were below 30 people per square kilometer in 1897. In contrast, Istanbul held a special position within the empire, with a population density of 242 people per square kilometer in and around the city in the same year.⁴⁴ As a result, rural-to-urban migration in the Ottoman Empire during the nineteenth century was lower than the urban growth seen in Western European countries. It is evident that industrialization played a key role in driving infrastructural investments.

In particular, the Ottoman Empire experienced urbanization in the early nineteenth century, but unlike European countries, it could not develop large industrial cities. The rapid growth of urban populations, combined with high urban mortality due to inadequate sanitary infrastructure—especially infant mortality—contributed to the spread of epidemic illnesses. As a result, industrialized European countries began investing in sanitary improvements, such as water and sewage systems. In the United States, urban infant mortality rates were 88 percent in 1890, but had decreased to 48 percent by 1900. The critical role of infectious diseases in overall mortality, particularly infant mortality, is evident in the adoption of clean water technologies and sewage systems by cities.⁴⁵

The centralized water system took shape in the industrialized West and then spread to other peripheral middle-income countries. Due to the limited urbanization and industrialization processes in the Ottoman Empire, water remained confined to household consumption after the mid-nineteenth century. It is clear that the industrialization process shaped water usage in industrialized countries as well as in others. As a result,

⁴³ Charles Issawi, *An Economic History of the Middle East and North Africa* (London: Routledge, 1982), 34-35.

⁴⁴ Tefik Güran, *Resmi İstatistiklere Göre Osmanlı Toplum ve Ekonomisi* (İstanbul: Türkiye İş Bankası Kültür Yayınları, 2017), 26.

⁴⁵ Michael R. Haines, "The Urban Mortality Transition in the United States, 1800-1940," *Annales de Démographie Historique* 101 (2001): 33-64.

water did not become an input for production functions and remained limited investments in the Ottoman Empire. Ultimately, in contrast to industrialized countries, water infrastructural investments in the Ottoman Empire progressed gradually during the late nineteenth and early twentieth centuries.

The nineteenth century witnessed not only a dramatic decline in transportation costs and enormous growth in international trade but also significant infrastructural development during the first wave of globalization from 1870 to 1913. Water pipes replaced traditional water systems, although the pace of transformation varied depending on the economic conditions of both countries and individuals. Traditional water systems, such as well water and fountains, lost their central role in developed countries. However, these methods remained commonly used for various purposes in daily life, particularly in developing countries where traditional societies were more prevalent.

2.2.3 *The Emergence of Water Companies: Factors Shaping Duality of Clean Water Systems*

In the Ottoman Empire, traditional water systems, such as fountains and wells, maintained through public ownership or waqf endowments, ensured free access to water for all. However, with the arrival of foreign water companies in certain port cities, a dual water system emerged. These private companies offered water services for a fee, while a significant portion of the population continued to depend on the free, traditional sources. Throughout the nineteenth century, the Ottoman government faced severe economic and political crises during the nineteenth century which hindered the effective management and development of its water resources.⁴⁶

The grand viziers and sultans initiated reforms across various sectors in an effort to preserve the empire. One key focus of these reforms was the development of basic infrastructure, though the majority of investments were directed towards transportation (railroads and ports) and

⁴⁶ Doygun, 19. *Yüzyıldan 21. Yüzyıla Suyun İstanbul'daki Dönüşümü*, 227–230.

communication systems. In contrast, investments in clean water infrastructure, particularly modern water-pipe systems, were relatively small and largely concentrated in port cities. This resulted in significant disparities between port cities and other urban areas, especially in the empire's periphery, where foreign direct investments, such as those in railways, ports, and clean water systems, were unevenly distributed.⁴⁷

For instance, growth and urbanization were most pronounced in port cities like Istanbul, Izmir, and Salonica, which played pivotal roles in supporting expanding international trade and adapting to economic, technical, and social changes. Given their strategic importance, it is not surprising that water companies in the Ottoman Empire were primarily established in these port cities. In total, there were five water companies in the Ottoman Empire, three of which were located within the current boundaries of Türkiye.⁴⁸ After providing an overview of all the water companies, I focus on the three that were located within the borders of present-day Türkiye: the Istanbul (Dersaadet) Water Company, the Uskudar-Kadıköy Water Company, and the Izmir Water Company.

The first water company, the Beirut Waterworks Company, was set up under the name of Selim Faris Efendi with English capital in London in 1874. At the same time, the Istanbul (Dersaadet) Water Company, *Compagnie des Eaux de Constantinople*, was granted a privilege by Kemal Bey and Terneau Bey, in association with French capital, in 1874.⁴⁹ Kemal Bey and Terneau Bey secured a concession to establish the Dersaadet Water

⁴⁷ Pamuk, *Uneven Centuries*, 117–120.

⁴⁸ Edgar Pech, *Manuel des Sociétés Anonymes* (Paris, 1906), 174–186.

⁴⁹ In some sources, the Istanbul Water Company is also referred to as the Terkos Water Company or the Istanbul Kızıldere Water Company. See Ahmet Kal'a, *İstanbul Su Külliyyatı XIII, Vakıf Su Tahrirleri, XIX ve XX. Yüzyılda İstanbul Suları* (Istanbul: İstanbul Büyükşehir Belediyesi İstanbul Araştırmaları Merkezi Yayınları No. 50, İstanbul Su ve Kanalizasyon İdaresi Genel Müdürlüğü Yayınları No. 26), 17–19. Additionally, both Pech and Kazgan indicate that the water companies in Istanbul were established with French capital. In contrast, Noyan contends that the joint-stock company *Compagnie des Eaux de Scutari et Kadikeui*, which was initially under German ownership and later became a French company after World War I. See Noyan, "Reluctant Modernization," 685.

Company in Istanbul in 1874, though the company did not begin operations until 1885.⁵⁰



Figure 2.1 An example of a written agreement between the Ottoman Empire and the Istanbul Water Company. SOURCE: BOA, A.)DVN.MKL. 29-11 (February 21, 1888).

Furthermore, the Uskudar-Kadıköy Water Company, known as *Compagnie des Eaux de Scutari-Kadikeui*, was established on the Asian side of Istanbul in 1890.⁵¹ Finally, the Salonika Water Company, *Compagnie Ottoman des Eaux de Salonique*, and the İzmir Water Company, *Compagnie*

⁵⁰ İlhami Yurdakul, *Aziz Şehre Leziz Su Dersaadet (İstanbul) Su Şirketi* (İstanbul: Kitabevi Yayınları, 2010), 33–38; Noyan Dinçkal, "Reluctant Modernization," 685.

⁵¹ In 1882, although the charter was signed, it took several more years before it became fully operational. See; Ali İhsan Öztürk, *İstanbul Şehir Suyu Hizmetinde Şirketler Dönemi 1881-1937* (İstanbul: İdeal Kültür Yayıncılık, 2018), 64–67.

Ottomane des Eaux de Smyrne, both supported by Belgian capital, were founded later, in 1891 and 1895, respectively.⁵²

Society took a keen interest in the new water companies, following the construction of water pipes with curiosity. There was a water-selling office in Tophane where residents could purchase purified water. To support the development of these water systems, the government granted the water companies tax exemptions on iron pipes imported from abroad. Moreover, according to the Water Company's regulations, the companies were required to supply free water to hospitals, schools, military posts, and fire hydrants in areas where the company had subscribers.⁵³ At the outset, the companies anticipated that the number of subscribers would increase over time. However, the subscriber base did not grow, which disappointed the foreign water companies. This situation indicates that the foreign companies failed to conduct preliminary research on the economic conditions of the inhabitants of Istanbul and Izmir. Furthermore, during this period, due to financial difficulties, significant sources of income in the Ottoman Empire were under the control of the Ottoman Public Debt Administration. During the financial crisis, the salaries of senior civil servants in the Ottoman Empire were frequently delayed or disrupted. Forget about an increase in subscribers; the existing ones had become unable to pay their bills. This situation was a direct consequence of the economic challenges the empire faced. In response, the foreign water companies in Istanbul began selling fixtures such as faucets, toilets, and other bathroom-related products to boost their profitability. This move reflected the influence of a Westernized lifestyle, as these modern amenities were associated with changes in domestic living standards and hygiene practices.⁵⁴

⁵² Ufuk Adak, "Water, Sewage and Sanitation: Infrastructure Projects and Public Health in Izmir in the Late Ottoman Empire," *Journal of Balkan and Near Eastern Studies* 24, no. 2 (2022): 268; Edgar Pech, *Manuel des Sociétés Anonymes* (Paris, 1906), 174–86.

⁵³ BCA, 230-0-0-0, 62/3/7, (26.09.1899); BCA, 230-0-0-0, 62/3/8, (29.06.1900).

⁵⁴ Kazgan and Önal, *İstanbul'da Suyun Tarihi*, 36-39.

Water companies established in the Ottoman Empire had four important characteristics. Firstly, it was no coincidence that these five companies were founded in port cities. Keyder argues that port-city populations became agents of modernization from below, creating a bottom-up demand for water companies.⁵⁵ Growing economic and commercial relations with Europe, along with the presence of a non-Muslim bourgeoisie in cities such as Istanbul, Izmir, Beirut, and Salonica, led to increasing pressure from foreign capital to establish private infrastructure companies. Foreign water companies in port cities primarily provided services to the upper and upper-middle classes, especially non-Muslim Ottoman citizens, while in other cities, the majority Muslim population continued to rely on fountains and water wells to meet their water needs.

Secondly, during the period of the Ottoman Empire's incorporation into the global economy, foreign water companies provided insight into the empire's position. These five water companies, established by various European nations with the involvement of English, French, and German engineers, place in the Ottoman Empire in the semi-periphery category of world-systems theory.⁵⁶ Foreign water companies can be seen as a reflection of the empire's economic integration into the world system. The centralization of clean water systems began in the industrialized West, and European countries expanded their investments into other middle-income nations using the build-operate-transfer model. After the mid-nineteenth century, the Ottoman Empire also adopted this model for water companies due to its economic constraints and the advent of new technological developments.

⁵⁵ Çağlar Keyder, "Port Cities in the Belle Époque," in *Cities of the Mediterranean: From the Ottoman Empire to the Present Day*, edited by Meltem Toksöz and Biray Kolluoğlu (London: I.B. Tauris, 2010), 14–23.

⁵⁶ For more information, Çağlar Keyder, *State and Class in Turkey: A Study in Capitalist Development* (London: Verso, 1987), 25–48; Şevket Pamuk, *Osmanlı Ekonomisinde Bağımlılık ve Büyüme, 1820-1913* (İstanbul: Tarih Vakfı Yurt Yayınları, 2005); Reşat Kasaba, *Osmanlı İmparatorluğu ve Dünya Ekonomisi: On Dokuzuncu Yüzyıl* (İstanbul: Belge Yayınları, 1993).

Thirdly, water systems should be viewed as a component of modernization.⁵⁷ The transformation of water infrastructure symbolized modernity and reflected a Westernized lifestyle under the influence of European countries.⁵⁸ Modernity was tied to the changing lifestyles of the Ottoman upper and upper-middle classes. Clean water systems became essential for closets, bathtubs, bathroom facilities, and individual domestic hygiene—hallmarks of the Westernized home. The European style, or *alla franga*, gained popularity as modern life began to shape domestic culture.⁵⁹ Foreign water companies imported bathroom accessories from European countries to the empire, boosting their profitability. The *alla franga* bathtub first appeared in the homes of the non-Muslim bourgeoisie before spreading to the palace and bureaucrats' houses. Water companies symbolized inequality within society. They reinforced structures of social inequality by turning free water into a commodity. These disparities occurred not only between cities but also within same city to access clean water systems.

From the late nineteenth century until the mid-1930s, only three water companies operated in two cities in Türkiye. In addition to the disparities between cities, inequalities to access clean water systems were also evident within the same city. For instance, in Izmir, the Izmir Water Company invested in infrastructure primarily in lower neighborhoods where the non-Muslim bourgeoisie and upper class resided, further reinforcing inequality. The rest of Izmir's inhabitants had to sustain themselves with unchlorinated tap water and frequently faced water outages, highlighting the unequal distribution of water systems within the city.

⁵⁷ Kazgan and Önal, *İstanbul'da Suyun Tarihi*, 74-78.

⁵⁸ Zeynep Çelik, *The Impact of Westernization on Istanbul's Urban Form 1838-1908* (PhD diss., University of California, Berkeley, 1984), 75-80.

⁵⁹ Suraiya Faruqi, *Subjects of the Sultan: Culture and Daily Life in the Ottoman Empire* (London: I.B. Tauris, 2000), 256.

In other words, the two cities, Istanbul and Izmir, were divided into two parts based on the water system.⁶⁰ The high-income group benefited from clean water provided by the foreign water company, while the low-income group lacked access to it. Those without access to clean water pressured the governor of Izmir to expand the company's services to low-income areas. In response, the governor established a commission and negotiated with the foreign water company to address the issue. Despite the residents' demand for a water system and their promises to subscribe, the company did not make infrastructural investments in the rest of the city.⁶¹

This inequality in the water system was not limited to Izmir; the residents of Istanbul experienced the same issue, known as the duality of the clean water system in the Ottoman Empire. Istanbul was also divided into regions by different populations. The non-Muslim population predominantly lived in the seaside areas, while the Muslim population generally resided inland.⁶² The water companies' investments were aligned with high-income group settlements, as reflected in the maps of the water companies (Figure 2.2). The upper-income class, including non-Muslim citizens and bureaucrats, made up the majority of subscribers in the coastal areas. In other words, the infrastructure and water services provided by the foreign water companies were limited to a specific social class. Specifically, in the first thirty years, fewer than 10% of Istanbul's inhabitants had access to water from the *Dersaadet Water Company*.⁶³

⁶⁰ *İzmir'de Suyun Serüveni* (İzmir: İzmir Büyükşehir Belediyesi, 2017), 12–16; Erkan Serçe, *Tanzimat'tan Cumhuriyet'e İzmir'de Belediye 1868-1945* (İzmir: Dokuz Eylül Yayınları, 1998), 127.

⁶¹ Serçe, *Tanzimat'tan Cumhuriyet'e İzmir'de Belediye*, 124–27; Adak, "Water, Sewage and Sanitation," 270.

⁶² Çelik, 19. *Yüzyılda Osmanlı Başkenti Değişen İstanbul*, 2.

⁶³ Ali İhsan Öztürk, *İstanbul Şehir Suyu Hizmetinde Şirketler Dönemi (1881-1937)*, İdeal Kültür Yayıncılık, İstanbul, 2018, 85-86.



Figure 2.2 Map of Dersaadet (Terkos) Water Company. SOURCE: BOA, A)DVN.MKL.,29/11. (Feb 21, 1888).

Water companies offered their subscribers not only easy and convenient access to water but also relatively higher water quality. Foreign water companies supplied water to their subscribers after chlorinating it.⁶⁴ Chlorination neutralizes bacteria, viruses, and other harmful microorganisms in water. In addition to chlorination, periodic water analysis is also conducted by the water companies. Sometimes the results of these analyses raised concerns about whether the company's water was truly safe for consumption. As an example, reports by Bacteriologist Osman Nuri and Chemist Cevad Tahsin found the quality of Terkos water to be unsatisfactory.⁶⁵

As a result, the government decided to monitor the water quality of the *Dersaadet*, *Uskudar*, and *Kadıköy Water Companies* every fifteen days. However, in other cities, except Izmir⁶⁶ —which had similar experiences

⁶⁴ Kerim Esmer, *Tarih Boyunca İstanbul Suları ve İstanbul Su ve Kanalizasyon Sorunu* (İstanbul: İstanbul Su ve Kanalizasyon İdaresi Genel Müdürlüğü Yayınları, No. 1, 1983), 39–43.

⁶⁵ Öztürk, *İstanbul Şehir Suyu Hizmetinde Şirketler Dönemi*, 135–142.

⁶⁶ Serçe, *Tanzimat'tan Cumhuriyet'e İzmir'de Belediye*, 30–50.

to those of foreign water companies in Istanbul—water was distributed without chlorination. Therefore, I argue that water companies provide their subscribers with not only easy and convenient access but also higher-quality water, as it is regularly analyzed and chlorinated. While the general public used water from fountains that was neither purified nor chlorinated, the water supplied by these companies was chlorinated. Thus, in the Ottoman Empire, water companies contributed to social inequality in access to clean water, and this disparity in water systems became part of the Ottoman legacy passed on to the new Turkish Republic.

2.2.4 Causes of Water Shortage in the Ottoman Empire

Ottoman society faced water scarcity after the mid-nineteenth century. To address this issue, the traditional Ottoman water system was supplemented by foreign water companies established in Istanbul and Izmir towards the end of the century. As noted in Section 2.1.3, this development led to the formation of a new clean water system alongside the traditional one, a phenomenon referred to as the "duality of the clean water system." Although this dual system had a significant impact on meeting the water needs of certain groups, it was insufficient to fully resolve the water shortages within the empire. In this section, I will examine the underlying causes of water scarcity.

The primary cause of the water shortage was rooted in the existing water system. The Ottoman water system consisted of two distinct systems, referred to as the "duality of the clean water system," which neither complemented nor replaced one another. Furthermore, both the traditional water system and the foreign water companies failed to provide the population with adequate, efficient, and equitable water services.

The traditional water system relied on philanthropic activities, with *waqfs* playing a crucial role in the construction, maintenance, and distribution of water through fountains. Charity efforts and *waqf* activities were regarded as significant instruments for wealth redistribution in the Ottoman Empire. However, recent studies suggest a need to reconsider how the distribution of fountains functioned within society. Cansunar's study argues that elites used charitable activities to disproportionately

benefit themselves and their co-ethnics in Ottoman Istanbul, based on a dataset on water provision from 1868. Her research indicates that there were more fountains in areas where the upper class resided in Ottoman Istanbul. As a result, elite neighborhoods were more likely to have access to water, thereby perpetuating inequality within the water systems of Ottoman Istanbul.⁶⁷

Foreign water companies were granted the privilege to invest in an attempt to address the water shortage. However, the water problem in the Ottoman Empire persisted even after the establishment of these companies, and it further reinforced the unequal distribution of water. The foreign water companies began their operations in two cities within the borders of present-day Türkiye. However, their services were confined to narrow districts within these cities, rather than covering the entire urban population. As a result, people continued to experience water scarcity due to the inadequate and unhealthy distribution of water in the traditional system, compounded by the limited infrastructure services of the water companies, which reinforced inequality.

The increase in population due to immigration from war regions placed additional pressure on the already insufficient water systems. During the Crimean War (1853–1856), the Ottoman Empire faced an influx of immigrants from its lost territories, which led to a significant rise in population, particularly in Istanbul.⁶⁸ This population growth increased the demand for sanitary infrastructure. Similarly, the Russo-Turkish War of 1877–1878 accelerated the migration of Circassians and Abkhazians, many of whom arrived in Trabzon, Samsun, Sinop, and Bulgaria, with some eventually settling in Anatolia and Syria. According to Karpas, the Caucasian migrations—primarily Circassians who settled in the Ottoman Empire—comprised approximately 1.5 million people between 1859 and

⁶⁷ Aslı Cansunar, "Distributional Consequences of Voluntary Contributions to Public Goods: Self-Serving Philanthropy in Ottoman Istanbul," available at SSRN 3470075 (2020).

⁶⁸ Nadir Özbek, *Osmanlı İmparatorluğu'nda Sosyal Devlet: Siyaset, İktidar, Meşruiyet* (İstanbul: İletişim, 2002), 76–79.

1879. Additionally, emigration from Russia, involving around half a million people, continued from 1881 until 1914.⁶⁹

The wave of immigration continued into the early twentieth century, during a time when the Ottoman Empire was facing significant financial difficulties due to economic crises and the burden of wars. The period between 1854 and 1875 was marked by external borrowing and increasing financial dependence.⁷⁰ By 1875, the empire had lost its solvency due to excessive spending, leading to the establishment of the Public Debt Administration (PDA) in 1881, which created a modern bureaucracy under European control.⁷¹ The government faced economic and social challenges at the end of the nineteenth century, as evidenced by many documents detailing repair demands for taps and waterways.⁷² Due to economic difficulties, the government was unable to fund the renewal of water systems or invest in public water infrastructure. For example, the Halkalı and Kırkçeşme waterways had not been repaired for an extended period, leading to water shortages in the community.⁷³

Another issue related to the water shortage was the right of *suyolcuları*, which was passed down from father to son. Over time, this system broke down.⁷⁴ The deterioration of the water system was influenced not

⁶⁹ Kemal H. Karpat, *Ottoman Population 1830-1914: Demographic and Social Characteristics* (Madison, WI: University of Wisconsin Press, 1985), 3–10.

⁷⁰ Pamuk, *Uneven Centuries*, 110–112.

⁷¹ The Public Debt Administration (PDA) held the right to control various revenue sources, including tobacco, silk, spirits, and salt. Once the PDA gained control over these revenues, the Ottoman government could not make any changes to them, as the PDA had become an independent institution separate from the state. Mehmet Hakan Sağlam, *Osmanlı Devleti'nde Moratoryum 1875-1881: Rusum-ı Sitte'den Duyun-u Umumiye'ye* (İstanbul: Tarih Vakfı Yurt Yayınları, 2011), 115–118; Mehmet Sencer, *Türkiye'nin Mali Tutsaklığı -Parvus Efendi* (İstanbul: May Yayınları, 1977), 38–41.

⁷² BOA, BEO 30/2210, 15 Z 1309 (11.07.1892). The demand for repair of the Halkalı and Kırkçeşme Waterways. BOA, Y.PRK.EV 1/47, 27 S 1302 (16.12.1884).

⁷³ BOA, Y.MTV., 14/14, 15 Ca 1301 (13.03.1884).

⁷⁴ Selda Kaya Kılıç, "Su Yolları ve Su-Yolcu Esnafına Dair Bazı Tesbitler," *Tarih Araştırmaları Dergisi* 23, no. 36 (2004): 175–188.

only by the empire's economic situation but also by a lack of experience, knowledge, and technology. To improve the water infrastructure, the government needed to adopt new technologies, establish a reliable water supply for both households and industries and implement modern municipal services or effective private investments with a large subscriber base and broad service areas. Consequently, the development of modern water systems in the Ottoman Empire required the transfer of capital, technology, and expertise from abroad.⁷⁵

An important reason for the insufficient water supply after the mid-nineteenth century, I argue, was that water in the Ottoman Empire remained primarily a resource for household consumption. One of the main arguments of this thesis is that the Ottoman Empire was never able to effectively convert water into a productive input. According to Kazgan, the insufficient water supply led to the closure of paper mills in Kağıthane and Bursa. Additionally, Greek and Armenian entrepreneurs attempted to establish small textile mills in Istanbul after the abolition of the Janissaries. However, these profit-seeking ventures were ultimately shut down because water remained a costly and limited factor of production in the empire.⁷⁶ In contrast to the Ottoman Empire, in the factories of industrialized countries, water was not only used for household consumption but also served as a key input for steam-powered machines. Nevertheless, in European cities during the nineteenth century, water became not only a resource for household consumption but also a production input, leading to the development of extensive water infrastructure throughout the country.

Economic growth driven by the Industrial Revolution was initially led by Britain and later expanded to other Western European countries. Similarly, investments in water infrastructure began in Britain and spread to other nations. Mass producers of manufactured goods extended their reach beyond national borders, while developed countries sought mar-

⁷⁵ Dinçkal, "Reluctant Modernization," 685.

⁷⁶ Kazgan and Önal, *İstanbul'da Suyun Tarihi*, 29–31.

kets for their products, along with cheap sources of food and raw materials. The economic linkages between industrializing nations and the rest of the world were facilitated not only by trade but also by loans and foreign direct investments in sectors such as railroads, ports, telegraph systems, and water companies. The replacement of older water systems with new ones was spurred by the growing trade relations with Europe.

Finally, I emphasize that urbanization plays a significant role in the construction of water systems. After the mid-nineteenth century, the urban population in industrialized countries increased significantly in European nations such as England, Belgium, Italy, Germany, and France. The challenges posed by rapid urbanization during this period included widespread poverty and unhealthy living conditions in large cities.⁷⁷ Workers and city-dwellers lived in poor conditions in the suburbs, which led to a rise in diseases and mortality rates. As a result, there was mounting pressure to build and renew urban infrastructures, particularly water systems. The rapid spread of diseases was exacerbated by the lack of sewage systems and access to fresh drinking water.⁷⁸ Consequently, modern water systems were developed in European cities during the nineteenth century under the influence of industrialization, and these systems later spread to developing countries through the work of European engineers and companies. Developing countries, such as the Ottoman Empire, adopted advancements in water systems, albeit with some delay.

In the Ottoman Empire, Mustafa Reşit Paşa admired the urban planning of European cities such as Paris, London, and Vienna during his visits. He aspired to implement similar urban plans in the empire, relying on European architects and engineers. Various regulations were introduced between 1848 and 1882 to address this goal. These regulations, while inspired by European urban design, were also aimed at managing rapid growth and insufficient infrastructure. However, these efforts remained

⁷⁷ Eric Hobsbawm, *The Age of Empire, 1875-1914* (London: Abacus, 1995), table 2, 343; Jan de Vries, *European Urbanisation 1500-1800* (London: Methuen, 1984), table 3.8.

⁷⁸ Costa, "Health and the Economy," 540-45.

limited.⁷⁹ The majority of Türkiye's population continued to live in rural areas, but rural-to-urban migration, along with population growth, increased significantly after World War II. Developing countries experienced varying levels of industrialization and urbanization during this period. Although urban planning was important, a relatively small proportion of investment was directed toward sanitary infrastructure. In Chapter 3, I will examine whether there was any significant development in water infrastructure investment in relation to urbanization after the 1950s.

§ 2.3 From Empire to Nation-State

2.3.1 *Nationalization Period: From Foreign Water Companies to State Control*

Foreign direct investment played a significant role in the opening of the Ottoman economy. European countries began establishing enterprises and investing substantial capital in the empire. Pamuk notes that a large proportion of European direct investment was directed towards banking, insurance, railroads, ports, and some municipal infrastructure, primarily to boost foreign trade activities rather than production. In contrast, only 10 percent of these investments were allocated to agriculture, mining, and industry. Focusing on infrastructural investments, railway companies constituted a significant portion of foreign direct investments, accounting for approximately two-thirds. The construction of railroads offered important insights into international trade, particularly by enabling the easier transport of agricultural products from the hinterland to coastal areas. In addition, British, French, Belgian, and German companies were content with constructing railroads due to the government's provision of kilometric guarantees. On the other hand, the expansion of the railroads

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Çelik, 19. *Yüzyılda Osmanlı Başkenti Değişen İstanbul*, 62–68.

strengthened the central government's power by allowing for more efficient tax collection.⁸⁰

In contrast to the construction of railroads, foreign water companies operating within Türkiye had low profitability due to limited subscriptions. These companies began selling bath accessories, bathtubs, and modern faucets to increase their profitability. However, as Öztürk noted, the Dersaadet Water Company remained profitable from 1891 to 1932, despite not making sufficient investments in developing the water infrastructure in Istanbul. The Uskudar-Kadıköy Water Company, on the other hand, generated less profit than the Dersaadet Water Company, as reflected in its financial performance between 1911 and 1936.⁸¹

Many traditional houses were constructed with wooden structures, where small fires often led to disasters due to the narrow streets and the limitations of the water systems. These water systems played a crucial role in mitigating fire risks, as the wooden construction was particularly vulnerable to fire. Although foreign water companies had promised to supply water for fireplugs in areas where they had subscribers, they occasionally reduced water supply to fireplugs due to the frequent occurrence of fires.⁸² The water companies raised complaints about the frequent fires and occasionally cut off the water supply to fireplugs. In response, the government issued warnings to these companies, as the lack of fireplugs resulted in significant damage.⁸³

There was no information available regarding the companies' profitability. However, analyzing the distribution of water consumption among subscribers, public institutions, and fireplugs could be useful for understanding the companies' financial situation. The Dersaadet and Uskudar-Kadıköy Water Companies, based on their water consumption, could be divided into three subscriber categories: household subscribers, public

⁸⁰ Pamuk, *Uneven Centuries*, 117.

⁸¹ Öztürk, *İstanbul Şehir Suyu Hizmetinde Şirketler Dönemi*, 212-235.

⁸² Aytek Soner Alpan, "Bir Felâket Olan Yangın Meğer Pek Hayırlı Sabahın Aydınlığı İmiş": Tavatla Nasıl "Kurtuldu?", *Toplum ve Bilim* 158 (2022): 223-250.

⁸³ BCA, 230-0-0-0, 65/23/2, 01.08.1922.

institutions such as schools and hospitals, and, finally, fireplugs and fountains, which provided free water for public use. According to 1897 statistics, slightly more than half of the total water consumption went to household subscribers, accounting for 55% of the Dersaadet Water Company and 56% of the Uskudar-Kadıköy Water Company. Public institutions consumed 30% of the water in the Dersaadet Company and 24% in the Uskudar-Kadıköy Company. Water used by fireplugs and fountains, a category about which the companies often complained due to the provision of free water, accounted for 15% of 2,854,300 m³ in the Dersaadet Company and 19% of 494,300 m³ in the Uskudar-Kadıköy Company.⁸⁴

At the end of the nineteenth century in the Ottoman Empire, foreign water companies continued their operations, but they were insufficient in addressing the inadequacies of the water systems. The companies were dissatisfied with low profitability and limited subscriptions, while the public complained about the inadequate water systems. This duality of water systems created problems for society. During the reign of Abdülhamid II, the Hamidian water system was introduced in 1902 under the supervision of the municipality. This system, which was steam-powered and used the first cast iron pipes in the Ottoman Empire, marked a significant development in response to the shortcomings of foreign water companies. The Hamidian water system provided water to public fountains for the residents of Istanbul and various institutions such as schools, hospitals, and military facilities.⁸⁵ In 1906, the Istanbul Water Company lodged a complaint with the municipal administration regarding the free water provided by the Hamidian system.⁸⁶ The Hamidian water system still remains in operation under the control of the Istanbul

⁸⁴ Tevfik Güran, *Resmi İstatistiklere Göre Osmanlı Toplum ve Ekonomisi* (İstanbul: Türkiye İş Bankası Kültür Yayınları, 2017), 439.

⁸⁵ Kazım Çeçen, *İstanbul'un Osmanlı Dönemi Suyolları*, (İstanbul: İstanbul Büyükşehir Belediyesi İSKİ Müdürlüğü, 1992), chapter 6.

⁸⁶ Kazım Çeçen, *Taksim ve Hamidiye Suları* (İstanbul: İstanbul Büyükşehir Belediyesi İSKİ Müdürlüğü, 1992), 167–169.

municipality and continues to meet the water needs of the city's residents.⁸⁷

The twentieth century witnessed significant changes in the Ottoman Empire. Following the 1908 Revolution, liberal political and economic policies emerged as the Committee of Union and Progress (CUP). The period from 1908 to 1918 can be divided into two phases: the liberal period (1908–1913) and the war-statism period (1914–1918). Indeed, the Balkan Wars of 1912–1913 was a breaking point for the CUP. Following the defeats in the Balkan Wars, the CUP's ideological views shifted from Ottomanism to Pan-Islamism, and eventually to Turkism.⁸⁸ Moreover, the war economy between 1914 and 1918 significantly influenced the CUP's policies, economic, social, and daily life.⁸⁹ The Committee of Union and Progress (CUP) redefined its foreign economic policies in response to the challenges of the First World War. Noticeable decisions included abolishing capitulations, shifting from a low-rate ad valorem tax to a specific tax rate, and declaring a moratorium on foreign debt payments. Despite these efforts, the CUP still faced significant economic difficulties due to the war.⁹⁰

As the economy turned inward and focused on self-sufficiency, the national economy gained prominence under the new policy. Muslim, Ottoman, and Turkish identities became central in the newly established joint-stock companies.⁹¹ For example, in response to Istanbul's water needs, the *Dersaadet Menba Suları Şirket-i Osmaniyesi* was founded in

⁸⁷ “Hamidiye”, accessed [10.10.2024], <https://hamidiye.istanbul/kurumsal/hakkimizda>

⁸⁸ Yusuf Akçura, *Üç Tarz-ı Siyaset* (İstanbul: Ötüken Neşriyat, 2016).

⁸⁹ Zafer Toprak, *Türkiye’de Milli İktisat 1908-1918* (İstanbul: Doğan Kitap, 2012), 40–80.

⁹⁰ Şevket Pamuk, “The Ottoman Economy in World War I,” in *The Economics of World War I*, ed. Stephen Broadberry and Mark Harrison (Cambridge: Cambridge University Press, 2005), 119.

⁹¹ Ecem İncoğlu, “Osmanlıda Milli İktisat Uygulamaları ve Harp Zenginleri” (unpublished thesis, 2015).

1916 to transport and sell water in containers using hygienic methods throughout Istanbul and its vicinity, including Galata.⁹²

Moreover, at the request of the Committee of Union and Progress, there was a growing emphasis on the use of Turkish names and correspondence in Turkish within the newly established joint-stock companies. In 1913, foreign water companies operating in the Ottoman Empire were also required to conduct their correspondence in Turkish.⁹³ A significant portion of the workforce in foreign water companies consisted of non-Muslim citizens or foreign experts.⁹⁴ During this period, however, the number of non-Muslim workers in water companies decreased in both Istanbul⁹⁵ and Izmir⁹⁶. All these economic and ideological changes culminated in the foundation of the Turkish Republic in 1923. In 1924, non-Muslim workers at the Uskudar-Kadıköy Water Company were dismissed,⁹⁷ and their replacement by Muslim workers was widely welcomed.⁹⁸ This situation was presented as an example for other companies, and it was requested that Muslim workers replace non-Muslim workers whose terms had expired at the Izmir Water Company.⁹⁹ Despite undergoing staff changes, these foreign water companies continued their operations in the newly established Turkish Republic.

The water companies continued to operate in the new Turkish Republic as the government renewed agreements with them. However, the new

⁹² Celali Yılmaz, *Osmanlı Anonim Şirketleri* (İstanbul: Scala Yayıncılık, 2012), 111.

⁹³ BCA, 230-0-0-0, 63/9/5, 03.04.1913.

⁹⁴ The list of nationalities of workers at the Izmir Ottoman Water Company, see: BCA, 230-0-0-0, 123/1/5, 07.09.1914, Ek dosya:35Su.

⁹⁵ For details of the list of workers of the Dersaadet Water Companies, see: BCA, 230-0-0-0, 66/28/10, 34Su ek dosya, 14.10.1924. For another list of workers in the Uskudar-Kadıköy Water Company, see: BCA, 230-0-0-0, 66/28/13, 28.12.1924.

⁹⁶ For details of the list of workers of Izmir Water Companies, see: BCA, 230-0-0-0, 124/4/1, 09.03.1924.

⁹⁷ BCA, 230-0-0-0, 66/28/13, 28.12.1924.

⁹⁸ For details, see: BCA, 230-0-0-0, 28/22/7, 03.03.1925.

⁹⁹ BCA, 230-0-0-0, 124/5/2, 24.03.1926.

nation-state had high expectations for foreign water companies in the re-organization of the water systems. To support these efforts, the government granted a tax exemption to the Uskudar-Kadıköy Water Company for the importation of iron pipes from abroad.¹⁰⁰

Additionally, the new republican government drafted a law concerning water procurement for cities and villages in 1924.¹⁰¹ This law, addressing water management, was enacted in 1926. The authority for managing and supplying water in cities and villages was assigned to municipalities; in the absence of a municipality, this responsibility fell to the board of aldermen. Furthermore, the control and management of water resources under the authority of waqfs were transferred to municipalities. Consequently, the scope of municipal authority expanded with the enactment of the Water Law in 1926.¹⁰²

The authority of municipalities was expanded with the 1926 Water Law, but the development of water systems required both technical expertise and funding. For this purpose, some municipalities obtained loans from banks to cover the capital costs of these systems. For example, the Samsun municipality secured funding from Ziraat Bank to establish a water supply for the city.¹⁰³ In some cases, the government resorted to short-term solutions due to the high costs of water system infrastructure investments in certain cities. For example, because of the projected expense of the drinking water project in Erzurum, it was planned to distribute water from *Şehler* only within the inner city.¹⁰⁴ While attempting to address the cost issue through loans or short-term investments, the government also sought technical support from foreign experts for water infrastructure projects. For instance, M.F.A. Giefrink from the Netherlands

¹⁰⁰ BCA, 230-0-0-0, 66/31/7, 15.06.1926.

¹⁰¹ BCA, 11/50/13, 02.11.1924.

¹⁰² 831 Sular Kanunu, 28 April 1926, Resmi Gazete, 10.05.1926, no. 368, 661–664.

¹⁰³ BCA, 19/41/3, ek 105-17, 13.07.1926.

¹⁰⁴ BCA, 30-10-0-0, 157/106/14, 18.10.1935.

was appointed as a construction expert for the Ankara Drinking Water Commission.¹⁰⁵

The Great Depression was challenging for Türkiye's economy, as it was for many developing countries. As Mustafa Kemal Atatürk and his friends focused on rebuilding the nation-state, the sharp decline in agricultural product prices had a significant impact on the Turkish economy. In response to the Great Depression, the government adopted etatism as its primary policy in the 1930s. The trends of interventionism and protectionism continued throughout the interwar years. During this period, the state's role in utility regulation expanded as the nation-state took on responsibilities for finance, management, and ownership. The nationalization of water companies began with the acquisition of the Terkos Water Company in 1932.¹⁰⁶ In addition, the nationalization process continued with the acquisition of the Uskudar-Kadıköy Water Company in 1937¹⁰⁷ and the Izmir Electricity, Tramway, and Water Company in 1942¹⁰⁸. The Terkos Water Company, also known as the Dersaadet Water Company, was renamed the Istanbul Turkish Anonim Water Company.¹⁰⁹

The nationalization of water companies can be explained by several factors. The founding leaders of the Turkish Republic placed significant emphasis on public health during the country's reconstruction. And, they realized that clean water infrastructure was essential for preventing epidemics caused by water-borne diseases. In response, Atatürk and other founding leaders oversaw the water quality and filtration systems of the companies and demanded reports on their conditions.¹¹⁰ For example, water analysis revealed that the water from the Uskudar-Kadıköy Water Company was not suitable for drinking. Thus, the government issued a

¹⁰⁵ BCA, 21/45/10, 21.06.1931.

¹⁰⁶ BCA, 30-18-1-2, 23/66/14, 21.09.1931. However, in Kerim Esmer's book on İSKİ, the purchase date is given as 1932.

¹⁰⁷ BCA, 30-18-1-2, 75/47/14, 02.06.1937.

¹⁰⁸ BCA, 30-10-0-0, 157/105/5, 09.10.1942.

¹⁰⁹ BCA, 30-18-1-2, 34/16/12, 04.03.1933.

¹¹⁰ BCA, 230-0-0-0, 66/28/11, 04.12.1924.

warning to the company, instructing it to make the water safe and drinkable.¹¹¹

Table 2.1 Number and properties of water companies in 1932.

Name of Companies	Waterways (meter)	Number of Fireplugs	Number of Fountains
Izmir Water Company	52.529	169	42
Uskudar Kadıköy Water Company	224.371	257	24
Samsun Municipality Water Company	14.200	38	50
Odemiş Municipality Water Company	34.293	70	10

SOURCE *10 Yılda Türkiye Nafiası 1923-1933* (İstanbul: Matbaacılık ve Neşriyat Türk Anonim Şirketi, 1933), 17.

Furthermore, dissatisfaction grew over time between the new nation-state and foreign companies. The government requested that water companies expand their infrastructure and provide safe, affordable water services to the public. However, the companies were reluctant to do so, citing low profitability and a limited number of subscribers as reasons for not expanding their water systems. Moreover, the companies informed the government that they needed to raise water prices due to the rising cost of coal. However, the government rejected this request.¹¹² In addition to the conflict between the companies and the government, the public also expressed dissatisfaction with the water companies' services. The companies were criticized by the community, particularly after water shortages during the Haydarpaşa and Kadıköy fires in Istanbul caused significant damage.¹¹³ In a news report by the *Cumhuriyet* newspaper, the

¹¹¹ BCA, 230-0-0-0, 66/29/3, 12.01.1925.

¹¹² BCA, 230-0-0-0, 65/18/6, 22.08.1918.

¹¹³ BCA, 230-0-0-0, 65/23/2, 1.08.1922.

services of the Terkos Water Company were criticized, with emphasis placed on the idea that the company's future was uncertain.¹¹⁴ Similarly, due to growing dissatisfaction in Izmir, much like in Istanbul, the Izmir Municipality voiced its complaints about the Water Company.¹¹⁵

Another crucial aspect was the reaction of international capital during the interwar period. Foreign capital responded to the Great Depression with protectionism, while the state's role in utility ownership increased significantly. Countries were still recovering from the effects of World War I until 1929.

In addition to the challenges of transitioning from an empire to a nation-state—politically, economically, and socially—the new Turkish state also faced the Great Depression. The Turkish economy relied on agricultural production. To support small and medium-sized family enterprises, the new government abolished the tithe in 1924. Despite the adverse effects on agricultural prices, agricultural production showed an increasing trend until the 1930s. It is evident that the state's construction of railways and demographic recovery had a positive impact on both agricultural production and per capita income during this period. However, with the onset of the Great Depression and the disruption of external trade, economic nationalism and self-sufficiency began to dominate global economic policies. However, economic nationalism and self-sufficiency began to dominate global economic policies due to the Great Depression and the disruption of external trade.¹¹⁶ The state's influence in the ownership of utilities increased, while foreign capital tended to flow out of the country.

Between the 1920s and 1960s, the role of the state in utility regulation expanded with the emergence of new nation-states. These changes oc-

¹¹⁴ BCA, 230-0-0-0, 83/77/7, 16.03.1929.

¹¹⁵ BCA, 230-0-0-0, 125/9/1, 29.01.1938.

¹¹⁶ Pamuk, *Uneven Centuries*, 184–194.

curred not only in Türkiye's clean water system but also in other countries across various sectors.¹¹⁷ Millward discusses the nationalization of energy, telecommunications, and transport in Western Europe from the mid-nineteenth century until the end of the twentieth century.¹¹⁸ The development of regulations that controlled public utilities in the nineteenth and twentieth centuries is examined by Clifton, Lanthier, and Schröter. They proposed that public utilities can be organized even though they were different from economic, sectoral and also geopolitical contexts. As a consequence, they argue that utility regulation can be divided into three waves: the first wave (late nineteenth and early twentieth centuries), the second wave (1920s-1960s), and the third wave (post-1970s). Infrastructures during the first wave required significant investments and carried considerable risks. The burden of infrastructural investments fell on private alliances with banks, families, or entrepreneurs, while states acted as adjudicators and regulators, overseeing service quality. The second wave of infrastructure regulation emerged with the rise of new nation-states. During the interwar period, the state assumed the roles of financier, manager, and owner. Its involvement in utility regulation expanded further during the nationalization period. The third wave began after the 1970s, marked by the growing influence of domestic and foreign private sectors, as well as multinational companies.¹¹⁹

The evolution of clean water infrastructure investments in Türkiye aligns with the first two waves. A significant portion of the population

¹¹⁷ Sırrı Emrah Üçer, "İstanbul Telephone Company from Concession to Nationalization: A Study in Business History (1909-1936)," *Muhasebe ve Finans Tarihi Araştırmaları Dergisi* 20 (2021): 63–90; Nurçin İleri, "İmtiyazlı Şirketlere Yönelik Şikâyetler: İstanbul Terkos Su ve Tramvay Şirketlerinin Millileştirilmesi," *Toplumsal Tarih Akademi*, no. 2 (2023): 25–51; Mustafa Emir Küçük, "Belgian Investment and Capital in the Constantinople Tramway Company," paper presented at *Pathways to Empire? Belgian Global Expansion 1830–1930 International Conference*, KU Leuven – CEGESOMA, September 11–13, 2024.

¹¹⁸ Robert Millward, *Public and Private Enterprise in Europe: Energy, Telecommunications and Transport 1830-1990* (Cambridge: Cambridge University Press, 2005), 19–40.

¹¹⁹ Judith Clifton, Pierre Lanthier, and Harm Schröter, "Regulating and Deregulating the Public Utilities 1830-2010," *Business History* 53, no. 5 (2011): 659–672.

met their water needs through traditional systems, such as cisterns, aqueducts, fountains, and wells. Water infrastructure investments advanced considerably during the nineteenth century, driven by industrialization and urbanization processes in Western countries. These modern water systems extended to peripheral middle-income countries, such as the Ottoman Empire, through foreign direct investments facilitated by European capital and companies. On the other hand, developing countries, such as the Ottoman Empire, lacked the economic resources and technical expertise to undertake modern water infrastructure investments. As a result, a duality of clean water system emerged in the Ottoman Empire, with foreign water companies operating under special concessions in port cities.

Table 2.2 Budget of municipalities, 1925-1934.

Year	Total Budget of Municipalities (Turkish lira)
1925	16.611.000
1926	23.284.000
1927	20.769.000
1928	22.559.000
1929	19.338.625
1930	18.484.425
1931	17.675.991
1932	17.625.835
1933	19.863.233
1934	15.992.248

SOURCE: Osman Ergin, "Belediye Vergileri," *İller ve Belediyeler Dergisi*, no. 2: 40.

After the establishment of the republic, foreign water companies continued their operations. However, with the passage of the Water Law in 1926, the new government transferred the management of public and waqf water resources to the municipalities.¹²⁰ The purpose of the new water law was to grant municipalities the authority to manage the clean

¹²⁰ 831 Sular Kanunu, 661-664.

water supply. Although it expanded municipalities' responsibilities and authority over the clean water system, municipal revenues, and budgets were limited during the 1920s and 1930s. Table 2.2 shows the budgets of municipalities from 1925 to 1934. Although the government attempted to increase municipal budgets starting in 1925, the Great Depression significantly reduced these budgets due to its negative impact. For these reasons, the Bank of Municipalities (*Belediyeler Bankası*) was established by the government in 1933 to provide credit facilities and financial support to municipalities for utility services, such as clean water systems.¹²¹

The new government's motto was change. Furthermore, national security, urban hygiene, public health, and demographic were important priorities for the nation-state. The nation-state sought to strengthen its control over public utilities, while foreign capital also tended to flow out of the country as a consequence of the Great Depression. In Türkiye, the responsibility for water investments shifted from foreign companies to public as a result of the nationalization of foreign water companies during the 1930s and 1940s. This nationalization process began with the acquisition of Terkos Water Company in 1931¹²² and continued with two other companies in time. The Uskudar Kadıköy Water Company and the İzmir Electricity, Tramway, and Water Company were purchased by the state at five-year intervals, in 1937¹²³ and 1942¹²⁴, respectively. The duality of clean water systems was resolved by the state as a result of the nationalization process, effectively ending the period of competition between foreign water companies and the public water systems.

¹²¹ İller Bankası, *Atatürk'ün Doğumunun 100. Yılına Özel* (Ankara: İller Bankası Genel Müdürlüğü Matbaası, 1981), 11.

¹²² BCA, 30-18-1-2, 23/66/14, 21.09.1931. Note: İSKİ's publication lists the purchase date as 1932. See: Esmer, *Tarih Boyunca İstanbul Suları*.

¹²³ BCA, 30-18-1-2, 75/47/14, 02.06.1937.

¹²⁴ For negotiations regarding the purchase of the company in İzmir after Istanbul, see: BCA, 30-10-0-0, 157/105/5, 09.10.1942. Authorization was given to the Ministry of Public Works (Nafia Vekaleti) for the acquisition. See: BCA, 30-18-1-2, 100/103/8, 26.11.1942; BCA, 30-10-0-0, 157/105/5, 09.10.1942.

2.3.2 *From the Core Cities to Periphery in the Clean Water Systems*

The duality of clean water systems from the late nineteenth century to the mid-twentieth century led to inequality not only between cities but also within cities where foreign companies operated. High-income groups in port cities had access to chlorinated and purified water provided by these foreign companies. Those outside this privileged group continued to rely on traditional water systems inherited from the empire. Since a substantial part of traditional water systems consisted of wells and fountains, they provided free water (if it was possible). However, the quality of water in these systems should be critically examined. It is clear that people in Türkiye experienced shortages of clean water from the Late Ottoman period to the early Republican era. These two systems neither dominated nor complemented each other, as explained in detail in Section (2.1.3). To analyze this complex process, I use the term “duality of the clean water systems”.

Following the declaration of the Turkish Republic, Atatürk and other founding leaders realized that the water system, which was inconsistent with the republic's mission, required reform. The nation-state decided to improve the clean water systems and distribute it equitably across society. For this purpose, Ankara was selected as the priority city for initiating infrastructural investments. In other words, they focused on the construction of the new capital, Ankara, which symbolized the success of the regime. To analyze the clean water systems during the early Republican era, I categorize Ankara, Istanbul, and Izmir as core cities. In this section of the thesis, I examine the transition from the duality of clean water systems to the centralization of water systems between the 1930s and 1950. Additionally, I will demonstrate how water infrastructure investments expanded from core cities to peripheral areas.

Two world wars and the Great Depression significantly shaped the global economy and policies between 1914 and 1950. During this period, the open economy, liberal views, international trade, and capital flows declined, while protectionism and interventionism gained prominence. For Türkiye, these years marked a period of transformation, not only in terms of economic and ideological shifts but also in its political transition

from an empire to a nation-state. As the global economy struggled to recover after World War I, the falling prices of agricultural products, exacerbated by the Great Depression, had a negative impact on both developed and developing economies.

During the interwar period, the state sought to increase its control over utility regulation. The new nation-state aimed to expand its authority over utility ownership, while foreign capital tended to leave the country. The wars of the early twentieth century, along with the transition from empire to nation-state, led to significant losses in human capital in Türkiye. The new nation-state realized the importance of public health. In line with this goal, resources allocated to healthcare services and professionals, such as doctors and nurses, increased significantly from 1.9 per 10,000 population in 1928 to 2.5 in 1939.¹²⁵ This alteration occurred in the realization of reciprocal.

Foreign water companies invested in port cities such as Istanbul and Izmir, where the bourgeoisie maintained their livelihoods. Did the inequality between cities converge as the political system transitioned from the Empire to the Republic, or did the distribution of water investments among regions shift? What were the patterns of waterway distribution and subscriber numbers by region in Türkiye between 1923 and 1950? What were the trends in water supply and consumption? What role did the state play in shaping these trends? How did the state manage water production and consumption? This section addresses these questions by examining water investments and the nationalization process from the 1930s to 1950.

2.3.3 *Selective Distribution of Water Systems*

Istanbul and Izmir were central cities in the development of clean water infrastructure. Ankara should be included among these core cities due to its significance as Türkiye's capital since 1923. Prior to this, in 1898, Abidin Pasha, the progressive governor of Ankara at the time, played a key role in improving the city's infrastructure. He facilitated the supply of water

¹²⁵ Pamuk, *Uneven Centuries*, 201.

to the city's fountains by commissioning French engineers to construct pipelines from the Hanımpınar and Elmadağ springs.¹²⁶ The fountains used by the public were insufficient to meet the city's water needs due to the increasing population following Ankara's designation as the capital. Consequently, the Turkish Water Company of Ankara was established in 1928.¹²⁷

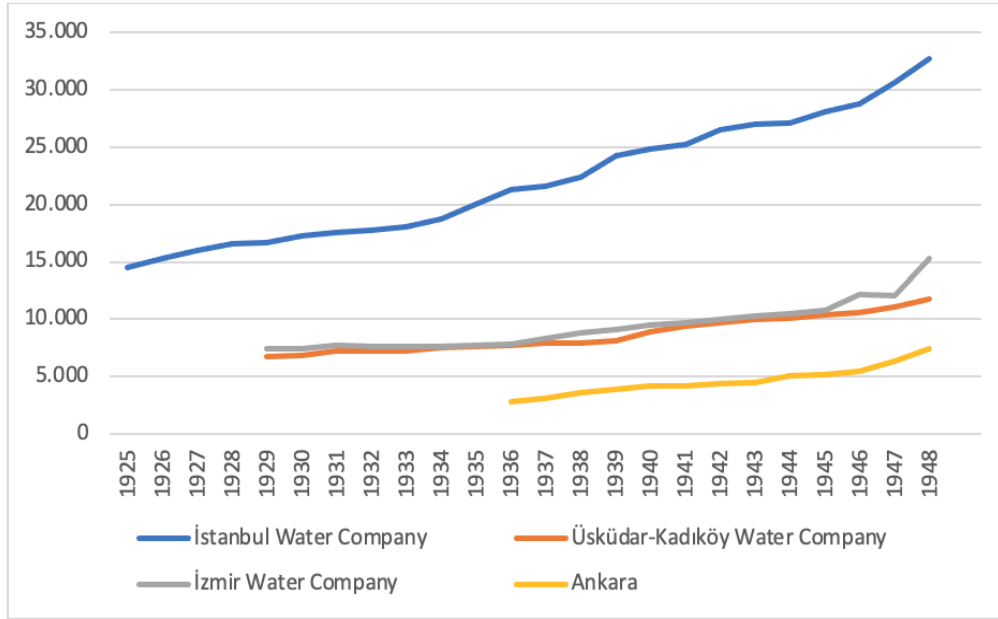


Figure 2.3 Number of subscribers in water companies (for households). Sources: Compiled by the author based on Statistical Annuals between 1928 and 1949.

Figure 2.3 indicates the number of water company subscribers in Türkiye's three largest cities between 1925 and 1948. The data demonstrate a slow increase in subscriber numbers during the transition of ownership from foreign capital to the public sector over a twenty-five-year period. How many residents in these three cities had the opportunity to

¹²⁶ Eşref Özand, *Ankara Şehri Su Tesisleri 1*, Ankara Sular İdaresi Genel Müdürlüğü Yayın No: 4 (Ankara: Yeni Desen Tic. Ltd. Şti Matbaa, 1967), 3-5.

¹²⁷ BCA, 30/64/6, 28.10.1928.

subscribe to the water companies? How did this gradual change affect urban dwellers? In other words, how many people living in these cities could access water company services?

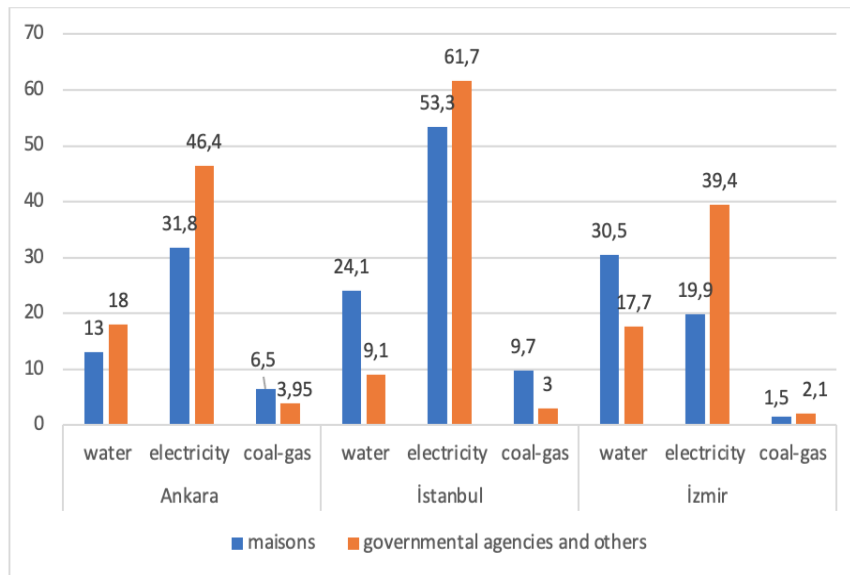


Figure 2.4 Access rates of the buildings to water, electricity and coal-gas in Istanbul, Ankara and Izmir in 1935. Sources: Compiled by the author based on statistical yearbook of 1935-1936.

Figure 2.4 illustrates that the 1935 building statistics enable us to assess the penetration rate of the water system in the three core cities. In 1935, only 13 percent of the 17,372 houses and 18 percent of the 5,536 other buildings (such as public buildings and shops) in Ankara had water connections. In Istanbul, 24 percent of the 101,584 houses had access to water connections, while the rate in Izmir was approximately 30 percent. For other buildings (excluding houses), the access rate in Istanbul was only 9 percent of 41,839, compared to nearly 18 percent in Izmir. Comparing the three core cities in terms of water systems, Izmir had a relative advantage

as a port city.¹²⁸ According to Figure 2.4, electricity was more accessible than water and coal gas infrastructure for the residents of Istanbul and Ankara.

Although access to water appeared higher than access to coal gas, the overall rate of water access remained relatively low. Another conclusion drawn from Figure 2.3 is that, despite the slow increase in the number of subscribers to water companies in these three core cities, the access rate for residents was still limited. Most city dwellers relied on public fountains to meet their water needs. Although Istanbul, Izmir, and Ankara became the core cities for clean water investments in Türkiye, the proportion of the population that had access to water provided by companies remained very limited.

Over time, water investments expanded from these core cities to peripheral areas. The number of water companies gradually increased between 1926 and 1950. The Samsun Water and Electricity Company and the Kütahya Turkish Anonymous Company were established in 1929¹²⁹ and 1931¹³⁰, respectively. By the late 1930s, water administrations became operational in peripheral cities such as Bursa, Afyon, Diyarbakir, Edirne, Gaziantep, Hatay, Kastamonu, Kocaeli, Konya, Manisa, and Mersin.

Figure 2.5 shows the total number of water administration subscribers in Türkiye in 1939. Nearly 34,000 subscribers in Istanbul benefited from the water system, almost double the number in Izmir. There was a significant difference in the number of subscribers between the two port

¹²⁸ *Istatistik Yıllığı, 1935-1936* (Istanbul: Devlet Basımevi), 93.

¹²⁹ BCA, 230-0-0-0, 157/102/8, 00.00.1930.

¹³⁰ BCA, 22/51/15, ek dosya163-27, 12.07.1931.

cities, Istanbul and Izmir, and other cities. In all cities except Bursa, the number of water administration subscribers remained below 5,000.

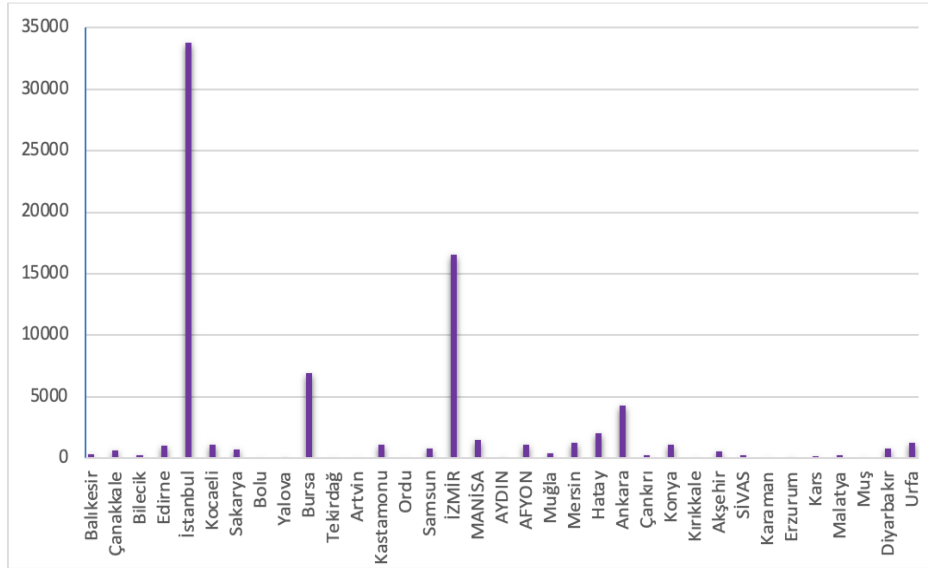


Figure 2.5 Number of subscribers in water administration in 1939. Sources: Compiled by the author based on the statistical yearbook of 1940-1941.

The development and distribution of water infrastructure investments closely paralleled urbanization trends. Figure 2.5 shows that cities such as Istanbul, Izmir, Bursa, Mersin, Edirne, Hatay, Urfa, Manisa, and Afyon experienced higher rates of urban population growth. This population increase created a pressing need for water infrastructure investments. Consequently, highly urbanized regions like the Marmara and Aegean regions received the largest share of water investments.

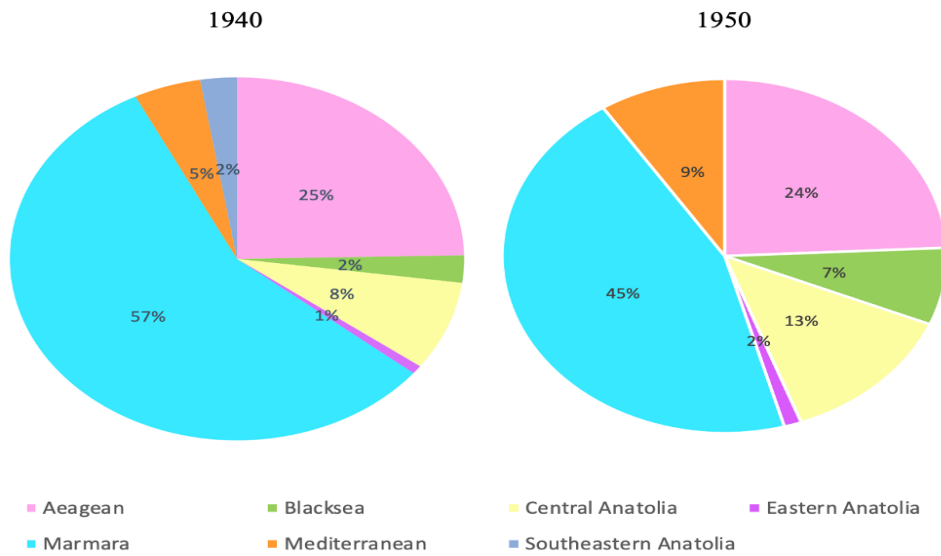


Figure 2.6 Distribution of total water administration subscribers in seven regions in 1940 and 1950, respectively. Sources: Compiled by the author based on statistical yearbook of 1941 and 1952.

In 1940, the total number of water administration subscribers in Türkiye was 77,400, rising to 134,210 by 1950. However, these subscribers were not evenly distributed across the country. The Marmara Region had the highest percentage of water administration subscribers, largely due to the legacy of foreign water companies. Despite this, the region's share decreased from 57% in 1940 to 45% in 1950, as shown in Figure 2.6. The Aegean Region, which had the second-largest share in 1940, saw its proportion drop slightly from 25% to 24% over the same period.

The largest increase in the number of subscribers occurred in the Black Sea region, where the percentage rose to 7% in 1950, more than doubling from 1940. Similarly, the Mediterranean region saw its subscriber share grow from 5% in 1940 to 9% in 1950. Although there is no available data for Southeastern Anatolia in 1950, its share was recorded at 2% in 1939. Maps 2.1 and 2.2 provide a visual comparison of subscriber numbers across cities in each region. A comparison of the maps reveals

that the number of cities with subscribers increased in all regions except Eastern Anatolia by 1950.



Map 2.1 Cities distribution of water administration subscribers among regions of 1940 shown in Figure 2.6. SOURCE: Mapped by the author based on the yearbook of 1941.



Map 2.2 Cities distribution of water administration subscribers among regions of 1950 shown in Figure 2.6. SOURCE: Mapped by the author based on the yearbook of 1952.

Figure 2.6 illustrates the distribution of water administration subscribers across regions based on all subscriber types. However, the pie chart does not show the relationship between the number of subscribers and the population.

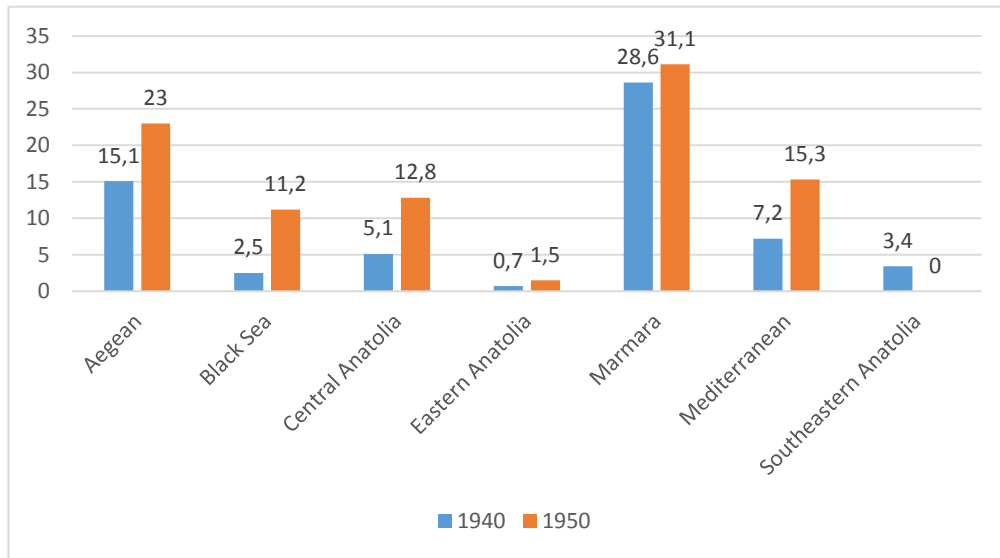


Figure 2.7 The penetration rate of water subscribers based on the total population among the regions in 1940 and 1950. SOURCE: Compiled by the author based on statistics of the Ministry of Public Works and census of related years.

Figure 2.7 presents the penetration rates of water subscribers across regions in 1940 and 1950. I calculated these penetration rates by multiplying the number of household subscribers by five, dividing the result by the total population, and then multiplying by 100, based on the assumption that an average family consists of five people. The Marmara Region had the highest penetration rate among all regions in both years, with 28% in 1940 and 31.1% in 1950. The penetration rate in the Aegean Region increased from 15.1% to 23% over the ten-year period between 1940 and 1950. The most significant change occurred in the Black Sea Region, where the rate increased more than fivefold, reaching 11.2% in 1950. The rates in Central Anatolia, the Mediterranean, and Eastern Anatolia more than doubled during the same period, reaching 5.1%, 15.3%, and 1.5%, respectively. Unfortunately, I was unable to calculate the 1950 penetration rate for Southeastern Anatolia due to a lack of data.

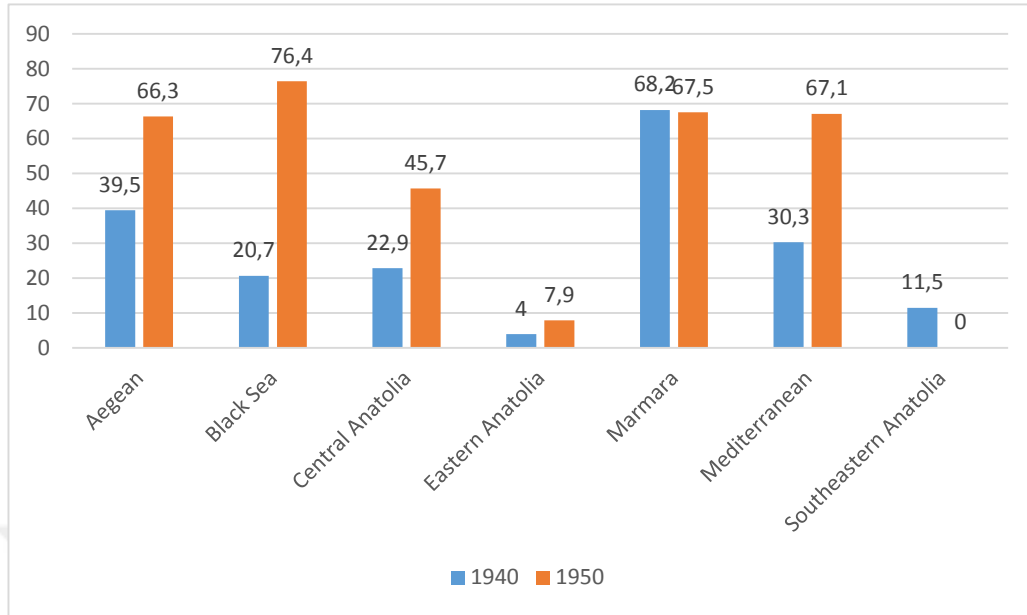


Figure 2.8 The penetration rates of water subscribers based on the urban population among the regions in 1940 and 1950. **SOURCE:** Compiled by the author based on statistics of the Ministry of Public Works and census of related years.

Since the 1940s, water administrations were established under municipal control and gradually expanded from core cities like Istanbul, Izmir, and Ankara to peripheral areas. Due to limited financial and organizational capacity, municipalities prioritized the development of clean water systems in urban areas. As a result, the growth of water administration subscribers was closely linked to urban areas up until 1950. Therefore, it may be more accurate to recalculate the penetration rate by focusing solely on the urban population. Figure 2.8 reflects these recalculated penetration rates, focusing on urban populations across regions between 1940 and 1950.

Penetration rates were calculated by multiplying the number of household (Maison) subscribers by five, dividing by the urban population, and multiplying by 100, based on the assumption that the average family consists of five people. The difference between Figures 2.7 and 2.8 lies in the calculation using total population versus urban population. It

is evident that penetration rates increased significantly in all regions when focusing solely on urban populations. Although the Marmara Region had the highest penetration rate of 68.2% in 1940, it dropped to the second highest at 67.5% in 1950. The penetration rate for the Southeastern Anatolia region could not be calculated due to insufficient data in 1950.

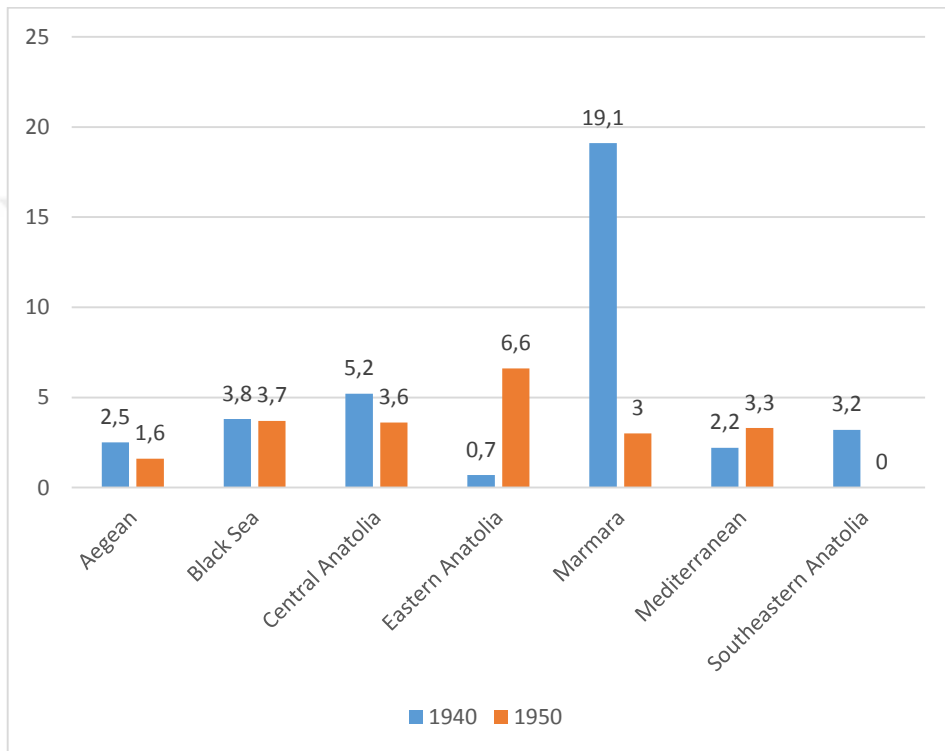


Figure 2.9 The ratio of government agencies in the total water administration subscribers in 1940 and 1950. SOURCE: Compiled by the author based on statistics of the Ministry of Public Works.

There were three types of water administration subscribers: households (maisons), hotels and baths, and government agencies. According to the statistical yearbook, the majority of subscribers were households, but government agencies also made up a significant portion. Figure 2.9

shows the proportion of government agencies among total water administration subscribers across regions in 1940 and 1950. In most regions, the ratio of government agencies ranged between a minimum of 2.1% and a maximum of 5.2% in 1940, except in Eastern Anatolia. In the Eastern Anatolia region, the government agency share was notably higher at 19%. Over the following decade, this share decreased to 6.6% by 1950 as water administration expanded to other sectors.

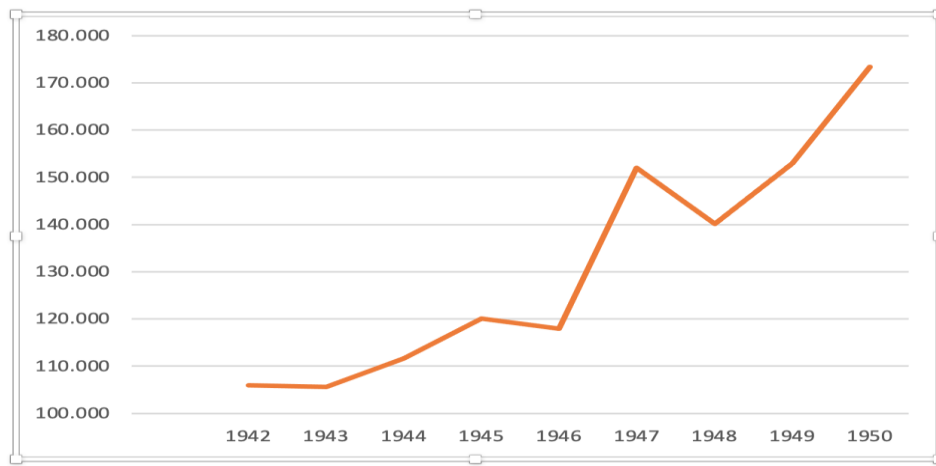


Figure 2.10 The number of subscribers in the water administration in Türkiye between 1942 and 1950. SOURCE: Compiled by the author based on statistics from the Ministry of Public Works.

Figure 2.10 shows the change in the number of Water Administration subscribers between 1942 and 1950. During this eight-year period, the number of subscribers in Türkiye grew slowly, except for a notable increase in 1947. Figures 2.6 and 2.7 further indicate that nearly all regions in Türkiye, with the exception of the Marmara and Southeastern Anatolia regions, experienced an increase in subscribers.

Although the number of subscribers in Istanbul steadily increased, the Marmara Region's share in the pie chart dropped significantly from 57% to 45% between 1939 and 1949. Similarly, despite the growth in subscribers in Eastern Anatolia from 593 to 1,301, its proportional share relative to other regions remained unchanged. Unfortunately, no data were

available on the rate of Water Administration subscribers in Southeastern Anatolia for 1949. Between 1939 and 1949, the majority of water investments in Türkiye were concentrated in the Marmara and Aegean Regions, accounting for 81% of total investments in 1939 and 71% in 1949. The disparities in the number of subscribers across regions in Türkiye remained substantial until 1950.

Another factor that illustrated regional inequality in water infrastructure investments was the distribution of waterways. Waterways consisted of two parts: main waterways and branch waterways (*şube suyolu*). Both main and branch waterways were combined to emphasize the differences among regions (Figure 2.11).

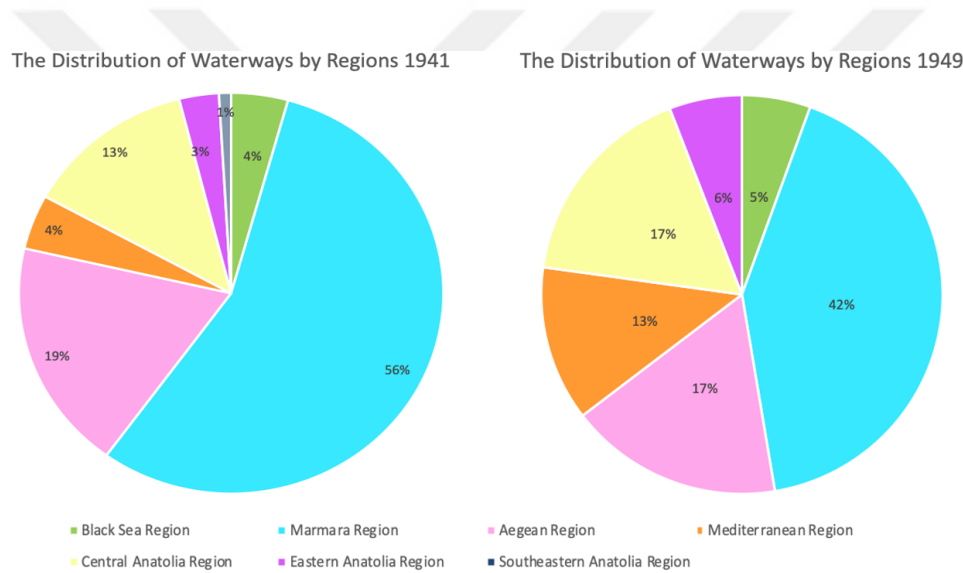


Figure 2.11 The distribution of waterways by regions in Türkiye in two years: 1941 and 1949. SOURCE: Compiled by the author based on the statistical yearbook of 1942 and 1950.

The two graphs show the distribution of waterways by region in Türkiye for both 1941 and 1949. There was an increase in the Mediterranean Region, where the proportion rose from 4% to 13% over the eight-year period. Additionally, the percentage of waterways in the Eastern Anatolia

Region doubled during this time. Although the Marmara Region had the largest percentage of waterways, its share decreased from 56% in 1941 to 42% in 1949. The Aegean Region had the second-largest share in Türkiye, though its proportion decreased from 19% to 17% over the same period. As a result, all regions, except for Southeastern Anatolia (due to lack of data), experienced an upward trend. Overall, regional disparities in Türkiye's water infrastructure gradually decreased from the foundation of the Republic of Türkiye to 1950, although these differences remained significant.

§ 2.4 An Overview of Türkiye's Urban Clean Water Infrastructure until 1950

Significant responsibilities for establishing clean water infrastructure investments were assigned to municipalities in the early years of the Republic. This section provides a comprehensive examination of urban clean water infrastructure investments managed by municipalities across Türkiye up to 1950. In 1949, a thorough analysis was conducted through the creation of the *Municipal Yearbook*, a three-volume publication that compiled demographic, economic, and infrastructure data on municipalities nationwide.¹³¹ The yearbook, intended to document general information, municipal services, and cultural, social, and tourism-related activities, provided insights into the demographic and economic status of municipalities across 639 municipalities in 63 provinces. This dataset illuminated aspects such as population, sources of income, public utilities, and infrastructure investments, facilitating a detailed understanding of municipal conditions across Türkiye. Furthermore, the 1949 *Municipal Yearbook* served as a comprehensive urban inventory of Türkiye, developed in response to the 1945 expansion of authority granted to the Bank of Provinces. This publication thus marks a critical phase in

¹³¹ The data of the Yearbook of Municipalities that published in 1949 were collected until May 1948.

Türkiye's urban infrastructure development, coinciding with significant investment initiatives aimed at enhancing urban areas.

In the early phase of the Republic, the government emphasized establishing and strengthening the role of municipalities as providers of public utility services. To this end, various legal frameworks were introduced, including the 1930 Law on Municipalities, as mentioned in Chapter 2. This law clearly outlined the duties and responsibilities of municipalities, stipulating that localities with populations exceeding 2,000 were to be organized as municipalities to provide public services and administer local affairs. As municipalities sought to expand their responsibilities and authority, their numbers increased steadily over the years. (As noted in Figure 4.1, there was an upward trend in the number of municipalities.)

Figure 2.12 illustrates the distribution of 639 municipalities across various regions in Türkiye in 1949. The Central Anatolia Region had the largest share, with 115 municipalities. This was followed by the Aegean and Marmara regions, with 113 and 104 municipalities, respectively, both of which were relatively urbanized. The Black Sea Region had 101 municipalities, while the Mediterranean Region had a comparatively smaller share, with 65 municipalities. In contrast, the Southeastern Anatolia Region had the lowest concentration, accounting for only 7% of the total, with 46 municipalities. Although the distribution varied across regions, it can be argued that the allocation of municipalities corresponded with the degree of urbanization in each area.

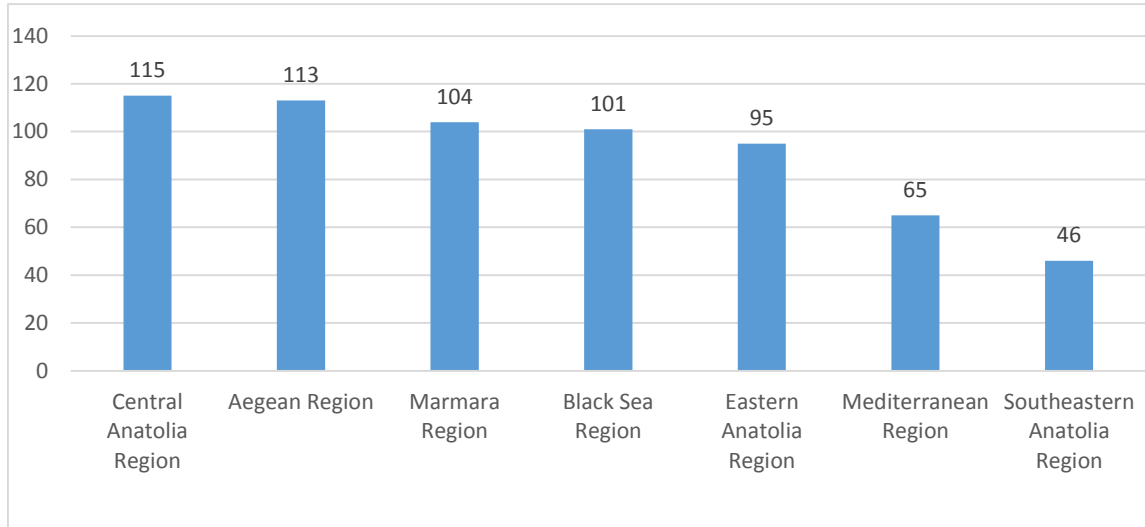


Figure 2.12 The regional distribution of the 639 municipalities in Türkiye based on the 1949 Municipalities Yearbook. SOURCE: Compiled by the author based on the Municipalities Yearbook of 1949.

A majority of the citizens who sustained their lives in urban areas under the control of these municipalities obtained their water needs from natural sources, such as streams, springs, wells, and fountains, which I referred to as the traditional water systems. The citizens who lived in urban areas like towns and cities initially relied on natural water sources to fulfill their water requirements, subsequently turning to wells and fountains. Whether these traditional systems were enough to meet their water needs and also be healthy for the citizens is another research topic. In the scope of the thesis, I will focus on only the distribution of the modern clean water system, both among the regions and also within the same cities in this section. I can define modern clean water systems as water infrastructural investments that were provided by municipalities or private companies, utilizing a network of closed pipes to supply homes or public

buildings. Thus, the number of subscribers was a guide in examining how the distribution of modern clean water systems among regions.

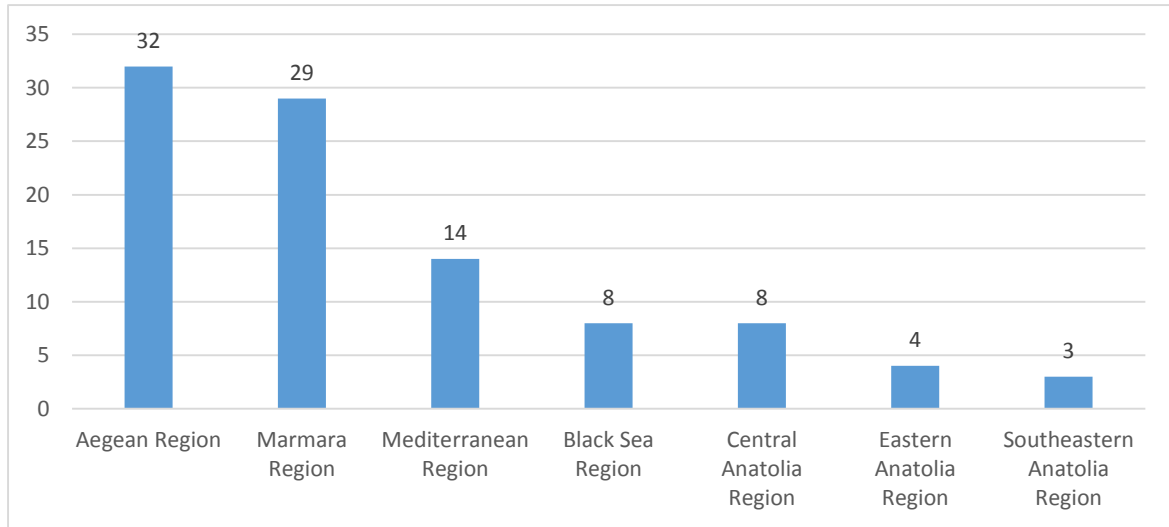


Figure 2.13 The allocation of municipalities with urban water systems across seven regions according to the 1949 Municipal Yearbook. SOURCE: Compiled by the author based on the Municipalities Yearbook of 1949.

Figure 2.13 indicates that there are a total of 98 municipalities from 7 regions with subscriber information according to the municipal yearbook of 1949. The Aegean Region had the most municipalities with urban water networks, followed closely by the Marmara Region with 29. These two regions were more urbanized compared to the other regions, which could explain their having more municipalities with urban water networks. The Mediterranean Region had 14 municipalities with clean water systems, while the Black Sea and Central Anatolia regions both had 8. Whereas the Eastern Anatolia Region had only 4 municipalities that had clean urban water systems, the Southeastern Anatolia Region had the fewest number of municipalities with urban water systems among the regions.

The clean water systems of Türkiye in 1949 were unevenly distributed among regions, as there are relatively more municipalities connected to clean water infrastructure in the western regions. The higher

number of municipalities with urban water systems in the Aegean and Marmara regions, compared to the other regions, could be attributed to their higher levels of urbanization and also population density at the time. In 1945, the urbanization rate in Türkiye was 24%, and it was observed that cities located in the Marmara and Aegean Regions, especially Istanbul and Izmir, had higher urbanization rates compared to other regions. However, it does not mean that all citizens in the Marmara and Aegean regions could have clean urban water systems. In the same way that there was inequality in access to clean water systems among regions, there were also inequalities within cities. In order to examine the inequalities in more detail in regions and also inside the city, the relationship between the number of clean water subscribers and the urban population should be examined.

Table 2.3 indicates the number of subscribers, average household size, population, and access to the clean water systems of the 98 municipalities that had clean water systems in seven regions in Türkiye based on the Municipalities Yearbook of 1949. According to the number of water subscribers in the table, the Marmara Region had the largest number of water subscribers, with a total of 56,100 subscribers. The Aegean Region followed closely behind it, with a total of 32,015 subscribers. The three municipalities of the Southeastern Anatolia Region had 5,868 subscribers, while the number of water subscribers of the Mediterranean Region was 7,185, referring to 14 municipalities. The eight municipalities of the Central Anatolia Region consisted of 4,478 subscribers, while the Eastern Anatolia Region had the smallest subscriber base among the regions listed, with only 645 subscribers.

This data highlights the disparities in subscriber numbers among the various regions of Türkiye, with the Marmara and Aegean regions having the largest subscriber bases, and the Eastern Anatolia Region having the smallest. The details of the cities located in the regions are found in Table 2.3. Furthermore, the table shows that there appeared to be variability in the average household size across the seven regions in municipalities

that had clean water systems in Türkiye. The table prepared by the author compiled based on the declarations of municipalities in 1949 did not represent all of the citizens residing in municipalities.

This table consisted of information about the urban citizens of Türkiye who could access modern clean water systems. In other words, it is clear that the table describes the sample of the urban class who maintained their lives in areas under the administrative control of municipalities and could access urban clean water systems. Although each city that had clean water systems had a different household size each other, this sample indicates that the average household size for all cities of regions consisted of able to access clean water systems in Türkiye was 4.9. It is an reasonable situation that the average household size of the urban class could be a little low compared to rural areas and also the whole country.

The findings of the 1949 *Municipalities Yearbook*, which documented 98 municipalities with access to clean water systems, highlighted regional variations in average household size across Türkiye. Data on household size was available for 92 municipalities; however, for six municipalities—Adana, Antakya, Kandıra (in Kocaeli), Kars, Tekirdağ, and Istanbul—the average household size had to be estimated by the author due to a lack of specific information.

Table 2.3 Regional distribution of demography and urban clean water systems in 98 municipalities in Türkiye based on the Municipalities Yearbook.

Cities in the Regions	The Number of Subscribers	Average Household Size	The Urban Population	Access to Clean Water System
Aegean Region	32,015	4.2	536,016	19.5
Afyon	1,071	5.5	39,149	6.5
Aydın	2,496	4.1	40,436	20.0
Denizli	841	4.4	13,870	31.3
İzmir	21,011	4.4	315,788	23.8
Kütahya	665	3.3	19,859	10.9
Manisa	5,737	3.5	98,555	20.0
Muğla	194	3.7	8,359	8.5
Black Sea Region	3,651	5.5	103,158	15.4
Amasya	381	4.2	16,126	10.0
Bolu	78	3.0	7,532	3.1
Çoruh	165	7.5	7,488	19.9
Çorum	368	4.0	20,307	7.3
Kastamonu	7	6.2	1,803	2.4
Tokat	646	5.1	20,078	16.6
Trabzon	2,006	6.5	29,824	43.8
Central Anatolia Region	4,478	4.6	186,359	10.7
Çankırı	400	4.9	14,641	13.3
Kayseri	150	5.8	57,698	1.5
Konya	3,894	4.7	103,355	14.0
Niğde	34	3.0	10,665	1.0
Eastern Anatolia Region	645	5.7	69,054	13.7
Erzincan	60	9.4	1,414	40.0
Erzurum	163	3.5	40,336	1.4
Kars	380	5.7	22,264	9.7
Muş	42	4.2	5,040	3.5
Marmara Region	56,100	4.6	1,221,083	12.9
Balıkesir	973	4.1	46,678	7.2
Bilecik	360	3.2	14,864	7.2
Bursa	5,019	4.0	139,871	12.2
Çanakkale	879	7.0	41,608	12.5
Edirne	1,800	4.2	29,404	25.7
İstanbul	43,925	5.0	864,166	25.4
Kocaeli	2,788	5.4	69,712	18.7
Tekirdağ	356	4.7	14,780	11.3
Mediterranean Region	7,185	4.7	241,946	16.3
Antalya	290	4.3	5,802	33.2
Burdur	8	3.5	3,808	0.7
Hatay	3,261	4.4	58,464	18.9
Içel	618	7.1	28,829	15.1
Maraş	1,113	5.3	33,104	17.9
Seyhan	1,895	5.1	111,939	5.1
Southeastern Anatolia Region	5,868	5.2	140,399	21.5
Diyarbakır	1,150	4.8	41,260	13.5
Gaziantep	3,018	5.6	62,783	26.8
Urfa	1,700	5.2	36,356	24.3
Total	109,942	4.6	2,498,015	15.9

Source: Compiled by the author based on the Municipalities Yearbook of 1949.

For Seyhan (Adana), the number of households is assumed to be 20,750, which is derived from the 20,750 houses and 2,558 summer vineyard houses with the assumption that the urban water systems will only be in the houses. Estimates for Antakya, Kandıra municipality in Kocaeli, Kars, and Tekirdağ were based on the average household size specific to each region. For Istanbul, the data from Yalova, which was a district of Istanbul at the time, was incorporated into the city's calculations. Additionally, the average household size of the city was estimated to be 5, based on the available information on 95,012 houses and 5,040 apartments in the municipality, as well as the reported average household size of 4.9 in 1955.¹³²

The Aegean Region, consisting of municipalities with access to clean water systems, had the smallest average household size, with 4.2 individuals, while the Black Sea Region had the largest average household size at 5.5 individuals. The Central Anatolia and Marmara Regions displayed similar average household sizes of 4.6. The average household size in municipalities with access to clean water systems in the Mediterranean Region was 4.7. Additionally, the Southeastern Anatolia Region had an average household size of 5.2. Further analysis and comparison across regions could provide a more comprehensive understanding of household size dynamics and their implications for clean water infrastructure.

¹³² The average household size in Istanbul was 4.9 in 1955. See: *Dünden Bugüne İstanbul'un Nüfus ve Demografik Yapısı* (Istanbul: Istanbul Ticaret Odası, 2006), 132.

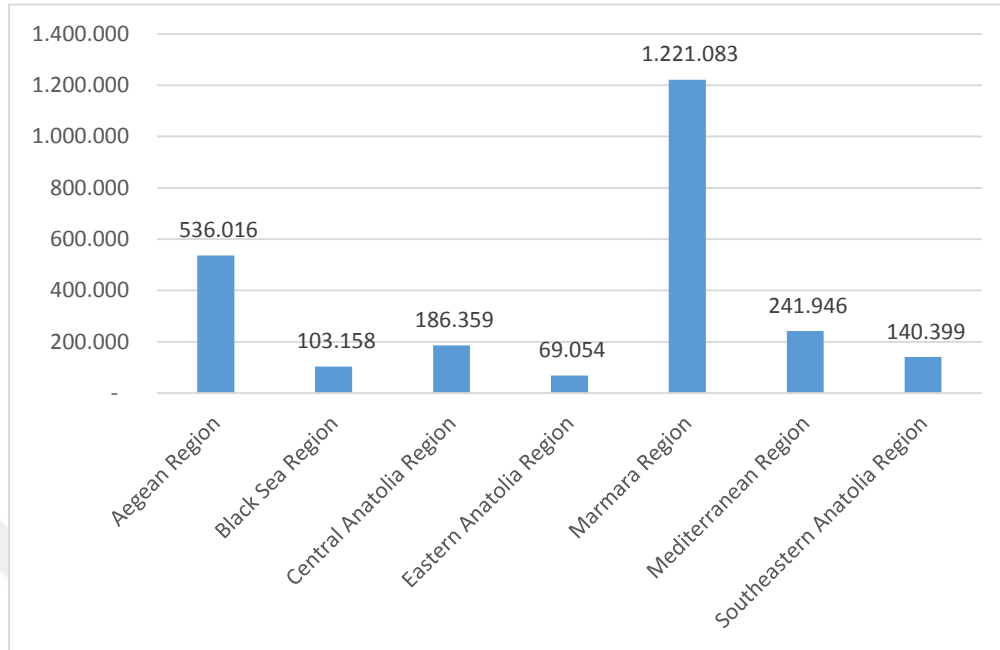


Figure 2.14 Regional distribution of the population that had a clean water system in Türkiye based on the 1949 Municipalities Yearbook. SOURCE: Compiled by the author based on the Municipalities Yearbook of 1949.

According to population data from 1945, when urbanization was at 24.9%, the data I collected from the *Municipalities Yearbook* represents 13.3% of the total population and 53.3% of the urban population. As shown in Figure 2.14, the Marmara Region had the highest number of urban residents, with 1,221,083 individuals living in municipalities with access to clean water systems. It is important to note that while the Marmara Region had a high population density, this did not indicate universal access to clean water systems for all inhabitants. To fully understand the distribution of access to clean water across regions, an analysis of the number of subscribers and the population is necessary. Detailed calculations of the percentage of access to clean water systems are provided on the following page. In addition to the Marmara Region, the Aegean Region had the second-highest number of urban residents, with 536,016, followed by the Mediterranean Region with 241,946 residents. The urban

population in the Central Anatolia, Southeastern Anatolia, and Black Sea Regions ranged between 100,000 and 190,000. The Eastern Anatolia Region had the lowest number of urban residents in municipalities with access to clean water systems. These data provide insights into urbanization patterns in Türkiye up to 1950 and highlight regional differences in urban population distribution.

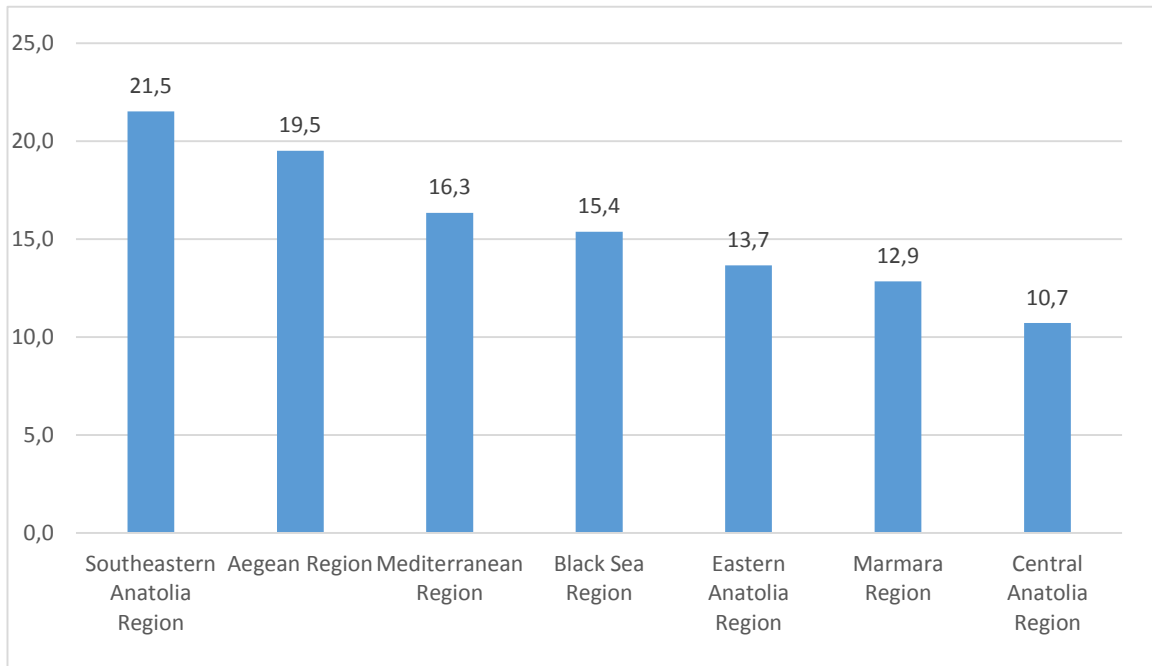


Figure 2.15 Average percentage of access to urban clean water systems by region in 1949. SOURCE: Compiled by the author based on the Municipalities Yearbook of 1949.

From a macro perspective on regional averages, the data presented in the table highlights disparities in access to urban clean water systems across different regions of Türkiye in 1949. According to these data, the Southeastern Anatolia Region, with information available for three provinces, had the highest average access to clean water at 21.5%. The Aegean Region followed with the second-highest average access to clean water systems, at 19.5%. The Mediterranean Region had an average access rate

of 16.3%, while the Black Sea Region's access rate was 15.4%. The Eastern Anatolia Region showed a slightly lower access rate of 13.7%. Surprisingly, the Marmara Region, despite having the largest number of water subscribers, recorded the second-lowest access rate among the listed regions, at only 12.9%. The Central Anatolia Region had the lowest average access rate to clean water systems, with 10.7%. From the micro perspective, access to clean water systems varied significantly among municipalities within each city, indicating that disparities existed not only between regions but also within urban areas. Although details on each city's average access rates are provided in the table, I will elaborate on selected sample cases.

In this section, I discuss the unequal distribution of access to urban clean water systems in Türkiye. First, I argue that the development of clean water systems began in western cities, such as Istanbul and Izmir, and gradually expanded to city centers in the southern, northern, and eastern regions. Second, I suggest that access to clean water systems progress outward from core cities like Istanbul, Izmir, and Edirne to surrounding areas in the Marmara and Aegean regions. Conversely, I contend that the expansion of clean water systems in the eastern regions remained limited to specific city centers and, when it did reach peripheral areas, occurred at a slower pace. These arguments are supported by the examination of selected regions and cities as examples.

The data presented in the *1949 Municipality Yearbooks* reveals disparities in access to clean water systems across different regions of Türkiye. The Marmara and Aegean regions demonstrated more extensive development of clean water systems compared to other regions, with 61 municipalities equipped with urban clean water systems. Although these systems were insufficient to meet the needs of all inhabitants, it is evident that clean water systems extended to peripheral areas in these regions. In contrast, I argue that clean water systems in the Southeastern Anatolia and Eastern Anatolia Regions were largely confined to city centers.¹³³

¹³³ *Belediyeler Yıllığı*, cilt 1-2-3 (Istanbul: Güney Gazetecilik ve Matbaacılık, 1950).

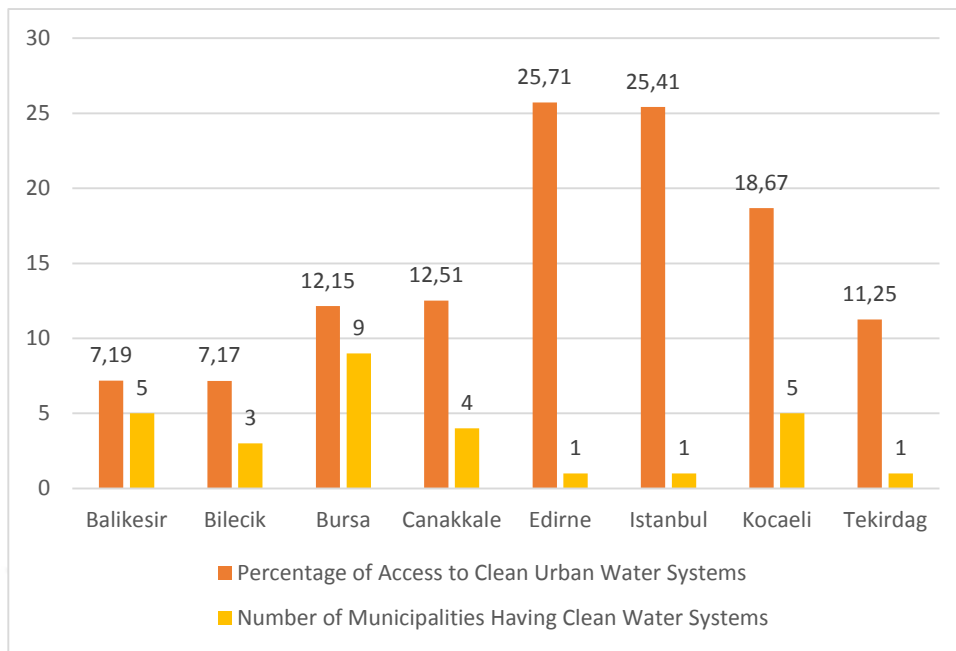


Figure 2.16 Analysis of urban clean water system access among cities in the Marmara Region in 1949. SOURCE: Compiled by the author based on the Municipalities Yearbook of 1949.

Figure 2.16 indicates the distribution of municipalities with urban clean water systems and the percentage of access to these systems within the Marmara Region. It is evident that access to clean water systems was unevenly distributed among cities within the same region. These disparities could be attributed to factors such as urbanization level, population density, and the degree of commercial development in each city. Edirne shows the highest level of access, with a rate of 25.71%, followed closely by İstanbul at 25.41%. In contrast, cities like Balıkesir and Bilecik have lower access levels, with rates of 7.19% and 7.17%, respectively. Although these data points indicate a disparity in the distribution and development of clean water systems within the Marmara Region, there was a spread of clean water systems from core cities like İstanbul and Edirne to peripheral cities such as Bilecik and Tekirdağ.

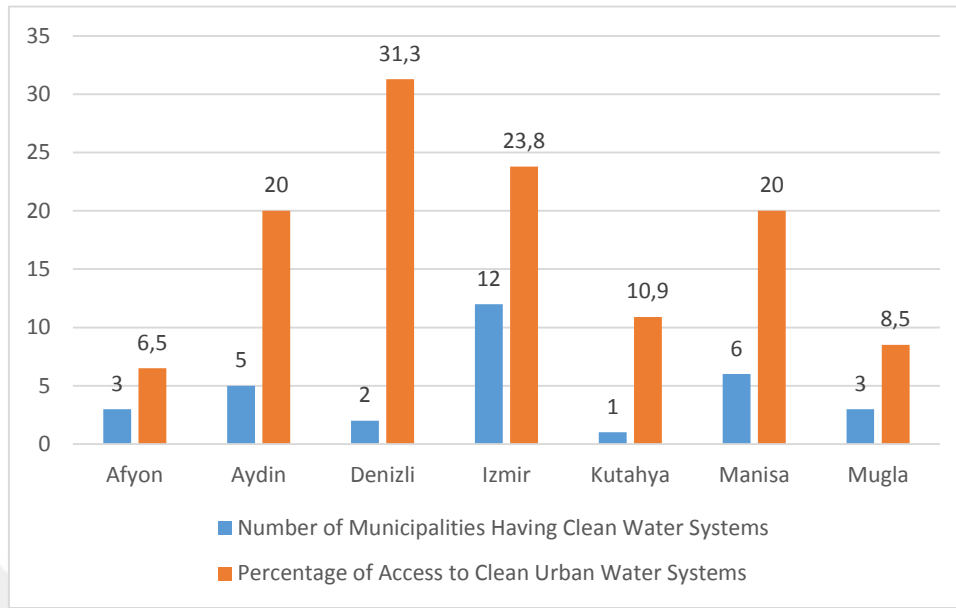


Figure 2.17 Analysis of urban clean water system access among cities in the Aegean Region in 1949. SOURCE: Compiled by the author based on the Municipalities Yearbook of 1949.

Figure 2.17 presents the number of municipalities with clean water systems and the percentage of access to clean water in each city within the Aegean Region. The data indicates a range of access levels across the region, from 6% to 31.3%, with cities such as Denizli and Izmir having higher access levels compared to cities like Afyon and Muğla. Notably, while some cities exhibit relatively high access to clean water, these levels may still fall short of meeting the needs of all residents. It is evident that there was an unequal distribution of clean water access across cities within the same region. Similar to Istanbul, clean water systems spread from core cities like Izmir and Denizli to peripheral cities such as Afyon in the Aegean Region.

My argument is that urban clean water systems spread gradually from core cities to peripheral areas in the western regions of Türkiye, unlike in other regions. To illustrate this, I focus on the city of Manisa (Figure 2.18). Manisa is situated near Izmir, while Turgutlu is strategically located along a key railway line connecting Akhisar to Izmir. Although city

centers would typically have the highest percentage of clean water access, in Manisa's case, peripheral areas like Turgutlu and Akhisar, connected by rail to Izmir, had higher water access rates than the city center. This supports my argument that clean water system development extended from core cities to the periphery more effectively in western regions compared to eastern regions of Türkiye in 1949. Furthermore, while access to clean water systems was uneven both within cities and across the region, commercial links through transportation facilitated infrastructural investments in cities like Manisa.

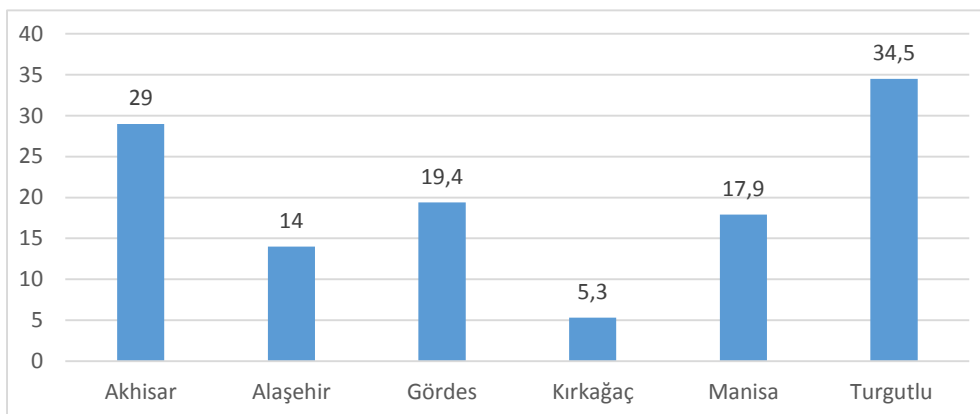


Figure 2.18 The distribution of the percentage of clean water systems in Manisa of the Aegean Region in 1949. SOURCE: Compiled by the author based on the Municipalities Yearbook of 1949.

Figure 2.19 shows the percentage of access to clean water systems in three cities within the Southeastern Anatolia Region. According to the figure, access to clean water systems varies across Diyarbakir, Gaziantep, and Urfa. Gaziantep has the highest access rate at 26.8%, followed by Urfa at 24.3%, and Diyarbakir with the lowest rate at 13.5%. In terms of clean water access, the city centers of Gaziantep and Urfa surpass the national average. However, there was no extension of clean water systems from core cities to peripheral areas. Unlike in western regions, access to clean water in the Southeastern Anatolia Region remained largely limited to city centers, with most investments and developments concentrated in the city centers.

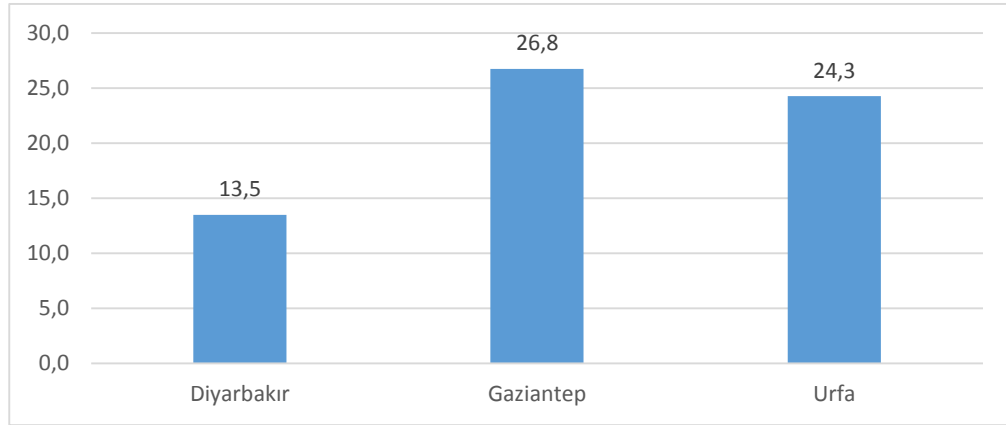


Figure 2.19 The distribution of percentage of access to clean water systems in the Southeastern Anatolia Region in 1949. SOURCE: Compiled by the author based on the Municipalities Yearbook of 1949.

Figure 2.20 illustrates significant variation in access to clean water systems among cities in the Eastern Anatolia Region. Erzurum and Muş had the lowest access rates to urban clean water systems, at 1.4% and 3.5%, respectively. Kars had a modest access rate of 9.7%, while Erzincan showed a significantly higher rate of 40%. The high level of access to clean water in Erzincan could be explained by the devastating earthquake that struck the city in 1939. The earthquake resulted in terrifying destruction, with 32,968 fatalities and 116,720 buildings reduced to rubble.¹³⁴ After the devastating earthquake, when the city was rebuilt, clean water infrastructural investments were provided for the new buildings. The available data suggested that these efforts were successful in improving access to clean water in the city. In addition to the Southeastern Anatolia Region, access to clean water systems in Eastern Anatolia was also limited in the specific urban centers and these systems did not extend to the periphery provinces and towns.

¹³⁴ İlhan Haçın, "1939 Erzincan Büyük Depremi," *Atatürk Araştırma Merkezi Dergisi* 30, no. 88 (2014): 37–70.

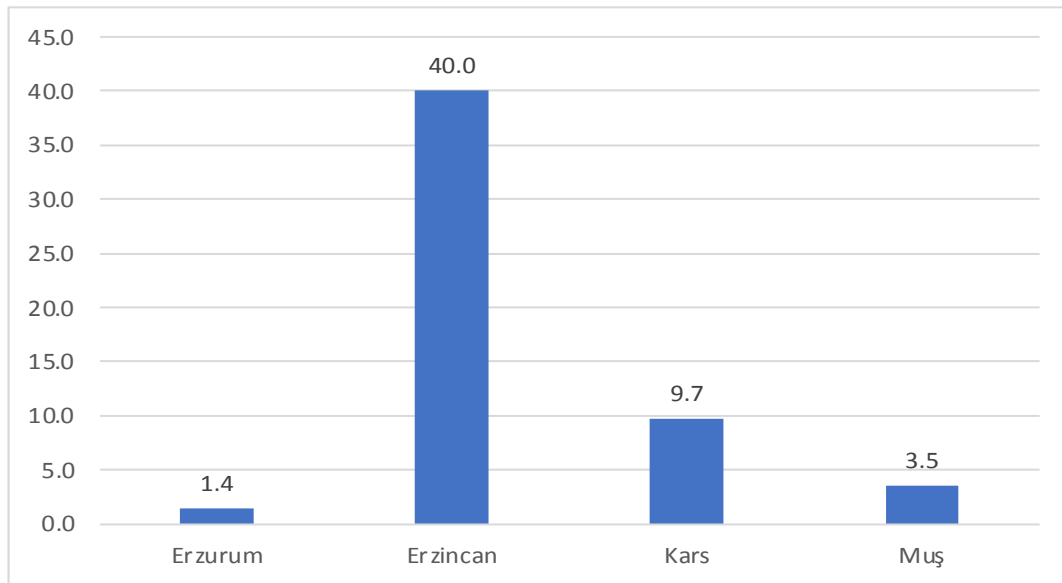


Figure 2.20 The Distribution of Percentage of Access to Clean Water Systems in the Eastern Anatolia Region in 1949. SOURCE: Compiled by the author based on the Municipalities Yearbook of 1949.

In conclusion, the *Municipal Yearbook* of 1949 provides a comprehensive overview of urban clean water systems across Türkiye. According to the yearbook, a total of 98 municipalities across seven regions had subscriber information available. The percentage of access to clean water systems varied by city and region, reflecting uneven distribution patterns. These disparities stemmed from historical, economic, commercial, and political factors. The sample of 98 municipalities with access to clean water systems suggests that only a limited urban population could access these systems. Based on 1945 population data, during a period of 24.9% urbanization, my analysis of this sample revealed that these municipalities represented 13.3% of the total population and 53.3% of the urban population.

In the western regions of Türkiye, where urbanization and population density were high, clean water systems extended beyond city centers to surrounding cities and provinces, though access levels remained low. In contrast, while clean water infrastructure was available in city centers in

the eastern regions, these investments were largely restricted to urban cores without extending to peripheral areas. In other words, there was no core-to-periphery development of clean water systems in the eastern regions in 1949. This analysis provides valuable insights into the state of clean water infrastructure in Türkiye during the early years of the Republic, offering a basis for future comparative studies and emphasizing the need for continued efforts to improve access to clean water across all regions.

§ 2.5 The Influence of Clean Water Systems on Public Health

Nowadays, the unprecedented consequences of the COVID-19 pandemic reshaped the social order, bringing the importance of public health back to the forefront. When examining epidemic diseases throughout world history, humanity has continually faced significant outbreaks, such as the Justinian and Black Plagues. These major epidemics left a lasting mark on human history, not only due to their severe impact on human capital but also their economic consequences. Advances in medical services and health research have positively contributed to the prevention of epidemics, while in some cases, communities developed immunity over time.¹³⁵ In this section, I address the significance of clean water systems in relation to water-borne epidemic diseases and their impact on public health.

Industrialized countries began reorganizing their sanitary investments after discovering the close relationship between clean water systems and public health. The 1848 Public Health Act was a significant milestone in protecting public health. Edwin Chadwick, a leading figure in the 1834 Poor Law reforms, emphasized the importance of providing clean

¹³⁵ For further information, see Şevket Pamuk, “Tarihte Küresel Salgınlar ve İktisadi Etkileri,” in *Salgın Ekonomisi* (Ankara: Efil Yayınları, 2020), 35–50.

drinking water and improving drainage and sewer systems.¹³⁶ As discussed in 2.1.2 headings, industrialized countries in the nineteenth century focused on improving clean water provision by developing sanitary infrastructure to eliminate water-borne illnesses.

The awareness of sanitary investments initially spread from Britain to other European countries, and from these core nations to peripheral countries. By the end of the nineteenth century, today's high-income countries had largely addressed clean water investment issues. Notably, improvements in clean water systems had a substantial impact on life expectancy, reducing water-borne illnesses and mortality rates, particularly child mortality.¹³⁷

Türkiye has historically been a significant intersection point, situated at the center of key land and sea routes between Europe and Asia. Port cities, in particular, were especially vulnerable to epidemic diseases due to trade, migration, and warfare. The Quarantine Administration and disinfection stations were important methods for controlling pandemics during the Ottoman Empire. Another significant measure was the establishment of the Bacteriological Laboratory, *Bakteriyolojihane-i Şahane*, which investigated both animal and human bacteriology, produced vaccines and serums, and analyzed water quality.¹³⁸ It is an undeniable fact that these institutions played a significant role in reducing the spread of epidemic diseases. However, recent studies show that improving clean water systems plays a significant role in decreasing water-borne illnesses and mortality rates.

¹³⁶ UK Parliament, "The 1848 Public Health Act," *Parliament.uk*, accessed [10.10.2024], <https://www.parliament.uk/about/living-heritage/transformingsociety/towncountry/towns/tyne-and-wear-case-study/about-the-group/public-administration/the-1848-public-health-act/>.

¹³⁷ Sections 1.2 and 1.3 provide the literature on the impact of clean water and sewage systems on infant mortality and life expectancy.

¹³⁸ Mesut Ayar, *Osmanlı Devletinde Kolera: İstanbul Örneği, 1892-1895* (İstanbul: Kitapevi, 2007), 148-236.

In cities lacking a clean water system, rainwater and floods caused by the spread of epidemics such as typhoid, cholera, and diarrhea. As previously mentioned, Ottoman traditional water systems, consisting of aqueducts, conduits, dams, mains, and water intake towers, should be critically examined in terms of their impact on public health. The society primarily met their water needs through wells and public tap water.¹³⁹ While the number and existence of wells can be traced through real estate records in the Ottoman archives, these documents contain no information regarding the water quality of the wells.¹⁴⁰ There was very limited information about the water quality of wells and fountains in Türkiye, largely because the state did not conduct regular inspections of water sources across the country. According to the analysis conducted by İstanbul Municipality's laboratory, in 1914, 25% of 253 wells and 45% of 20 fountains were found to be safe. By 1922, these percentages changed as follows: 71% of spring waters, 22% of 35 wells, and 35% of 22 fountains were found to be safe.¹⁴¹

Istanbul was a pioneering city in Türkiye's transition to a modern water system. In 1874, the water company privilege was granted to Foreign Affairs Chamberlain Kamil Bey and Engineer Mr. Terneau to supply water to Istanbul's inhabitants from Terkos Lake. Although the company began operations in 1883, debates arose regarding whether the water from Terkos Lake was drinkable following the granting of the privilege in 1874. According to Demirkol, these discussions about Terkos Lake's water quality were reflected in three humor magazines—*Hayal*, *Tiyatro*, and *Latife*—published in 1874-1875, which presented two differing views.¹⁴²

¹³⁹ Osman Gümüşçü, "Osmanlı'dan Cumhuriyet'e Geçiş ve Cumhuriyetin İlk Yıllarında Türkiye Halk Sağlığı," *Atatürk Araştırma Merkezi Dergisi* 19, no. 55 (2003): 137-140.

¹⁴⁰ Burak Ünveren, Ecem Doygun, ve Özdemir Teke. "An Economic History of Religious Discrimination: Evidence from the 1875 Cadastral Survey of Istanbul." *SSRN* (2022). Erişim: SSRN 4305497.

¹⁴¹ Güran, *Osmanlı Toplum ve Ekonomisi*, 95-97.

¹⁴² Gökhan Demirkol, "Osmanlı Mizah Basınında Terkos Suyu İmtiyazı (1874)," *Su ve Sağlık, Tarih ve Kültür Penceresinden Su ve Sağlık Uluslararası Sempozyumu*, 229-247.

Newspapers of the period, such as *The Levant Herald*¹⁴³, along with other reports, described Terkos water as harsh-tasting and unhealthy. In contrast, reports from the foreign water company and Engineer Batemann claimed that the water from Terkos Lake was suitable for drinking.¹⁴⁴

Between 1883 and 1926, water companies in Istanbul provided chlorinated but unpurified water to their subscribers, while the rest of the city's residents relied on unsafe water from public fountains and wells. The year 1926 marked a significant step towards improving the quality of Istanbul's water system with the installation of the first water purifier in Kağıthane. Since then, private companies have provided purified and chlorinated water services to their subscribers, while those who were not subscribed to these companies in the same city, as well as residents in other cities, continued to consume untreated water through the traditional water system via public taps and wells.¹⁴⁵

Hamidiye Water was sourced from spring waters in Kemerburgaz and transferred to the water reservoir in Cendere. This water, stored in tanks, was only chlorinated and distributed to palaces, military stations, and nearly 50 fountains in Istanbul. Additionally, water managed by the foundation was distributed without chlorination or purification. In 1937, the distribution of Kırkçeşme, Taksim, and Halkalı waters was prohibited by the Istanbul Health Commission due to the outbreak of water-borne diseases such as typhoid, cholera, dysentery, and viral hepatitis.¹⁴⁶

The concepts of urban hygiene and public health emerged at the end of the nineteenth century, marking the beginning of a new era in state

¹⁴³ Vedat Aycan, *Levant Herald Gazetesi'nin 1874 Yılı Haberlerine Göre İstanbul'da İktisadi, Sosyal ve Kültürel Hayat* (Yüksek Lisans Tezi, İstanbul Üniversitesi Sosyal Bilimler Enstitüsü, 2016).

¹⁴⁴ Demirkol, "Terkos Suyu İmtiyazı," 246.

¹⁴⁵ Nuran Yıldırım, *A History of Healthcare in Istanbul: Health Organizations, Epidemics, Infections, and Disease Control Preventive Health Institutions, Hospitals, Medical Education*, The Istanbul 2010 European Capital of Culture Agency and Istanbul University Project No: 55-10 (İstanbul, 2010), 53.

¹⁴⁶ Esmer, *İSKİ*, 40.

policy, infrastructure development, and clean water supply for the public.¹⁴⁷ After the declaration of the Turkish Republic, control and responsibility for water resources, both public and waqf systems, were transferred to municipal administrations through a law passed in 1926.¹⁴⁸ Although the purpose of the new water law was to grant municipalities authority over clean water supply, in the absence of a functioning municipality, this duty was assigned to the board of aldermen. In 1930, the government introduced two key laws—the Municipality Code and the Public Health Law—which complemented each other in addressing public health concerns.¹⁴⁹

Refik Saydam was an important figure in shaping early republican health policies as the Minister of Health. He also founded the Hıfzıssıhha Institute and prioritized the advancement of modern bacteriology.¹⁵⁰ It is evident that the provision of clean water was considered essential for the eradication of water-borne diseases.

Fountains played an important role in the water supply for society. Figure 2.21 illustrates the percentage breakdown of fountain distribution across Türkiye's seven regions between 1939 and 1949. Over this ten-year period, there was a more equal distribution of fountains among the regions, in contrast to the unequal distribution seen in the number of subscribers to the Water Administration.

¹⁴⁷ Burcu Kurt, "Osmanlı'dan Cumhuriyet'e Salgın Hastalıklar ve Kamu Sağlığı," in *Osmanlı'dan Cumhuriyet'e Salgın Hastalıklar ve Kamu Sağlığı*, ed. İsmail Yaşayanlar (İstanbul: Tarih Vakfı Yurt Yayınları, 2017), 2-7.

¹⁴⁸ *831 Sular Kanunu*, 661-664.

¹⁴⁹ *Türkiye'nin Sağlık Tarihi Bağlamı İçinde 1593 Sayılı Umumi Hıfzıssıhha Kanunu ve Cumhuriyetin Sağlık Sorununa Yaklaşımı*, Türkiye Bilimler Akademisi Raporları (Ankara, 2010), 48-53.

¹⁵⁰ Halis Akder, "Forgotten Campaigns: A History of Disease in Turkey," in *Turkey's Engagement with Modernity: Conflict and Change in the Twentieth Century*, edited by Celia Kerslake, Kerem Öktem, and Philip Robins (New York: Palgrave Macmillan, 2010), 228.

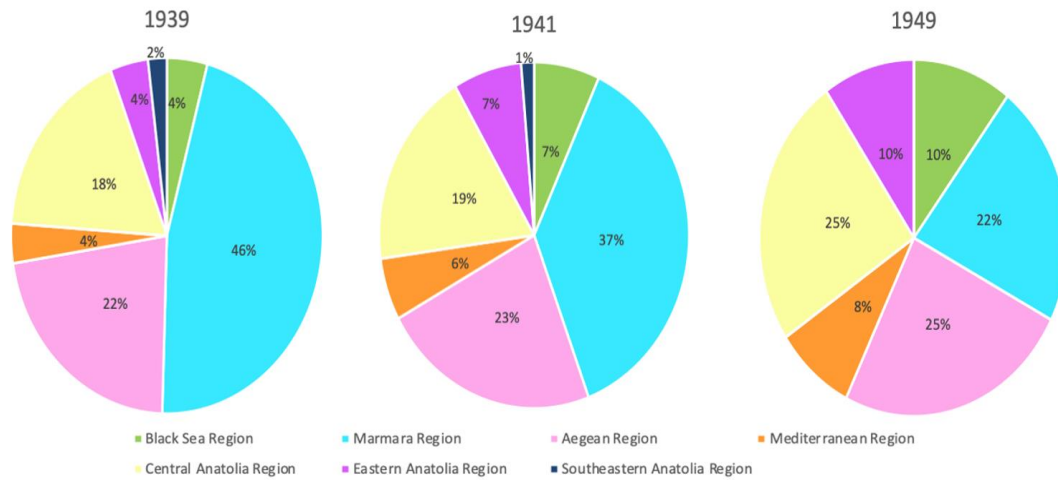


Figure 2.21 Distribution of Fountains in Türkiye for the Years 1939, 1941, and 1949. SOURCE: Compiled by the author based on statistical yearbooks from 1940 to 1950.

Figure 2.21 shows that in both 1939 and 1941, the Marmara and Aegean regions accounted for the largest proportion of fountains in Türkiye, together comprising over half of the total. However, their combined share decreased significantly by 1949. In contrast, the percentage of fountains in the Black Sea, Central Anatolia, Eastern Anatolia, and Mediterranean regions increased between 1939 and 1949. No data is provided for the Southeastern Anatolia region during this period.

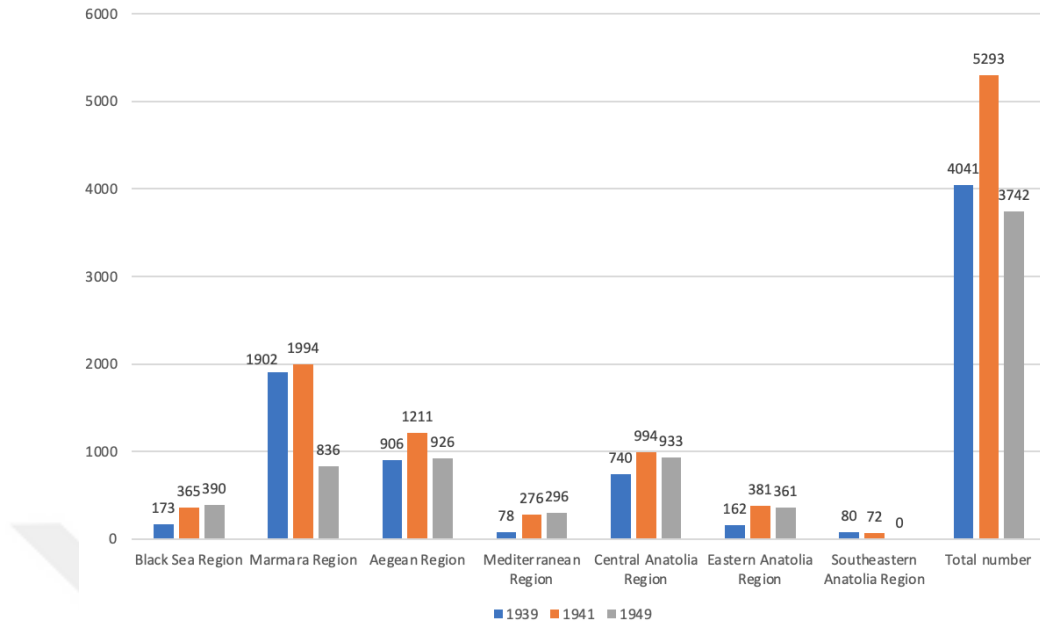


Figure 2.22 The distribution and the total number of fountains in the regions of Türkiye in three years: 1939, 1941, and 1949. **SOURCE:** Compiled by the author based on the statistical yearbook between 1940 and 1950.

Figure 2.22 shows a general decline in the number of fountains in Türkiye between 1939 and 1949. The total number of fountains decreased from 4,041 in 1939 to 3,742 in 1949, reflecting a reduction of 299 fountains. In the Marmara region, the decrease was particularly significant, with the number of fountains dropping from 1,902 in 1939 to 836 in 1949, a decline of 1,066 fountains. However, all other regions, except the Marmara and Southeastern Anatolia regions, had an increase in the number of fountains. No data is available for the Southeastern Anatolia region in 1949. The distribution of fountains across cities in 1939 and 1949 is illustrated in maps 2.3 and 2.4.



Map 2.3 The Distribution of Fountains in Türkiye in 1939 SOURCE: Mapped by the author based on the statistical yearbook of 1940.



Map 2.4 The Distribution of Fountains in Türkiye in 1949 SOURCE: Mapped by the author based on the statistical yearbook of 1950.

Figure 2.22 indicates that the number of fountains decreased over the ten-year period between 1939 and 1949. However, it is possible that some fountains or other water sources were not included in the statistical yearbooks. It is undeniable that the number of subscribers, waterways, and fountains related to water systems and water administration provides valuable data for analyzing cities and comparing regions. Nonetheless, I believe we should sometimes approach data with caution.

Collecting information from cities was the first step in compiling the statistical yearbook. The government requested data on clean water infrastructure from each city's local administration. If the local administration did not respond to the government's request for any reason, there would be no information about the city's water system in that year's statistical yearbook. A communication gap between the government and local administrations may explain the absence of information for some cities. Therefore, although the data are valuable for analyzing and comparing cities, they may not always provide accurate or complete information.

Fountains and wells were significant components of water systems in villages. Figure 2.23 illustrates the distribution of drinking water in 1,310 villages across four cities in the Thrace region of Türkiye. Cities, particularly densely populated ones, were the primary focus of government investment in clean water systems. Therefore, water provision in villages depended largely on the advantages or disadvantages of their geographical location and available water sources. A booklet titled *Drinking and Utility Water in the Village* was prepared by the Ministry of National Education to educate the peasantry on safe drinking water practices. This booklet provided guidance on what actions peasants should take before

consuming water from taps, wells, and other sources. Moreover, it involved in some technic knowledge to indicate to peasants how they should make a basic filter method for unhealthy waters.¹⁵¹

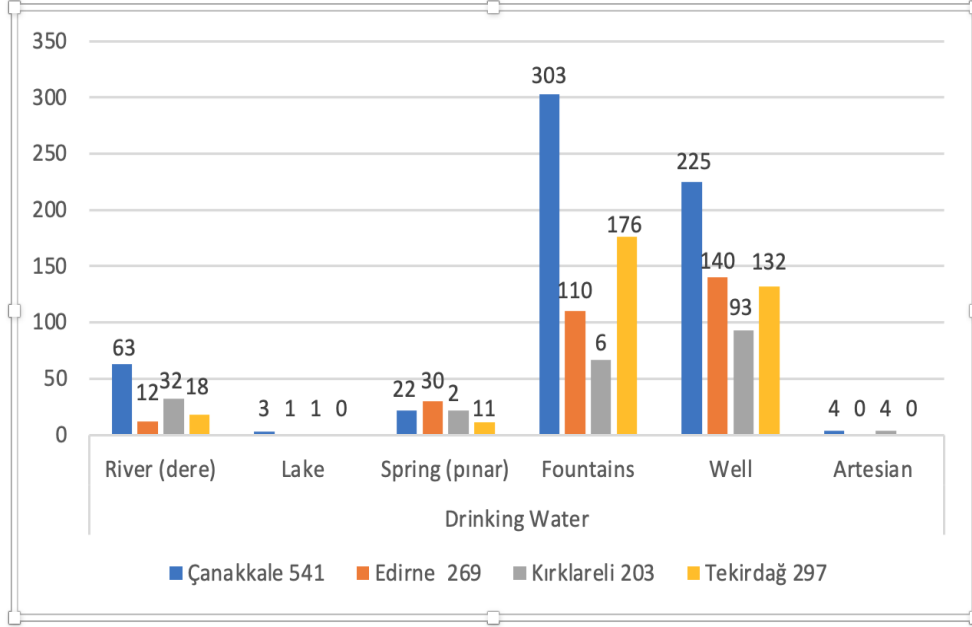


Figure 2.23 The Distribution of Drinking Water in four cities in the Thrace Region the year 1939. SOURCE: Compiled by the author based on Land Survey in Villages in 1939.

Publicly accessible water from wells and taps played a significant role in the emergence and spread of epidemic diseases. Gastrointestinal diseases, including diarrhea, are closely linked to water systems. According to the World Health Organization, diarrheal diseases are frequently identified as the second leading cause of child mortality worldwide.¹⁵² Another epidemic that spread easily through society was typhoid, caused by contaminated water. Malaria was also a significant epidemic, primarily

¹⁵¹ *Köyde İçme ve Kullanma Suyu*, Milli Eğitim Bakanlığı Köy Kitaplığı 16 (İstanbul: Milli Eğitim Basımevi, 1950), 6-37.

¹⁵² Centers for Disease Control and Prevention. "Global Diarrhea Burden." Last reviewed April 10, 2023. Accessed [08.05.2023]. <https://www.cdc.gov/healthywater/global/diarrhea-burden.html>.

associated with swamps. To protect public health, the government undertook efforts to drain swamps in an attempt to eradicate malaria.¹⁵³

The new nation-state placed great importance on public health, making efforts to provide safe water and analyze water quality. During the interwar period, the role of the state in utility regulation expanded. Similar to regulatory trends in other countries, the nation-state assumed responsibility for financing, managing, and owning public utilities. As a result, the duality of the clean water systems inherited from the Ottoman Empire came to an end through the nationalization process, which also closed the competition between foreign water companies and the public water system.

During the early republican period, the government expanded the authority of municipalities regarding clean water investments; however, municipal budgets were very limited for sanitary projects. Although the establishment of the Bank of Municipalities was an important step in both supporting municipalities and promoting infrastructure investments, its real impact was in laying the foundation for the restructuring of sanitary investments in Türkiye between 1950 and 1980. In addition to clean water systems, sewage systems are essential for ensuring healthy living conditions and preventing waterborne diseases. In Chapter 3, the sewage systems in Türkiye up until 1950 will be examined, with an evaluation of the regional distribution of infrastructure during that period.

§ 2.6 Concluding Remarks

This chapter analyzes the development of clean water systems in Türkiye from the late nineteenth century through the Early Republican period, focusing on the roots of inequalities in water infrastructure. The inequalities in clean water systems observed during the Early Republican period were a legacy inherited from the Ottoman Empire. Although infrastructure investments often lead to initial inequalities within societies, these disparities diminished over time, depending on the economic strength

¹⁵³ Yıldırım, *History of Healthcare in Istanbul*, 37-56

and state capacity of each country. In today's developed countries, water infrastructure investments initially constructed unevenly but were eventually extended nationwide by the late 19th and early 20th centuries, significantly reducing inequalities in access to clean water. In contrast, developing countries continue to experience inequalities in access to clean water infrastructure. This chapter analyzes the slow and uneven development of clean water investments in Türkiye between 1880 and 1950, focusing on the restriction of water to household consumption, the duality of clean water systems, and the resulting inequalities both between and within cities.

Modern, clean water systems emerged in European cities in the nineteenth century, driven by industrialization. In industrialized countries, water became essential not only for household needs but also as a key input in production, powering steam engines and supporting mass-production machinery. As urban crowding led to epidemics and high mortality rates, governments prioritized infrastructure investments to combat these issues. Consequently, water infrastructure investments advanced in the industrialized West and then spread to developing regions, such as the Ottoman Empire, through build-operate-transfer agreements involving British, French, and German engineers and companies. In contrast to industrialized countries, water in the Ottoman Empire remained confined to household consumption. The lack of water resources led to the closure of production centers, such as the paper mills in Kağıthane and Bursa. Small, profit-driven workshops were also forced to shut down due to the limited and costly access to water. As a result, water could not be transformed into a factor of production in the country.

One of the key findings of this chapter is the duality within clean water systems. Similar to the duality in sewage systems, the period I refer to as the 'duality of the clean water system' began in the late nineteenth century with the operation of foreign water companies into the traditional water systems of the Ottoman Empire. In fact, in the Ottoman Empire, the water system consisted of sources such as fountains, cisterns, wells, and streams, through which the society met its water needs from this traditional system. Along with the development of trade, loans, and

investments in the nineteenth century, three foreign water companies were established within the present borders of Türkiye: the Dersaadet Water Company and the Uskudar-Kadıköy Water Company in Istanbul, and the Izmir Water Company in Izmir. These foreign water companies made their investments to the upper-income groups of the cities in which they were established, leading to inequalities in access to clean water systems in the society. This inequality emerged not only among cities but also within the same city. Subscribers to foreign water companies had access to relatively healthier, treated, and chlorinated water, while the rest of society depended on untreated water from traditional systems, facing a serious public health risk. I use the term 'duality of the clean water system' to highlight this disparity between traditional water systems and foreign water company-provided water. In addition to this inequality, I argue that the 'duality of water systems' is that these two systems neither complement nor substitute each other.

After the establishment of the Republic of Türkiye, the duality in the water system persisted until the 1930s. During the interwar period, Atatürk and the other founding leaders aimed to expand investments in clean water infrastructure, yet the water companies struggled to meet these growing demands. Between 1930 and 1950, this duality in clean water systems gradually shifted toward a centralized water policy through expropriation. Istanbul and Izmir represented core cities during the Ottoman period, Ankara was added to this group with the declaration of the Republic. Clean water systems began to expand to other cities experiencing urban population growth, such as Bursa, Mersin, Edirne, Hatay, Urfa, Manisa, and Afyon, within the economic capacity of the state. Clean water systems were centralized under municipal control and later expanded by the state in an attempt to cover all regions. However, due to limited state capacity and challenging economic and political conditions, these efforts could not be fully realized in the short term.

Regional inequalities in access to clean water systems have been addressed on two levels: urban and rural. Inequalities in urban water systems across regions are examined based on the number of subscribers to water authorities, while the regional distribution of rural water systems

is analyzed through the number of fountains. A comparison of urban subscriber numbers in 1940 and 1950 shows that the Marmara Region had the highest subscription rate with the Water Administration, attributable to its population density, level of urbanization, and the legacy of foreign water companies. The Aegean Region followed in subscriber numbers, while the Central Anatolia, Mediterranean, and Black Sea regions also demonstrated significant growth in subscriptions over this decade. In contrast, the Eastern Anatolia and Southeastern Anatolia regions had comparatively low subscriber rates.

Another significant issue in the development of urban water systems in the western regions is that, while water networks expanded from central cities to peripheral areas in the Marmara and Aegean regions, these investments remained limited in specific urban centers in other regions. However, this development does not imply easy access to clean water for all residents within the Marmara and Aegean regions. Analyzing penetration rates reveals that, despite having the highest investment shares, these regions still require clean water infrastructure investments.

Between 1939 and 1949, the regional distribution of rural water systems by the number of fountains was more balanced across regions than that of urban water systems. Although the Marmara and Aegean regions had a higher share, an increase in the share of the Black Sea, Central Anatolia, Eastern Anatolia, and Mediterranean regions was observed during this period. No data is available for the Southeastern Anatolia Region in 1950.

This chapter provides, for the first time from a macro perspective, evidence of the unequal distribution of clean water systems—through foreign water companies, aqueducts, and fountains—across Türkiye's seven regions up to 1950. Before analyzing changes in clean water systems from 1950 to 1980 in Chapter 4, it was essential to outline the development of these systems from the late nineteenth to the mid-twentieth century. This background establishes the historical context necessary for understanding the foundational policies influencing later decisions. In the following chapter, I will focus on the causes of unequal distribution in sewage systems in Türkiye from the late nineteenth century to 1950.

The Transition of Sewage Systems in Türkiye: From Duality to Nationalization

This chapter examines the history of sewage systems in Türkiye, tracing infrastructure developments from the late Ottoman Empire to the Early Republican Era. It remains unclear what kind of sewage systems the new Turkish Republic inherited from the Ottoman Empire and the state of these systems until 1950. In this context, this study is the first to explore the development and regional distribution of sewage systems across the territory of Türkiye from the late nineteenth century to 1950. Additionally, this chapter provides historical context for the regional distribution of sewage infrastructure investments from 1950 to 1980, a topic that will be examined in detail in Chapter 5. Since the construction of modern sewerage systems started with foreign water companies, the time span of this section is set from the end of the nineteenth century to 1950.

The chapter presents two main arguments. First, I argue that the Republic inherited an uneven and inadequate sewage infrastructure from the Ottoman Empire, which largely remained in use until 1950. During

the Early Republican Era, the new government faced significant challenges, including the War of Independence, population movements, two World Wars, and the Great Depression. Atatürk and other founding leaders prioritized railroad construction to address national security and transportation needs along the country's borders, aligning with broader economic and political goals. For these reasons, Türkiye's sewage infrastructure remained underdeveloped until 1950, with most systems in use inherited from the Ottoman Empire.

Second, although sewage systems were a basic infrastructure, access to them remained uneven across regions, cities, and even within cities until 1950. The origins of these disparities in sewage infrastructure during the Early Republican Era can be traced to the late nineteenth century when the first steps toward modern sewage systems in Türkiye began with the establishment of foreign water companies. In the nineteenth century, expanding economic relations between Western Europe and the Ottoman Empire extended beyond trade to include loans and foreign direct investments. Foreign financiers invested in infrastructure to support international trade. While most of these investments focused on railroads, a small portion was directed toward water and sewage systems. With increasing urbanization, sewage systems were constructed by foreign water companies, particularly in high-income regions of two cities, Istanbul and Izmir, at the end of the nineteenth century. The rest of the population relied on septic tanks and open sewers to meet their sewage needs. Similar to the disparities in clean water systems discussed in Chapter 2, I refer to this inequality in access to modern sewage systems as the "duality of sewerage systems." This term highlights the inequality in a critical public health infrastructure investment, both between cities and within different areas of the same city.

In this chapter, the development of sewer systems is examined across two periods: the duality period and the reassessment period. The year 1930 marked a turning point in recognizing the importance and necessity of sewage infrastructure investments—similar to clean water systems—in relation to public health and institutional responsibilities.

Thus, it was a critical step in overcoming the duality of the sewage systems. The second period, covering the years between 1930 and 1950, is discussed as a reassessment period during which the new nation-state initiated infrastructure investments at the municipal level. Although sewage systems are essential investments for controlling epidemics and protecting public health, their development and expansion to all regions and cities in Türkiye remained limited until 1950 due to constrained financial and state capacities. On the other hand, the development of sewage infrastructure was directly associated with the development of clean water infrastructure investments. Moreover, sewage systems, by their design, require more technical expertise and skilled labor compared to clean water systems. Furthermore, this chapter explores the reasons for and the impacts of the delay in sewage system development on public health in Türkiye by 1950.

The organization of this chapter is as follows: Section (3.1) provides a brief history of sewage systems, including the emergence of modern sewage infrastructure in developed European cities during the nineteenth century, driven by industrialization. This section highlights how sewage systems in developed countries paralleled investments in water infrastructure while developing countries lagged behind, progressing more slowly in sewage system development. Section (3.2) then examines the evolution of sewage systems in Türkiye, tracing the transition from the Ottoman Empire to the early years of the Republic. Section (3.3) focuses on urban sewage infrastructure investments in Türkiye until 1950, analyzing regional disparities within urban areas. Section (3.4) explores the reasons for the inadequacy of sewage systems in Türkiye up until 1950, including factors such as limited urbanization, economic constraints, and technical challenges. The chapter concludes with Section (3.5), which provides the main findings discussed in the preceding sections.

§ 3.1 Literature Review

The history of sewage systems had its origins in the early ages. Although the history of sewage systems went a long way back, and some civilizations, like the Hellenes and Romans, contributed to their development, sewer systems changed very little until the mid-nineteenth century.¹ The nineteenth century witnessed the evolution of modern sewage systems in Western European countries. The industrialization process of these countries contributed significantly to the development of modern sewage systems. After the mid-nineteenth century, the great majority of houses and buildings in these industrialized countries had sewer connections. In contrast to industrialized countries, modern sewage investments through foreign capital and companies gradually penetrated peripheral and semi-peripheral countries (today's developing countries) at the end of the nineteenth and early twentieth centuries. However, these investments in sewage infrastructure developed unevenly both between countries and even within the same country. In other words, these sewer investments remained limited to port cities, and even then, only to high-income regions within these cities. Thus, disparities in sewer infrastructures among countries began in the late nineteenth century and increased further during the early twentieth century. In addition to the disparities among countries, there was also a significant difference in sewage investments within countries. In Türkiye, only a limited group of people benefited from these modern sewage systems in port cities.

The importance of sewage systems became apparent over time as a result of industrialization and urbanization. The urbanization rate in industrialized countries like Britain, Germany, and France has increased significantly since the mid-nineteenth century. Crowded cities and inadequate infrastructure have created environments conducive to the proliferation of epidemic diseases. Waterborne illnesses were correlated with

¹ More information about the historical development of sewage and drainage systems worldwide see; De Foe, G., et al. "The Historical Development of Sewers Worldwide." *Sustainability* 6 (2014): 3937-3939.

water quality and sewage systems. Therefore, governments in developed countries placed special emphasis on sanitary infrastructural investments to prevent the spread of waterborne epidemic illnesses in large cities. Developed countries not only built sewage infrastructure but also improved their technical knowledge of sewer systems after the mid-nineteenth century.

Nowadays, the scholarly focus on sewage systems constitutes an emerging body of literature that addresses issues related to public utilities and public health. Many economic historians emphasize the role of effective sewage systems on public health indicators such as life expectancy, infant mortality, and the spread of waterborne epidemic illnesses. The relationship between sanitary investments, inequality, and public health has paved the way for researchers to reconsider economic history. Therefore, in this section, I focus on the reasons for the development of sewer systems in developed countries and why they lagged behind in developing countries.

3.1.1 *Factors Behind the Development of Sewage Systems in Industrialized Countries*

The sewer systems changed very little over the long course of history, although some civilizations contributed to their development.² The nineteenth century, however, was a turning point for modern sewage systems, which advanced significantly in industrialized countries. In particular, industrialization, urbanization, population growth, and epidemics provided the impetus for the development of sewer systems. The modern concept of public health emerged in developed European cities during the nineteenth century under the influence of industrialization.

Industrialization led to significant urbanization, with large numbers of people moving into cities, which created overcrowded and unsanitary living conditions. Specially, workers lived under poor conditions in the suburbs, which led to increased disease and mortality. Indeed, in the

² De Foe et al., "Historical Development of Sewers," 3937-3939.

nineteenth century, urban life was characterized by unsanitary and hazardous conditions for city dwellers, attributed to overcrowding, inadequate sewage systems, restricted access to clean water, and the proliferation of illness, a situation known as the "urban mortality penalty."³

Table 3.1 Urbanization rate in various European countries at two different time points during the nineteenth century.

Countries	1850 (%)	1890 (%)
England	40.8	61.9
Belgium	20.5	34.5
Germany	10.8	28.2
France	14.5	25.9
Spain	17.3	26.8
Italy	20.3	21.2
The Netherlands	29.5	33.4
Portugal	13.2	12.7
Scandinavia	5.8	13.2
Switzerland	7.7	16
Total Europe	16.7	29

SOURCE Jan de Vries, *European Urbanisation 1500-1800* (London, 1984), 45-46.

Without public health, neither the expansion of trade nor the growth of military power would have been possible. Urbanization and increasing population density exposed the deficiencies in infrastructural investment, prompting industrialized nations to recognize the need for urban planning and infrastructural improvements to safeguard public health. Table 3.1 illustrates the urbanization rates in ten European countries at two different points in the nineteenth century. According to Table 3.1, the urbanization rate in Europe increased between 1850 and 1890, leading to the implementation of more effective public utilities in cities. As rising urbanization rates underscored the need for public utilities such as clean water, sewage systems, and electricity, governments prioritized infra-

³ Costa, Dora L., *Health and the Economy in the United States from 1750 to the Present*, *Journal of Economic Literature*, 53(3), 2015, pp. 540-45.

structural investments. Similar to the urbanization rates, the development of sewage systems began in Britain, which had the highest urbanization rate among the countries. Other European nations followed Britain's lead in developing sewage systems. Over time, industrialized governments saw returns on their investments in sanitary infrastructure.

In the nineteenth century, England experienced rapid urbanization, which placed increasing strain on urban infrastructure. The rapid growth of urban populations, driven by the Industrial Revolution, further exacerbated this pressure, posing significant threats to public health. In response, an extensive spending program was implemented to meet the needs of the rapidly changing society. From 1790 to 1890, local governments in England significantly increased public spending, funded through direct and indirect taxation, rising from 17% to 41% of total government expenditure. This surge in spending was primarily due to the construction of health-related infrastructure, such as sewage systems and filtered water supplies.⁴ Local governments aimed to increase spending on health and sanitation investments as an effective public utility that benefited all urban classes. Furthermore, these public utility investments, such as sewage and clean water systems, functioned as a redistribution mechanism and were supported by elites.⁵

In the nineteenth century, England underwent extensive political transformation, marked by significant changes in taxation and redistribution policies.⁶ These reforms, which involved the expansion of sewage and clean water systems, were supported and promoted by the elites, resulting in substantial progress in protecting public health. However, the

⁴ More details in Figure 3, see: Alessandro Lizzeri and Nicola Persico, "Why Did the Elites Extend the Suffrage? Democracy and the Scope of Government, with an Application to Britain's 'Age of Reform,'" *The Quarterly Journal of Economics* 119, no. 2 (2004): 712.

⁵ Daron Acemoglu and James A. Robinson, "Why Did the West Extend the Franchise? Democracy, Inequality, and Growth in Historical Perspective," *The Quarterly Journal of Economics* 115, no. 4 (2000): 1167.

⁶ Robert Millward and Sally Sheard, "The Urban Fiscal Problem, 1870-1914: Government Expenditure and Finance in England and Wales," *Economic History Review* (1995): 501-535.

disparity in sanitary investments among countries increased significantly after the Industrial Revolution. Today's developed countries focused on constructing sewage systems during the mid-nineteenth century to reduce urban mortality and combat waterborne epidemic diseases. Britain was a leader in sewage investments and shared its technological expertise with other European nations. Industrialized countries possessed the economic and technological capacity to build modern sewage systems. These investments had a positive impact on public health in developed nations between the late nineteenth and early twentieth centuries. Chapman's study examines the relationship between borrowing costs and sanitary investments from 1887 to 1903, showing that sewer investments contributed to improved public health by reducing waterborne diseases and infant mortality.⁷ For another example, typhoid mortality rates in Germany were 1.2 times higher than in England and Wales in 1877, at the time when Germany initiated sanitary reforms. By 1892, the typhoid mortality rate in Germany had significantly decreased, surpassing the rates in England and Wales. German sanitary reforms led to substantial improvements in sewage systems, resulting in 90 percent of urban households being connected to a sewer by 1912.⁸

Sanitary investments in Germany accelerated from the late nineteenth to the early twentieth centuries as a consequence of industrialization. The establishment of industries such as textiles, iron, and steel triggered several problems, including environmental pollution. It also generated a demand for infrastructure investments. Compared to England, Germany's later industrialization explains the delayed introduction of new sanitary measures. However, the two countries demonstrated a

⁷ Jonathan Chapman, *Interest Rates, Sanitary Infrastructure, and Mortality Decline in Nineteenth-Century England and Wales*, EHES Working Paper, no. 218 (October 2021), 2-5.

⁸ Costa, "Health and the Economy," 550-55.

key structural difference: in Germany, municipal authorities became pivotal agents in addressing public health issues, whereas in England, state control has historically been a dominant feature of public health policy.⁹

In addition to England and Germany, Paris also witnessed significant sanitary transformations. Kesztenbaum and Rosenthal provided detailed data on both mortality and access to water infrastructure across Paris's 80 neighborhoods, focusing on mortality, rents, and sewer systems from 1880 to 1914. According to their study, none of Paris's buildings were directly connected to the sewer system in 1880. However, by 1913, over half of the buildings in Paris had direct links to the sewer network. Moreover, sewer connection rates were higher in wealthier Parisian districts than in poorer ones. Consequently, they showed that neighborhood characteristics, declining mortality rates, sewer access, and variations in average rents in Paris had a positive impact on life expectancy.¹⁰

3.1.2 *The Sewage Systems in Developing Countries*

In contrast to industrialized countries, the water and sewage systems of peripheral and semi-peripheral countries have been shaped as a component of international trade via foreign direct investments and engineers from industrialized countries. In this section, I focus on the reasons behind the delayed development of sewage systems in the periphery and semi-peripheral countries, in other words, today's developing countries. A significant difference exists between developed and developing countries regarding sewage infrastructure. It is clear that countries must possess improved water systems in order to have effective sewer systems.

The industrialization process led to the migration of people from rural to urban areas, resulting in a significant increase in the urbanization rate in these countries, as shown in Table 3.1. These social and economic

⁹ E. P. Hennock, "The Urban Sanitary Movement in England and Germany 1838-1914: A Comparison," *Continuity and Change* 15, no. 2 (2000): 269-296.

¹⁰ Lionel Kesztenbaum and Jean-Laurent Rosenthal, "Sewers' Diffusion and Decline of Mortality: The Case of Paris 1880-1914," *Journal of Urban Economics* 98 (2017): 174-186.

changes created modern cities that required municipal services and public utilities. As a result, water and sewage systems became indispensable infrastructural needs for city dwellers. All these changes pushed governments to make infrastructural investments. Particularly when sewage flowed openly in the streets, it could mix with clean water sources, jeopardizing public health as urbanization increased. In other words, sewage systems represented more than just an investment for society—they were also crucial for the government. Therefore, governments used sewage systems as an effective method to protect public health. Unlike in developed countries, both low state capacity and population density failed to create pressure for infrastructural investments in developing countries, and thus people continued to rely on old traditional sewage methods.

The need for sanitary investments led to changes in the administrative approach to public utilities in industrialized countries. As I mentioned earlier, the construction and development of water and sewage systems began in England and then spread to other Western European countries. Local governments in England used direct and indirect taxation to extend investments and cover the entire population. These redistribution mechanisms were also supported by elites and industrialists.¹¹ In England, investments in water and sewage systems were funded by the state and local governments using both direct and indirect taxation, while Germany tended to empower municipal authorities to make sanitary investments.¹²

These industrialized countries had the financial capacity to make large-scale investments. Moreover, they possessed the technical expertise required for the construction of sewage systems. The construction of sewage systems relied on more specialized knowledge than clean water

¹¹ Robert Millward and Sally Sheard, "The Urban Fiscal Problem, 1870-1914: Government Expenditure and Finance in England and Wales," *Economic History Review* (1995): 501-535.

¹² Hennock, "Urban Sanitary Movement," 269-96.

systems and also required cooperation among various experts. In contrast to developed countries, governments in developing countries needed support related to financial resources and technical expertise for the development of sewage systems.

In developing countries, there are three common types of household sewage systems. The first is private toilets with septic tanks, where each house has its own cesspool. The second is also private toilets, but they are connected to public sewer systems. These private toilets are not common in rural areas due to the high costs for governments. The third type is public toilets.¹³ Compared to developed countries, the majority of the population in developing countries relied on these three sewer methods until the mid-twentieth century. In the case of Türkiye, only 43 percent of city residents in Istanbul in 1968 had access to sewage systems. Although Istanbul was a priority for sewage investments, the rates in other provinces were even lower.¹⁴

After the mid-nineteenth century, industrialized countries prioritized investments in clean water infrastructure. Providing clean water systems had a positive impact on the development of sewer systems. However, the progress of these infrastructure investments in peripheral and semi-peripheral countries lagged behind that of core countries. My main argument is that in industrialized countries, water was not only for household consumption but also a factor of production. Water served as both an input for steam engines and a component of mass production machinery during the nineteenth century, driven by industrialization in Western Europe. Therefore, the development of water systems contributed to the formation and further expansion of sewage systems in industrialized countries. In contrast to industrialized countries, water in developing countries remained limited to household consumption and did not stimulate the development of sewer systems until the mid-twentieth century.

Economic historians have observed similarities in the formation and regulation processes of public utilities, despite these processes involving

¹³ Grace Ukoli-Onodipe, "Designing Optimal Water Supply Systems for Developing Countries" (PhD diss., Ohio State University, 2003), 90-94.

¹⁴ *Tarih Boyunca İstanbul Suları*, 139-150.

diverse investments such as electrification, water, sewage, energy, and telecommunications, shaped by various economic, geopolitical, sectoral, and political factors. Clifton, Lanthier, and Schröter's studies argue that public regulation can generally be categorized into three waves, although there may be some alternatives or exceptions.¹⁵

These were the formation process, nationalization, and privatization waves. Based on this study, the first wave can be defined as a period characterized by significant burdens related to construction, financial, and technical challenges in regulating public utilities. This was initially a necessity, leading to high investment demands that required private alliances among entrepreneurs, families, banks, and financiers. Particularly in the first wave of public utilities, governments lacked the capacity to effectively adjudicate and regulate prices and service quality.

The interwar period saw the emergence of new nation-states that sought a more active role in the financing, management, and ownership of infrastructure. In contrast, international companies responded to the Great Depression by reducing their involvement in public utilities. Despite limited fiscal capacity, these new nation-states aimed to increase sanitary investments. Consequently, this period was characterized by a combination of greater state control and decreased international investment in infrastructure in developing countries. Third-wave utilities refer to the transition from state control to privatization.¹⁶ However, in Türkiye, clean water and sewerage systems have not transitioned from state control to privatization. As a result, there has not been a third wave of reform in clean water and sewage systems, unlike the trends observed in other countries.

While examining the history of sewer systems, research has been conducted on the public health impact of sewage systems and their expansion in developed countries, as mentioned in Section 3.1.1. In contrast to

¹⁵ Millward, *Public and Private Enterprise in Europe*, 160.

¹⁶ Clifton, Lanthier, and Schröter, "Regulating and Deregulating the Public Utilities," 659-662.

developed countries, research on the history of sewage systems in developing countries has been quite limited. Although sewage systems were able to spread throughout cities in industrialized countries over time, the development of sewerage systems in developing countries, such as Türkiye, remained largely confined to high-income areas in certain cities for a long time. The next section will discuss the history of sewer systems in Türkiye.

§ 3.2 Sewage Systems in Türkiye: From Empire to Nation-State

In the case of Türkiye, the sewage systems of the new nation-state were inherited from the Ottoman Empire. This section examines what kind of sewage systems the new Turkish Republic inherited from the Ottoman Empire and addresses the reasons behind the delayed development of sewer systems in Türkiye. My argument is that the sewage systems in Türkiye in 1950 consisted largely of the heritage passed from the Ottoman Empire to the new republican era. The primary reasons for this situation were financial constraints and limited state capacity, both influenced by the political and economic conditions of the period.

In this section, the development of sewage systems from the late Ottoman Empire to the Republic, covering the period between 1880 and 1950, is discussed in two distinct phases. The first phase, which I refer to as the "duality of the sewage systems," is defined as an era of limited access to sewage services, spanning from the late Ottoman Empire to the early republican period until 1930, similarly clean water systems in Chapter 2. This duality is characterized by the initial efforts of modern municipalities, despite their limited capacities. Similar to the first wave of public regulations, the Ottoman Empire granted concessions to foreign water companies to carry out water and sewage investments at the end of the nineteenth century. However, these foreign companies' sewage investments remained confined to high-income regions in only two cities.

The motivation of the new nation-state regarding modern sewage systems was driven not only by the construction and expansion of infrastructure but also by the goal of protecting public health. The year 1930

marked a significant period in redefining the responsibilities and duties related to sewage systems, with the enactment of two key laws: the Municipalities Law and the Public Health Law in Türkiye. The new government in Ankara sought to support municipalities by establishing institutions to promote infrastructural development, aiming to alleviate financial difficulties and enhance the state's limited capacity. Although these efforts did not fully address the sewage system deficiencies or the inequality in access, they did lead to the creation of institutions necessary for sanitary investments for the first time. Thus, the second period, between 1930 and 1950, referred to as the "reassessment period," can be seen as a preparatory stage for sewage investments that would take place between 1950 and 1980.

Similar to the second global wave of utility regulation, the new nation-state in Türkiye nationalized foreign water companies, while foreign capital also sought to reduce its international influence due to the Great Depression. In the first half of the twentieth century, several significant events occurred, including wars, reforms aligned with the new republic, inflation spikes, agricultural price declines, the Great Depression, and the onset of World War II. Under these conditions, the government had no opportunity to prioritize the development of sewage systems. Although the importance of sanitary infrastructure was recognized by the government, progress was limited to preliminary preparations for institutional changes in infrastructure investment related to responsibility and financial capacity before 1950. In the next section (3.2.1), I will examine the type of sewage system inherited from the Ottoman Empire by the Republic of Türkiye, with a focus on how the new nation-state laid the groundwork for sewage investments between 1950 and 1980.

3.2.1 *The Sewage Systems Inherited from the Ottoman Empire*

Starting in the mid-nineteenth century and continuing until the First World War, Türkiye's economy was shaped by reform efforts and increasing integration with the world economy. European entrepreneurs, benefiting from concessions, began establishing enterprises within the Ottoman Empire. Although these investments spanned various sectors, the

majority of foreign direct investment (FDI) in the Ottoman Empire was concentrated in railway companies. The focus on railway construction persisted after the establishment of the republic and continued until the 1950s. In addition to railway investments, FDI in banking, trade companies, insurance services, and port infrastructure supported the development of international trade. Pamuk observes that only 10 percent of investments went into productive sectors such as agriculture, mining, and industry. Most FDI was directed toward railways, banks, ports, and a small portion of municipal utilities, such as water companies. Sewer investments, however, accounted for only a very small share of these foreign direct investments, primarily through foreign water companies.¹⁷ If foreign water companies took only a small share of all investments, what type of sewerage infrastructure was transferred from the Ottoman Empire to the Republic of Türkiye?

The nation-state inherited four main types of sewage systems from the Ottoman Empire: cesspools, sewers, sewage lines installed by foreign water companies, and modern sewer plans initiated by municipalities or the state. Of these, cesspools constituted the majority of the infrastructure. Commonly referred to as *foseptikler*, cesspools were widely used throughout the Ottoman Empire, in both rural and urban areas. They were maintained by periodic cleaning carried out by cesspool evacuators or by replacing filled cesspools with new ones. Waste from these systems was typically transported to remote areas, away from human settlements. Sewers, *lağım*, which primarily consisted of open channels along streets, were another prevalent type of sewage system. In the case of Istanbul, black channels, *kara kanallar*, were constructed using mortar and dry stone walls. These channels had existed for a long time without control chimneys, making their routes and directions difficult to trace. Particularly in Istanbul, it remained unclear which sections of these sewers were constructed during the Byzantine period and which were built during the Ottoman era.¹⁸

¹⁷ Pamuk, *Uneven Centuries*, 117.

¹⁸ *İller Bankası*, 131.

These two types of sewers, though commonly used, were unsuitable for maintaining public health. The open sewage lines created unsanitary conditions, and the foul odors they produced disturbed the population.¹⁹ Numerous petitions in the Ottoman archives requested the cleaning of cesspools and open sewer lines. The government responded to public demands by addressing the cleaning and repair of sewer lines.²⁰ Additionally, open sewage flowing through the streets posed a serious risk to clean water sources, causing the spread of waterborne diseases such as cholera.²¹ For instance, the Taksim Waters, *Taksim Suları*, were temporarily shut down because sewage passing in front of the *Mekteb-i Funun-ı Harbiye* had contaminated the water.²² Furthermore, documents indicate that the government was urged to take precautions as sewage flowing in the streets and the accumulation of garbage had caused outbreaks of typhoid and deaths in certain neighborhoods of Istanbul, known as *Dersaadet* and *Bilad-ı Selase*.²³ The inhabitant of cities expressed its dissatisfaction with the stench of the sewers and open sewage lines through petitions, demanding that the government clean the cesspools and close the open sewage line.²⁴

The third form of sewage systems in the Ottoman Empire consisted of sewage lines constructed by foreign water companies with European capital. These companies, operating in Istanbul and Izmir, were responsible for the construction and maintenance of sewage infrastructure. The duality of the sewage systems, similar to that of the clean water systems, emerged as foreign water companies took on this responsibility. Similar

¹⁹ BOA, DH.MKT., 155/31, 12 R 1311 (23.10.1893). In addition, BOA, DH.MKT., 1735/32, 4 Za 1307 (22.06.1890).

²⁰ BOA, DH.MKT.1988/ 115, 24 M 1310 (18.09.1892).

²¹ BOA, DH.MKT. 149/78, 24 L 1329 (18.10.1911).

²² BOA, MKT.MHM, 594/30, 03 Za 1331 (9 May 1894).

²³ BOA, MKT.MHM, 597/13, 09 Za, 1331 (10.10.1913).

²⁴ The society demanded cleaning cesspools for Balat. BOA, DH.MKT., 1735/32, 4 Za 1307 (22.06.1890). For Üsküdar; BOA, DH.MKT. 155/31, 12 R 1311 (23.10.1893).

to clean water systems, modern sewage systems spread from industrialized countries to semi-periphery and periphery countries starting in the mid-nineteenth century. As previously mentioned, most infrastructural investments in the Ottoman Empire were introduced through foreign direct investments financed by European capital. However, it is noteworthy that no single industrialized country managed to gain complete control over all public utilities in the empire. Therefore, there was constant competition among foreign companies seeking to invest in the empire. This rivalry highlights the Ottoman Empire's position within the semi-periphery category of world-systems theory.²⁵

For instance, archives contain project plans from 1910 by the British Westinghouse Electricity and Manufacturing Company for electricity, telephone, and sewage investments in Istanbul.²⁶ Nonetheless, responsibility for sewage investments in Istanbul lay with the Istanbul (*Dersaadet*) Water Company and the Uskudar-Kadıköy Water Company, both associated with the French capital.²⁷

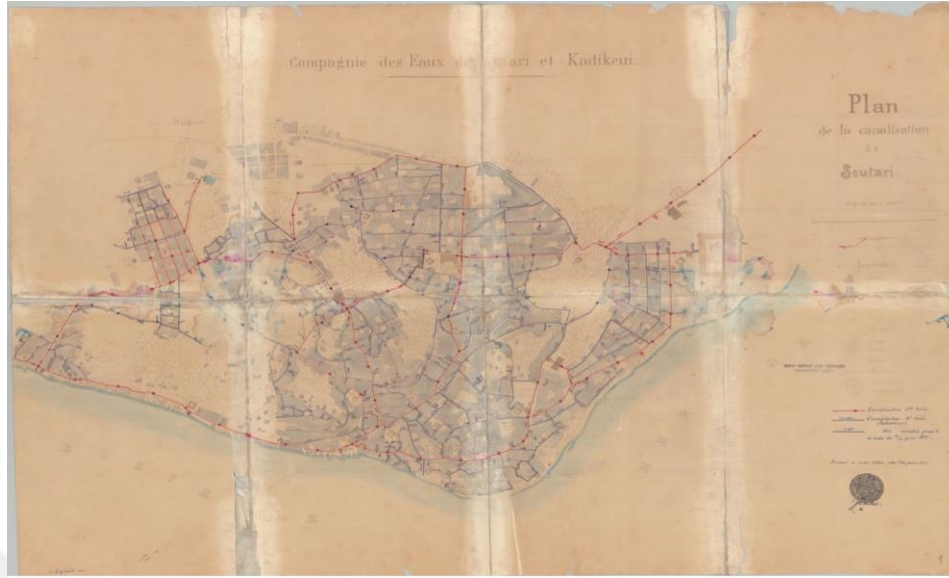
For the European side of Istanbul, the Bosphorus sewage line, extending 2.50 kilometers between Ortaköy and Dolmabahçe, was constructed by the Dersaadet Water Company in 1885. Additionally, following a new concession granted to the company, a limited sewage system was established on the Istanbul peninsula in 1888.²⁸ Unfortunately, there is no available information on whether these sewage lines consisted of closed channels or not.

²⁵ For more information, Çağlar Keyder, *State and Class in Turkey: A Study in Capitalist Development* (London, 1987), 25-48. Şevket Pamuk, *Osmanlı Ekonomisinde Bağımlılık ve Büyüme, 1820-1913* (İstanbul: Tarih Vakfı Yurt Yayınları, 2005).

²⁶ BCA Nafia Vekaleti, 230-0-0-0-0/23-8-1, 00.00.1910, 24.

²⁷ Edgar Pech, *Manuel Des Sociétés Anonymes* (Paris, 1906), 174-86; Kazgan ve Önal, *İstanbul'da Suyun Tarihi*, 41-52.

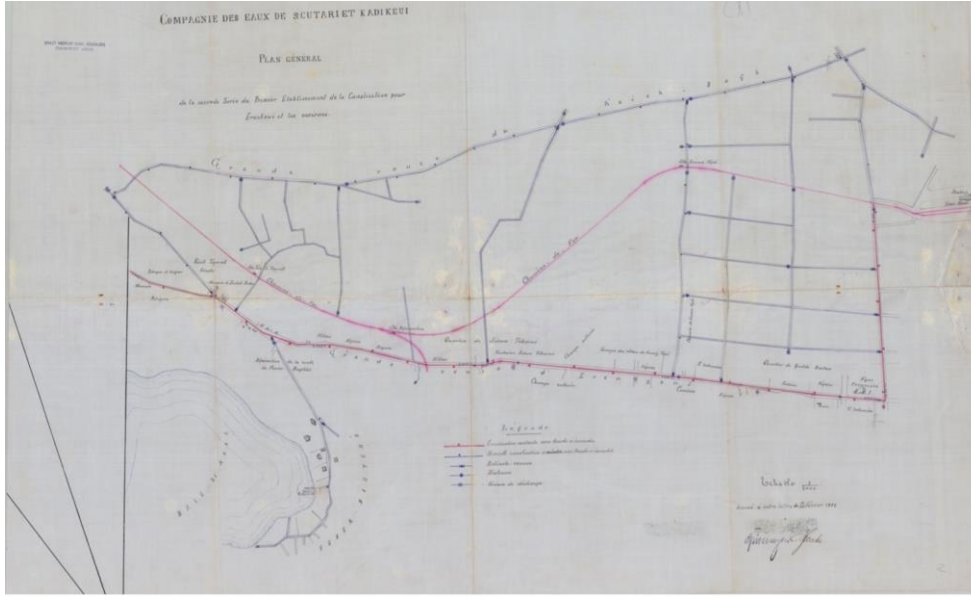
²⁸ Çelik, "Impact of Westernization on Istanbul's Urban Form," 98-100.



Map 3.1 The Sewage Plan in Uskudar by the Uskudar-Kadıköy Water Company, *Compagnie des Eaux de Scutari-Kadikeui*. SOURCE: BCA Nafia Vekaleti, 230-0-0-0, 115/16/5, (June 20, 1895).

The company, located on the Asian side of Istanbul, also developed sewage projects for this region. Map 3.1 illustrates a sewage plan prepared by the Uskudar-Kadıköy Water Company for Uskudar and its surrounding areas. The red lines on the map represent the first stage of the sewer plan, while the blue lines indicate the second stage for Uskudar. Additionally, Map 3.2 depicts the second phase of the initial sewerage system plan for Erenköy and its surroundings. These sewage plans were developed by the Uskudar-Kadıköy Water Company, but it remains unclear whether they were ever completed.²⁹

²⁹ BCA, Nafia Vekaleti, 230-0-0-0-0/ 115-16-5, 20.06.1895.



Map 3.2 The Sewage Plan in Erenkeui by the Uskudar-Kadıköy Water Company, *Compagnie des Eaux de Scutari-Kadikeui*. SOURCE: BCA Nafia Vekaleti,, 230-0-0-0, 115/16/5, (June 20, 1895).

Two foreign water companies were operating in Istanbul, continuing their activities on both continents of the city. These companies provided sewage investments only to limited parts of Istanbul, primarily serving high-income groups. In other words, middle- and low-income groups in Istanbul were excluded from the benefits of modern sewage systems provided by these companies. Similarly, the company in Izmir focused its water and sewage investments solely on high-income neighborhoods.³⁰ Thus, the water and sewage infrastructure investments by the foreign water companies were concentrated primarily in the high-income areas of these two cities in Türkiye, with investments in lower-income areas almost entirely neglected.

The foreign water companies may have restricted their sewer investments for three main reasons. First, the development of modern sewage systems required the construction of effective clean water systems,

³⁰ Serçe, *Tanzimat'tan Cumhuriyet'e İzmir'de Belediye*, 127-129.

which may have led foreign water companies to prioritize clean water infrastructure. Second, the construction of sewage systems represented a high-cost investment for these companies. The motivation of foreign water companies to invest in water and sewage systems in periphery countries was driven by profit-making. Additionally, the investment cost of sewer systems was difficult to price. Unlike clean water systems, the cost burden of sewer systems could not be easily shared with subscribers. As a result, foreign water companies avoided expanding sewer investments for this reason. Water companies operating in Istanbul and Izmir prioritized providing clean water to their subscribers, leaving the sewage systems underdeveloped. Consequently, high-income residents benefited from the services provided by foreign water companies, while the rest of society relied on traditional methods. In other words, there was inequality not only between cities but also within these two major cities in Türkiye, reflecting the duality of the sewage systems.

The unwillingness of foreign water companies to invest in sewage systems revealed that the responsibility for sewer investments should not be entrusted solely to these companies. The absence of adequate sewage systems was particularly evident in two cities with relatively higher urbanization rates. Keyder characterizes port cities as agents of change, emerging as crucial dimensions of Western expansion and accommodating rapidly modernizing urban populations. Additionally, port cities played a key role in the process of modernization. The activities of foreign water companies in port cities and Istanbul provided a connection to the global economy, operating within a liberal, open market framework. According to Keyder, the populations of port cities became agents of modernization from below during the first wave of globalization. People in these economically and politically privileged cities began demanding a new lifestyle, as well as the urban technologies and municipal utilities that came with it.³¹ The government recognized the need to

³¹ Çağlar Keyder, "Port Cities in the Bella-Epoque," in *Cities of the Mediterranean: From Ottomans to the Present Day*, ed. Meltem Toksöz and Biray Kolluoğlu (London: I.B. Tauris, 2010), 14-16.

construct modern sewage systems in Istanbul and Izmir, leading them to seek the assistance of foreign engineers for technical support in these projects. Thus, modern sewage systems were initially intended to be constructed in the two core cities of the empire.

Municipalities, along with the vision of their mayors, played a crucial role in the financing and construction of sewage systems. The fourth type of sewage system consisted of modern sewer plans developed by municipalities or the state. Although these plans were often unrealized due to wars, economic challenges, and other factors, they represented a significant step in urban policy. Starting in the early twentieth century, many foreign engineers were invited to Türkiye to prepare reports and provide recommendations on addressing key urban issues, such as water, sewage, and transportation.



Photograph 3.1 Dr. Emin, who was the mayor of Istanbul, inaugurated the installation of Istanbul's new sewage and drainage system on June 29. SOURCE: *Levant Trade Review*, vol 13, no 7, (July 1925).

The first initiative for a modern sewage system began during World War I with a French company in Istanbul. This system was planned for

limited areas, including Fatih, Laleli, and Beyazıt. However, these plans could not be implemented due to the outbreak of World War I.³²

The second project was prepared by a German engineer, known as the Wild Project, between 1925 and 1937 for Istanbul. Photograph 3.1 shows the opening ceremony of the city's new sewage and drainage systems. According to news in the *Levant Trade Review*, this initiative covered only a limited area of Istanbul. However, the report mentioned that similar sewage systems for Uskudar and Pera would be considered as soon as circumstances permitted. The project was planned to be carried out by Becker Fiebig Bauunion Aktiengesellschaft of Berlin over a period of five to eight years, with a projected cost of between ten and fifteen million Turkish liras, financed through annual payments from the municipal budget. The German engineer designed a system that not only laid pipes to carry off waste but also addressed the issue of excessive rainfall in frequently flooded areas. Turkish workers and personnel were involved in the construction process. During the Republic period, Dr. Emin Erkul, the first mayor of Istanbul, prioritized sanitary investments and made efforts to expand sewage systems in certain parts of the city during his time in office.³³ Thus, under his leadership, investments in water and sewage systems became a key focus to protect public health and prevent epidemic diseases.

In addition to Istanbul, the inhabitants of Izmir also voiced complaints about the absence of adequate sewage systems. The existing systems had been destroyed in the fire of 1922. After every heavy rainfall, sewage waste mixed with rainwater, leading to flooding in homes and workplaces. In Izmir, effective modern sewage systems became a necessary infrastructure. In 1926, only 326 meters of sewer lines were constructed, whereas the city needed a modern system that extended throughout its entire area. Despite the municipality recognizing the need for a proper sewer system, their efforts remained insufficient due to a lack of financial and technical resources. In 1926, İzmir's mayor, Mr.

³² Esmer, *İSKİ*, 139.

³³ *Levant Trade Review* 13, no. 7 (July 1925): 295.

Hüseyin Aziz (Akyürek), commissioned the “Hoizler” company to design a sewage plan, but the plan could not be realized due to high costs and financial difficulties.³⁴

Izmir and Istanbul were core cities in the development of sewage systems during both the Ottoman Empire and the early Republic. After the establishment of the republic, Ankara became the capital and was added to these core cities. The population of Ankara increased significantly after it became the capital. Negotiations regarding Ankara’s sewage infrastructure involved discussions with the New York-based Ulen Company for the modernization of the city. However, the planned projects could not be realized. Nevertheless, all these plans emphasized the need for sewerage and provided for the construction of a regional canal, if not for the entire city. For example, in Ankara, the government constructed a sewage channel of 263 meters in 1924, 2,504 meters in 1926, and 642 meters in 1927.³⁵ The construction of sewage systems in provinces outside of Ankara, Istanbul, and Izmir during this period relied on the vision and leadership of the mayors of those cities. For example, under Mayor Turhan Cemil’s tenure from 1926 to 1938, a 1,850-meter sewer line was constructed in Adana, and a 6,000-meter open canal was repaired and upgraded by the municipality.³⁶

In conclusion, I referred to the period extending from the late Ottoman Empire to 1930, similar to the clean water system, as the “duality of sewage systems.” Throughout this period, four types of sewage systems were inherited by the Republican regime: cesspools, sewers, sewage systems constructed by foreign water companies, and sewage system plans, of which only a small portion were implemented. Although foreign water companies were constructed to create modern sewage systems in two major cities, sewer infrastructure development during the Ottoman Empire was limited to high-income areas in the core cities of Istanbul and

³⁴ *Izmir’de Suyun Serüveni* (Izmir: İZSU, 2017), 18; Serçe, *Tanzimat’tan Cumhuriyet’e İzmir’de Belediye*, 270-271.

³⁵ İlhan Tekeli, “Ankara Kanalizasyonun Gelişimi ve Uygulanmakta Olan Büyük Kanalizasyon Projesi,” *Ankara Dergisi* 1, no. 2 (1991): 30.

³⁶ *Cumhuriyet*, November 12, 1934.

Izmir. After the proclamation of the Republic, Ankara was added to this group of core cities. The transformation from the Ottoman Empire to a nation-state was a challenging period for Türkiye. The defeat in the Balkan Wars ignited a surge of nationalism, particularly economic nationalism. Following the trauma of the Balkan Wars, as well as the onset of the First World War and later the War of Independence, the right to survive took precedence over societal welfare. Consequently, the development of sewerage systems did not become a priority within Türkiye's borders during the period I refer to as the "the duality of sewage system," which spanned from the late nineteenth century until 1930. Most of the sewage infrastructure inherited from the Ottoman era, in both rural and urban areas, consisted of cesspools, with the exception of limited modernized systems in the core cities of Istanbul, Izmir, and later Ankara.

3.2.2 *The New Nation-State's Approach to Sewage Systems: A Period of Reassessment*

The sewerage infrastructure inherited from the Ottoman Empire by the Republic consisted primarily of cesspools. Modern sewage systems constructed by foreign water companies served only a high-income group in two cities, a period referred to as the "duality of sewage systems" in the previous section. In this section, I examine the development of sewer systems over the next twenty years, a period I term the "reassessment phase," framed by the shift in economic policy between 1930 and 1950. This reassessment period can be seen as the preparatory phase for the sewerage investments that took place between 1950 and 1980. Despite the clear relationship between waterborne diseases and sewage, why did sewer systems fail to become a public health priority in the early republican era? Why were cesspools not converted into modern sewage systems and implemented equally across all regions? I argue that the answers to these questions lie in the peculiarities of the nation-state's development strategy and the absence of adequate institutions.

The old traditional method of sewage, which relied heavily on cesspools, had been widely used for a long time. By the 1920s, the government recognized that responsibility for sewage systems could not be left

solely to foreign water companies or to municipalities, which had limited financial and technical resources. They also observed notable disparities in urban infrastructure, leading to inequality in public utilities. Core cities such as Istanbul and Izmir, although benefiting from public services—albeit limited—were served by established municipalities. Atatürk and other founder of leaders were aware that the rest of the country's cities did not enjoy the same conditions. According to the new mission of the republic, the capital, Ankara, was to be included among these core cities. Public works in Ankara became significant as they symbolized the new regime. The republic aspired to create modern and healthy cities, with Ankara designated as the primary site for realizing these ambitions. However, the government lacked sufficient experience and knowledge on how to achieve this. Initially, they contacted the Ulen firm for the sewage infrastructure in Ankara, but this effort proved unsuccessful. Moreover, in 1928, a city-planning competition was held to promote the vision of a modern, healthy city for Ankara. Projects capable of functioning with limited water resources gained prominence among the participants. Jansen, who proposed the separation of rainwater and sewage, won the competition.³⁷

The cities of the country needed to be rebuilt in various areas, from education and health services to public utilities. For this reason, two laws—the Municipalities Law³⁸ and the Public Health Law³⁹—represented crucial steps toward the goal of creating a healthy, modern society with equal opportunities across Türkiye. Under the Municipalities Law, the provision of clean water and the construction of sewage systems were designated as key responsibilities of municipalities. Thus, municipalities were tasked with constructing and maintaining sewers and cess-pits within their jurisdictions. In accordance with this law, the cost of clean water and sewage systems would account for a significant portion of municipal budgets over a ten-year period. According to Article 157, the

³⁷ Tekeli, "Ankara Kanalizasyonun Gelişimi," 29-31.

³⁸ *Belediyeler Kanunu*, T.C. Resmi Gazete, Kanun No. 1580, 14.04.1930.

³⁹ *Umumi Hıfzıssıhha Kanunu*, T.C. Resmi Gazete, Kanun No. 1593, 06.05.1930.

right to purchase services from privileged companies, such as water and electricity, was granted to municipalities, provided they applied for and could afford the purchase.⁴⁰ Thus, legal arrangements were made for municipalities in Istanbul and Izmir to acquire water companies as part of their public utilities.

The preparation of the Municipalities Law revolved around several basic principles. The first principle was aimed at ensuring equality among municipalities, followed by promoting the autonomy of municipal activities. While the government sought to establish a mechanism for overseeing municipal administration, they also aimed to involve electors in this process. Finally, the primary objective of the Municipalities Law was to expand public utilities, such as clean water and sewage systems, to both core and peripheral cities.⁴¹

In addition to the Municipalities Law, the Public Health Law was another crucial step in the effort to create a healthy, modern society with equal opportunities in Türkiye. The purpose of the Public Health Law, *Umumi Hıfzısıhha Kanunu*, was to protect public health from all forms of epidemics. This new law aligned with the mission of the new nation-state, which aimed to implement policies against epidemic diseases. The republic was, fundamentally, a civilizational project striving to build a modern society, and these two laws—the Municipalities Law and the Public Health Law—were complementary in this regard.⁴² Life expectancy at birth declined in Türkiye during the war period, spanning from the Balkan Wars to the War of Independence. In particular, through the enactment of the Public Health Law, the government aimed to reduce infant mortality and protect mothers, as outlined in Article 3.⁴³

⁴⁰ *Belediyeler Kanunu*, 1580.

⁴¹ *Belediyeler Kanunu*, 1580.

⁴² Türkiye Bilimler Akademisi, *Türkiye'nin Sağlık Bağlamı İçinde 1593 Sayılı Umumi Hıfzısıhha Kanunu ve Cumhuriyetin Sağlık Sorununa Yaklaşımı* (Ankara, 2010), 56.

⁴³ *Umumi Hıfzısıhha Kanunu*, 1593.

Pamuk notes that high infant mortality rates were a significant factor behind low life expectancy at birth until 1950. Moreover, Pamuk estimates that life expectancy at birth increased slowly by about six years from the nineteenth century until World War I. The disappearance of the plague in the eastern Mediterranean during the second quarter of the nineteenth century, the quarantine of ships, and gradually rising per capita agricultural production—related to improvements in nutrition—had a significant influence on the increase in life expectancy in Türkiye. However, wars, population exchanges, and deportations had a direct impact on demography, which caused life expectancy at birth to drop sharply during World War I, to less than 25 years. After the 1920s, life expectancy in Türkiye began to rise again, reaching 35 years in the mid-1930s and 44 years by 1950.⁴⁴ During the early republican era, the government increased the number of doctors, nurses, and hospitals, while also implementing legal regulations to protect public health. These efforts, aligned with the decisions made in 1930, likely had a positive effect on public health and contributed to the rising life expectancy. Among these developments were significant decisions and investments in clean water and sewage systems.

Sewage systems were not only essential for infrastructure but also played a critical role in protecting society from epidemic diseases. According to Article 244 of the law, the government prohibited the discharge of sewage, contaminated water, and *çirkef*⁴⁵ waste into clean water sources, as these were major contributors to the spread of waterborne illnesses.⁴⁶ Unfortunately, this law was not effectively enforced in practice. Citizens continued to discharge contaminated sewage into streets, brooks, lakes, and seas, and even used it to irrigate agricultural lands. According to the newspaper *Cumhuriyet*, the garden owners

⁴⁴ Pamuk, *Uneven Centuries*, 40-43.

⁴⁵ *Çirkef* water refers to contaminated and murky water.

⁴⁶ *Umumi Hıfzısıhha Kanunu*, 1593.

in Istanbul around Maçka continued to irrigate their vegetables with sewage, despite being fined in 1935.⁴⁷ Another report mentioned that the sewage from Şişli Etfal Hospital was flowing into the garden behind the hospital.⁴⁸ People consumed vegetables irrigated with sewage water, which created ideal conditions for the spread of microbes and water-borne diseases such as typhoid. All of this occurred in Istanbul, one of the country's core cities, which had more infrastructure than many other cities.

Modern sewage systems, beyond being investments in infrastructure, served as a crucial defense against epidemic diseases. However, effective institutional organization, financial resources, and a legal framework were necessary to safeguard public health and develop infrastructure. The legal foundation for this was laid through the Municipalities Law and the Public Health Law, which aimed to protect public health and provide public utilities. According to these laws, municipalities were responsible for cleaning cesspools and constructing sewage systems. However, municipal budgets and responsibilities were insufficient to drive urban utility services. Table 2.2 in Chapter 2 shows the total budget of municipalities in Türkiye, including Istanbul, over four years. The total municipal budget increased by approximately 40% from 1925 to 1926 but decreased by 10% in 1927. Municipal budgets fluctuated between a minimum of 15 million and a maximum of 23 million over a nine-year period, but these funds were inadequate for large-scale infrastructure investments.⁴⁹ A defining feature of the period between 1930 and 1950 was the government's focus on defense expenditures. Additionally, the government sought to avoid budget deficits by prioritizing balanced budgets and hard currency policies, drawing lessons from past experiences.⁵⁰

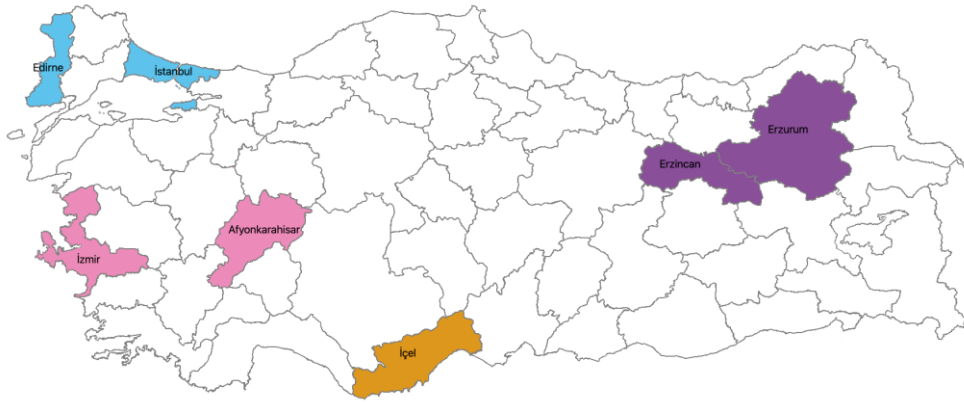
⁴⁷ *Cumhuriyet*, September 26, 1935.

⁴⁸ *Cumhuriyet*, June 28, 1935.

⁴⁹ Osman Ergin, "Belediye Vergileri," *İller ve Belediyeler Dergisi* 2: 39-41.

⁵⁰ Nevin Coşar, *Kriz, Savaş ve Bütçe Politikaları (1926-1950)* (İstanbul: Bağlam Yayınları, 2004); Erdoğan Öner, "Cumhuriyet Dönemi Türk Bütçeleri (1924-1993)," *Maliye Araştırma Merkezi Konferansları* (2012): 13-17.

The majority of expenditures in municipal budgets were allocated to public infrastructure, urban planning, electricity, water, and fire services. Notably, investments in electricity and clean water infrastructure consistently preceded the development of sewage systems until 1950. Large-scale infrastructure projects were essential for creating a self-sufficient economy. However, to effectively utilize its resources, the nation-state needed to assess the condition of its municipalities before embarking on state reconstruction. In other words, with limited financial capacity, the state had to allocate its resources as efficiently and effectively as possible. To facilitate this, the government conducted a municipal registry, *Belediyeler*, in 1933 to assess the public utility services and facilities of cities before initiating broader infrastructure efforts.



Map 3.3 The distribution of sewage systems in Türkiye in 1933. Sewerage systems in these cities were limited to specific areas within the city centers. SOURCE: Mapped by the author based on Municipalities Registry of 1933.

In 1933, a registry was prepared for 57 cities and their towns in Türkiye, providing detailed micro-level data on municipalities. This record book, *Belediyeler*, included information on population, households, municipal revenues, building types (e.g., schools, dispensaries, hospitals, motor vehicles, shops), and infrastructure investments (e.g., electricity, water, and sewage systems). According to the 1933 registry, cesspools

were commonly used for sewage needs. The record indicated that sewerage systems existed in seven cities in Türkiye: Istanbul, Izmir, Edirne, Mersin, Afyon, Erzurum, and Erzincan (Map 3.3). However, the presence of sewage systems in these cities did not imply an equal distribution throughout the urban areas. In cities like Istanbul and Izmir, the upper-income groups had access to sewer systems, while the rest of the population continued to rely on cesspools. It can be inferred, following the examples of Istanbul and Izmir, that sewer systems were likely constructed in the city center or in areas inhabited by wealthier residents. Unfortunately, there is no information available regarding whether these sewage systems were fully enclosed.⁵¹



Map 3.4 The cities in Türkiye with sewer lines in 1933. SOURCE: Mapped by the author based on the Municipalities Registry of 1933.

Map 3.4 illustrates the cities in Türkiye with sewer lines. While creating this map, I marked a province in color if there was information indicating the existence of sewer lines in any town or urban center within the province. In other words, at least one town in the marked provinces had a sewer line. This approach reflects the most optimistic depiction possi-

⁵¹ *Belediyeler, T.C. Dahiliye Vekaleti Mahalli İdareler Umum Müdürlüğü* (İstanbul: Holivut Matbaası, 1933), 4-8.

ble. Despite this, 16 provinces remain unmarked, indicating that no urban areas in these provinces had sewer lines, which accounts for approximately 28% of all cities. Upon closer analysis of cities with sewerage systems, it becomes evident that in most cases, sewer lines were limited to the city centers.

Municipalities with strong financial and administrative structures were essential for creating a modern nation-state. The 1930 Municipalities Law aimed to define and expand the responsibilities of municipalities. Beyond extending their sphere of influence, the government recognized the need to strengthen municipalities both financially and administratively. To this end, the Bank of Municipalities, *Belediyeler Bankası*, was established in 1933 by Mustafa Kemal Atatürk with a capital of 15 million lira. The bank's role was to provide the financial support municipalities required for the reconstruction of the country. Between 1933 and 1944, the bank's investments totaled 12,388,000 Turkish lira. The majority of activities between 1933 and 1945 focused on mapping and zoning plans. While maps and zoning plans were prioritized, sewage systems remained secondary. Although sewer construction was not a primary focus of public utilities until 1950, the developments between 1930 and 1950 can be viewed as preparatory groundwork for the expansion of sewage systems after 1950. During this period, the new nation-state gained valuable experience through the institutions and legal regulations established for the country's reconstruction and infrastructure investments after 1950.⁵²

The Municipalities Bank, as its name suggests, was originally established to support only cities with municipal governments. However, all cities, regardless of whether they had municipalities, required financial and technical assistance for constructing essential infrastructure, such as modern sewage systems. To address this need, the government decided to change both the name and scope of the Municipalities Bank. After 1945, the bank was renamed the Bank of Provinces, *İller Bankası*. In ad-

52

İller Bankası: Atatürk'ün Doğumunun 100. Yılı İçin Hazırlanmış, 11.

dition to expanding its mandate, the government also increased its capital. The Bank of Provinces began operations in 1945 with a capital of 100 million TL. Following this change, water and electricity projects were prioritized in the infrastructure budget, while investments in sewerage systems began in earnest only after the 1960s.⁵³

The *Journal of Municipalities* was published over a seven-year period between 1935 and 1942 with the goal of creating modern municipalities within the framework of statism. The activities of municipalities would introduce the new regime's objectives to society while addressing the issues faced by provincial centers. To build a modern, healthy, and contemporary nation-state, the government believed municipalities needed to be informed about their operations as well as those of municipalities in other countries. Thus, the journal served as a public platform for discussing various issues related to municipalism. Many articles, written by doctors and professors, addressed the relationship between sewage systems and public health, highlighting the importance of sanitary services. Among the intellectuals contributing to the journal, Ernst Reuter is particularly noteworthy. In his articles, he emphasized the significance of municipal enterprises, zoning plans, and the necessity of modern sewage systems, especially in the context of economic considerations in city planning.⁵⁴ Although the journal ceased publication in 1945, it was later revived under the name *The Province and Municipalities Journal* in a more comprehensive format.⁵⁵

The *Province and Municipalities Journal*, newly renamed, began monthly publication in 1945 under the Turkish Municipal Association,

⁵³ *İller Bankası*, 130-131.

⁵⁴ Fevzi Yavuz, "Prof. Ernst Reuter," *Ankara Üniversitesi SBF Dergisi* 23, no. 3 (1968):135-192; Ernst Reuter, "Belediyeler Bankası," *İstanbul Üniversitesi İktisat Fakültesi Mecmuası* 4, no. 1 (1943):42-68; Ernst Reuter, "Belediye İktisadiyatının Ehemmiyeti ve Problemleri," *İstanbul Üniversitesi İktisat Fakültesi Mecmuası* 2 (1941):381-411.

⁵⁵ More details see: Mehmet Karayaman, "Belediyeler Dergisinin (1935-1942) Yerel Tarih Araştırmalarında Yeri ve Önemi," *Cumhuriyet Üniversitesi Edebiyat Fakültesi Sosyal Bilimler Dergisi* 43, no. 2 (2019): 49-62.

with the aim of uniting not only municipalities but also cities across Türkiye through shared knowledge and coordinated action. The journal emphasized the importance of information exchange in solving municipal problems and providing technical assistance. It stressed that municipalities should be aware of each other's activities and conditions. In addition to covering developments within Turkish municipalities, the journal also included information on the duties and activities of municipalities in developed countries.⁵⁶ Furthermore, it publicized the plans and operational schedules of the Bank of Provinces to the public. These efforts laid the groundwork and provided valuable experience for the period between 1950 and 1980.

§ 3.3 *An Examination of Urban Sewage Infrastructure Investments in Türkiye until 1950*

The development of infrastructure investments is closely tied to the political and economic power and capacity of a country. Similar to investments in clean water infrastructure, the development of sewage systems is also shaped by a country's economic situation. Türkiye, like many other developing nations, underwent significant political, economic, and social transformations after World War II, one of which was the transition towards a multiparty political system. This shift to a more competitive political landscape led to a change in economic strategy, placing greater emphasis on agriculture, the primary livelihood for most of the population. In 1950, the rise of the Democratic Party marked a shift away from policies prioritizing a strong currency and balanced budgets, toward a more agriculture-oriented, liberal economy.⁵⁷

In addition to these political and economic changes, Türkiye began to urbanize after 1945. Rural-to-urban migration contributed to the proliferation of squatter settlements, known as *gecekondu*, in major cities such

⁵⁶ *İller ve Belediyeler Dergisi*, Türk Belediyecilik Derneği, no. 1 (Ankara, 1945), 1-11.

⁵⁷ E. J. Zürcher, *Modernleşen Türkiye'nin Tarihi*, çev. Y. Saner Gönen (İstanbul: İletişim Yayınları, 2007): 206-240.

as Ankara, Izmir, and Istanbul.⁵⁸ Following an investigation conducted by Ankara Deputy Hıfzı Oğuz Bekata regarding squatter housing in Ankara, Istanbul, and Izmir, it was determined that Istanbul had a total of 78,600 squatter houses accommodating approximately 393,000 residents. In Ankara, there were 40,000 squatter houses housing around 200,000 people, while Izmir had 9,584 such houses inhabited by 47,920 individuals. Parceling maps for these squatter housing areas were being prepared, and property deeds were gradually being distributed. Furthermore, plans were made to address the electricity, sewerage, and water supply needs of all these settlements.⁵⁹ These developments heightened the need for modern sewage systems, especially as population growth further increased demand. Before analyzing urban sewage investments in Türkiye from 1950 to 1980 in Chapter 5, it is essential to first assess the state of urban sewage infrastructure in 1950.

A three-volume Municipal Yearbook, *Belediyeler Yıllığı*, was created in 1949 to analyze the demographic, economic, and infrastructural conditions of municipalities across Türkiye. The data in this yearbook were collected from 639 municipalities in 63 provinces to present information on population, income, public utilities, and infrastructure investments. According to the yearbook, only 16 municipalities—Kastamonu, Zonguldak, Ankara, Niğde, Erzurum, Balıkesir, Bilecik, Bursa, Edirne, Istanbul⁶⁰,

⁵⁸ Karpas, Kemal H., and Tahire Erman. "The Politics of Squatter (Geceköndü) Studies in Turkey: The Changing Representations of Rural Migrants in the Academic Discourse." *Urban Studies* 38, no. 7 (2001): 983-1002; K. H. Karpas, *The Geceköndü: Rural Migration and Urbanization* (Cambridge: Cambridge University Press, 1976).

⁵⁹ T.B.M.M Zabıt Ceridesi, 60.İnikat, 25.4.1960, p.261.

⁶⁰ There is no information regarding the sewage systems in the *Municipal Yearbook* for the city of Istanbul; however, archival documents from the Istanbul Municipality reveal the existence of a limited sewerage system in certain districts between 1949 and 1950. For this reason, the author included the city to provide a more accurate representation of the state of sewage systems in Turkey. See: *Istanbul Municipality Encümen*, 506, 21.01.1938.

Izmir⁶¹, Hatay, İçel, Adana, Mardin, and Siirt—were equipped with partial sewage systems. In other words, approximately 3% of Turkish municipalities had partial sewage systems at the time. It is important to note that in these 16 municipalities with partial sewerage systems, not all residents had access to the infrastructure, highlighting inequalities both within the same municipality and between different municipalities. The sewage infrastructure was largely confined to the urban centers of the municipalities that had such systems.⁶²

Map 3.5 Cities and regions with municipalities that had partial sewage systems in 1950.



SOURCE Compiled by the author based on the Municipalities Yearbook of 1949.

In 1950, towns and areas with municipalities that had partial sewage systems were listed in Map 3.5. According to the *Municipal Yearbook*, every region contained at least one municipality with a partial sewage system. The Marmara region, in particular, had a higher number of municipalities with sewage systems compared to other regions. In 1949, urban sewage infrastructure in Türkiye largely consisted of cesspools due to the limited availability of modern sewerage systems. Vacuum trucks,

⁶¹ There is no information regarding the sewage systems in the *Municipal Yearbook* for the city of Izmir; however, the author included the city to provide a more accurate representation of the state of sewage systems in Turkey. See: Serçe, *Tanzimat'tan Cumhuriyet'e İzmir'de Belediye*, 271; *Izmir'de Suyun Serüveni*, 18.

⁶² *Belediyeler Yıllığı*, 1949.

vidanjör, were used to clean full septic tanks, although not in every municipality. The yearbook also reported that 64 out of 639 towns had sewer systems, *lağım*, with some municipalities providing detailed information on the dimensions of their sewer lines. Additionally, the yearbook revealed that 400 out of 639 municipalities had at least one public restroom, highlighting the urgent need for investment in sewage infrastructure across Türkiye.⁶³

§ 3.4 Why were the sewage systems in Türkiye very inadequate until 1950?

A modern sewer system is essential for maintaining healthy living conditions in any country. In developing countries during the early twentieth century, modern sewage systems were either nonexistent or only partially implemented, typically in areas inhabited by higher-income groups. In the case of Türkiye, although the early republican government initiated legal and financial regulations to promote infrastructural investments through municipalities, these efforts largely remained preparatory groundwork for the post-1950 period. The lack of modern sewage systems in Türkiye can be attributed to various historical, economic, and political factors. In this section, I will explore the reasons for the inadequacy of sewage systems in Türkiye, particularly concerning economic and political challenges. My motivation for this study is to examine the consequences of inadequate sewage systems in Türkiye up to 1950.

One reason for the limited development of sewer systems was the impact of wars in the early twentieth century. During wartime, the right to life consistently took priority over welfare rights.⁶⁴ Wars and the conditions resulting from them prevented the government from focusing on infrastructural investments. In the early part of the twentieth century, Türkiye was engaged in a series of battles, including the Balkan Wars, the First World War, and the War of Independence from 1920 to 1922. After

⁶³ *Belediyeler Yıllığı*, 1949.

⁶⁴ Zafer Toprak, *Türkiye’de Milli İktisat 1908-1918* (İstanbul: Doğan Kitapevi, 2012), 34-40.

the War of Independence, a new republic was established under the leadership of Mustafa Kemal Atatürk. However, this prolonged period of warfare brought significant demographic, economic, and political consequences. Demographically, the new nation-state suffered significant losses in human capital due to the prolonged period of war. Additionally, the multinational demographic structure underwent a transformation under the influence of nationalism, deportation, and population exchange agreements. As the composition of the population changed dramatically, Türkiye's total population decreased by approximately 20 percent during and after World War I. A study by Pamuk and Özel shows that the prewar population level in Türkiye was not regained until the mid-1930s.⁶⁵

Low urbanization rates were among the reasons why sewer systems remained limited until the 1950s. The low level of urbanization before 1950, coupled with Türkiye's population loss during the early republican era, did not exert significant pressure on the sewage infrastructure, enabling the state to postpone investments in modern sewage systems. In addition to demographic factors, the onset of the Second World War compelled the government to prioritize military defense over investments in infrastructure. Economically, Mustafa Kemal and his close associates were aware of the Ottoman Empire's financial and economic dependence on European powers, reinforced by capitulations and legal privileges. Therefore, achieving economic and financial independence became a top political and economic priority during the establishment of the new nation-state. Following lengthy negotiations at the Lausanne Peace Conference in 1922-1923, all commercial and legal privileges rooted in the Ottoman Empire were abolished. Additionally, after 1929, the new nation-state secured the right to set its own customs duties, thereby creating the

⁶⁵ Işık Özel and Şevket Pamuk, "Osmanlı'dan Cumhuriyet'e Kişi Başına Üretim ve Milli Gelir 1907-1950," in *75 Yılda Para'nın Serüveni*, ed. Mustafa Sönmez (İstanbul: Tarih Vakfı Yayınları, 1998), 83-90.

opportunity to protect selected goods and products.⁶⁶ For the government, achieving financial independence and maintaining peace took precedence over public works, such as sewage systems, during the inter-war period.

Another reason was related to the developmental mission of the new state. The motto of the nation-state was based on changes that contrasted sharply with those of the empire. Within the new borders, the state sought to establish a developed industrial and agricultural economy, ensure a healthy population, enhance institutional effectiveness, and build efficient infrastructure networks. However, given its limited economic capacity, the state was unable to prioritize all infrastructure investments equally. In the 1920s, the newly established nation-state pursued free trade and liberal policies to support the private sector. This period also witnessed a wave of reforms initiated by Atatürk and other founding leaders, spanning various fields such as economics, society, education, and culture. The motivation behind the republican regime was to transform an underdeveloped agricultural economy, a weak industrial base, and a state with limited capacity into a secular and modern nation. The new nation-state aimed to create a self-sufficient economy, with a particular focus on the production of the "three whites"—sugar, flour, and cloth—that had been scarce during the war. Furthermore, the tithe tax was abolished in 1924, both as a goodwill gesture to large landowners who had supported the War of Independence and to reduce the tax burden on small- and medium-sized agricultural producers. The government assumed that the abolition of the tithe would lead to increased agricultural production in the 1920s and 1930s.⁶⁷

A self-sufficient economy requires strong financial institutions and effective domestic infrastructure. To support a private sector-oriented economic model, *İşbank* was established. A more developed railroad network was also necessary to ensure regional food distribution and to facilitate the transfer of goods and military equipment across the country.

⁶⁶ Pamuk, *Uneven Centuries*, 171.

⁶⁷ Pamuk, *Uneven Centuries*, 166-175.

During the wars, the state faced famine and logistical challenges due to inadequate transportation infrastructure. Drawing on these experiences, the new government in Ankara prioritized railways as the primary infrastructure for connecting regions within the Turkish Republic, driven by economic, military, and political considerations. As a result, railways received the largest share of public investment during the early republican period.⁶⁸ While railway investments continued throughout the interwar period, investments in sewer systems lagged behind. The economic policies in the early republican era were clearly influenced by the lasting memory of the famine and inadequate transportation infrastructure experienced during earlier periods.

The Great Depression of 1929 triggered a decline in economic activities worldwide, forcing many countries to adopt inward-focused economic policies. During the 1920s, Türkiye began recovering in agricultural income and its overall economy, but the Great Depression caused a sharp drop in agricultural prices, affecting the Turkish economy as well. In response, the government adopted a state-led import-substituting industrialization strategy, known as etatism. In other words, during the early republican era, the government shifted its focus toward restructuring the nation's economic development rather than investing in infrastructure. This shift was largely driven by budget constraints. State control expanded across various sectors, including steel, iron, textiles, sugar, mining, and utilities. In the 1930s, as the role of the state in the economy increased, international actors, capital, and companies reduced their investments in semi-peripheral countries.⁶⁹

In 1924, there were eighty-one foreign companies (British, Italian, German, French, and American) operating in sectors such as mining, water, railways, and electricity, with a combined capital of 226.3 million Turkish lira. To strengthen its economic and political independence, the new government in Ankara initiated a period of nationalization that

⁶⁸ Nevin Coşar and Sevtap Demirci, "Incorporation into the World Economy: From Railways to Highways (1850-1950)," *Middle Eastern Studies* 45, no. 1 (2009): 22.

⁶⁹ Pamuk, *Uneven Centuries*, 176-184.

lasted until 1950. The state's efforts to increase its influence through the nationalization of foreign companies were not unique to Türkiye but aligned with global trends in utility regulation.⁷⁰

Foreign water companies were expropriated by the state between 1933 and 1944. Following their nationalization, the government sought to unify the water and sewage systems under a single framework. Although municipalities were granted expanded responsibilities for infrastructure investments through legal reforms, and the Bank of Municipalities was established to provide financial support, the development of sewage systems remained overshadowed by other investments.

The provision of clean and advanced water systems was a prerequisite for modern sewage systems. It is not possible to improve sewage systems without first developing water infrastructure. In other words, a lack of access to abundant and clean water prevents sewage systems from becoming a necessity. As mentioned in Chapter 2, there were substantial differences between today's developed and developing countries in the development of clean water and sewage systems. In fact, these disparities, which began in the mid-nineteenth century, continued into the twentieth century. In industrialized countries, water transitioned from being solely for household consumption to becoming a factor of production, while this transformation did not occur similarly in semi-peripheral countries. In contrast, water in developing countries remained primarily limited to household consumption. Hence, the delay in clean water systems also delayed the development of modern sewage systems. Additionally, infrastructure destruction was caused by fires and earthquakes; for example, all of İzmir's sewage systems were destroyed during the fire of 1922.⁷¹

The construction of sewage systems, unlike water systems, required more complex expertise and the collaboration of various specialists. Alt-

⁷⁰ *Atatürk Dönemi Maliye Politikaları* (Ankara: Maliye Bakanlığı Strateji Geliştirme Başkanlığı Yayınevi, 2008), 105. 5

⁷¹ Serçe, *Tanzimat'tan Cumhuriyet'e İzmir'de Belediye*, 173.

though municipalities were granted expanded responsibilities through legal reforms, they were also required to employ technical staff capable of both constructing and maintaining sewage systems. In practice, however, ordinary municipal employees suddenly found themselves working as sewer specialists without the necessary knowledge or skills to maintain these systems.⁷² Under these circumstances, the expertise of foreign specialists residing in Türkiye became crucial for designing and constructing sewage infrastructure. For instance, the government enlisted Mr. Wright, an American engineer from the Rockefeller Foundation and a lecturer at the Ankara Sanitary Institute, *Ankara Hıfzısıhha Enstitüsü*, to prepare a report on Ankara's sewage systems. As mentioned earlier, sewer system development in Türkiye began with major cities like Istanbul and Izmir. After Ankara became the capital, the government decided to initiate sewage investments there, adding it to the list of core cities. The report highlighted both the importance of modern sewage systems and the specific situation in Ankara. The government prioritized sewage infrastructure investments in Ankara due to its status as the capital city. Furthermore, the construction of sewage systems was crucial because open sewage lines flowed directly into the streets, contaminating water sources such as brooks. These open sewers posed a significant public health risk, especially during heavy rains and floods, when they would overflow into the city. To address these issues, the Ministry of Public Works allocated 1.5 million Turkish lira for the construction of sewage systems in Ankara, with the project slated for completion within five years. To address these issues, the Ministry of Public Works allocated 1.5 million Turkish lira for the construction of sewage systems in Ankara, with the project slated for completion within five years. Additionally, it was recommended that an expert in sewage systems be employed within the administration of public works.⁷³

⁷² Türkiye'de İçmesuyu ve Hıfzısıhha Çalışması, Uluslararası İçmesuyu ve Hıfzısıhha On Yılı 1981-1990 (Ankara: Devlet Planlama Teşkilatı Matbaası, 5 Temmuz 1982), 61-62.

⁷³ BCA, Başbakanlık Muamelat Genel Müdürlüğü, 30-10-0-0/122-870-3, 31.03.1936.

In line with this objective, Mr. Wright submitted a four-page report and plan for Ankara's sewage systems in 1937. However, his recommendations were met with criticism from government officials. Subsequently, they considered offering the project to another American expert, Mr. Flood, who estimated the cost at \$12,000.⁷⁴ Despite these discussions, the plans were not implemented, and the government ultimately chose to work with a German specialist for Ankara's sewage systems.

The sewage project for the capital was finally designed by Mr. Wild, who stayed in Ankara for a month during the project's preparation.⁷⁵ Before the implementation of Ankara's first sewage project, it was requested that the plan be reviewed in Germany. To facilitate this, two engineers were sent to Germany by the government to participate in the review.⁷⁶ The government was committed to developing sewage systems for the capital. In line with this goal, a draft law concerning sewage systems was prepared in 1941.⁷⁷ Seven months later, an amendment addressing changes in construction costs was added to the contract. Despite this, the government agreed to cover an additional 15% of the costs related to rising prices of sewage materials.⁷⁸ However, on the eve of World War II, these plans had to be delayed. In addition to collaboration among various experts, qualified employees, specialists, and engineers capable of maintaining and operating modern sewage systems were required by the state. Yet, during the early republican era, Türkiye had almost no qualified personnel in the sewer field.

Municipalities also faced limited budgets for sanitary infrastructure projects, which forced administrators to use these funds as effectively and efficiently as possible. However, an engineer with the initials H.Z., a

⁷⁴ BCA, Başbakanlık Muamelat Genel Müdürlüğü, 30-10-0-0/122-870-3, 08.04.1938.

⁷⁵ BCA, Başbakanlık, Kararlar Daire Başkanlığı, 30-18-1-2/89-107-9, 06.11.1939.

⁷⁶ These two engineers were Ratıp Sunam and Ömer İleri who worked at Water Works. BCA, Başbakanlık, Kararlar Daire Başkanlığı, 30-18-1-2/ 90-13-19, 12.02.1940.

⁷⁷ BCA, Başbakanlık, Kararlar Daire Başkanlığı, 30-18-1-2/ 95-45-15, 29.05.1941.

⁷⁸ BCA, Başbakanlık, Kararlar Daire Başkanlığı, 30-18-1-2/ 97-105-11, 24.12.1941.

columnist for *Cumhuriyet* newspaper, criticized the dysfunctional projects of municipalities under the headline 'How Municipalities Can Avoid Wasteful Expenditures.' Although considerable money and effort were spent on these projects, he argued that they failed to serve their purpose due to a lack of technical expertise. For instance, he noted that hundreds of thousands of liras were invested in sewage systems, but because the slopes were not properly calculated, the sewage did not flow, leaving the system incomplete, stranded between land and sea.⁷⁹ In other words, the municipality would need to invest in the sewage system again because the original project was constructed inadequately, without proper analysis or research, and by unqualified personnel. As a result, limited materials and financial resources were wasted, and additional labor and funds had to be spent to rebuild the infrastructure necessary for society.

Consequently, during the early republican era, foreign specialists were required for the construction, planning, and design of sewage systems. In addition, qualified personnel were needed for the maintenance and repair of these systems. Official documents indicate that existing sewage systems deteriorated over time due to a lack of skilled workers and proper upkeep.⁸⁰ These experiences demonstrated to the new nation-state the critical role engineers play in rebuilding infrastructure. The importance of being an engineer grew in line with the era's demands. Therefore, it is not surprising that engineers shaped many aspects of Turkish economic and political history between 1950 and 1980.

A significant reason for the delay in constructing modern sewage systems was their high cost. While clean water systems were considered a public utility, the financial burden of these systems could be offset by selling water to subscribers. In contrast, the financial responsibility for sewer systems fell entirely on the state. This issue originated in the Ottoman Empire in the mid-nineteenth century, during the onset of the first modern urbanization movement. Archival records provide some evidence of attempts to pass the cost of sewer construction onto the public.

⁷⁹ *Cumhuriyet*, March 9, 1936.

⁸⁰ *Türkiye'de İçmesuyu ve Hıfzıssıhha Çalışmaları*, 38.

For example, in a petition by the wife of Mahmut Effendi, she complained that although the government collected money from her for the construction of a sewer line in the Vezneciler district of Istanbul, the sewer line was never constructed.⁸¹ Urban planning regulations were first incorporated into the Ottoman legal system in the mid-nineteenth century. The *Ebniye Nizamnamesi* was introduced by the Ottoman government in 1848, initially aimed at city planning for Istanbul.⁸²

Similar to the development of water and sewage systems, legal regulations concerning city planning began in Istanbul and later expanded to other cities.⁸³ The *Turuk and Ebniye* regulation⁸⁴, which applied to all cities within the empire, was introduced in 1863 to replace the earlier *Ebniye* regulation and was subsequently formalized into law in 1882. According to Article 43 of this law, property owners were responsible for the maintenance and cleaning of sewer systems and septic tanks.⁸⁵ Numerous petitions regarding sewage overflow and cleaning requests can be found in the Ottoman archives.⁸⁶ Moreover, water contamination from open sewers posed a serious threat to public health. The state recognized the need to construct new sewage systems and replace outdated pipes.⁸⁷

⁸¹ BOA, DH.MKT, 1889/84, 12 R 1309 (15.11.1891).

⁸² Sadık Artukmaç, *Türk İmar Hukuku*, (Ankara: Ayyıldız Matbaası, 1972), 19.

⁸³ For instance, for the construction of a sewer in Malatya, where the sewers were combined, it was requested that the budget of the Mamuretulaziz province cover the costs. BOA, DH.İD., 161-1/1, 23 R 1331 (01.04.1913).

⁸⁴ Mehmet Bengü Uluengin ve Ömer Turan, "İmparatorluğun İhtişam Arayışından Cumhuriyet'in Radikal Modernleşme Projesine: Türkiye'de Kentsel Planlamanın İlk Yüz Yılı," *Türkiye Araştırmaları Literatür Dergisi* 6 (2005): 353-436.

⁸⁵ BOA, DVN.MKL, 70/76, 21 Z 1340 (15.08.1922). It was reported by the Şehremaneti that planning would be conducted in regions of Istanbul, excluding Çamlıca, Erenköy, Bostancı, Edirnekapı, and Topkapı. Expenses for infrastructure, such as sewers and pavement, would be collected from property owners in accordance with the Ebniye Law. BOA, DH.MKT.1241/80, 18 S 1326 (22.03.1908).

⁸⁶ The overflowing sewage in Galata led to an increase in cholera infections. BOA, MKT.MHM., 596/27, 2 M 1313 (25.06.1895).

⁸⁷ BOA, HMŞ., 22/33, 13 L 1329 (7.10.1911).

Society frequently complained about overflowing sewage and expected the state to cover the costs of cesspools and sanitary infrastructure. However, the state and municipalities sought to involve property owners in the costs of sewer construction, maintenance, and repairs.⁸⁸

The government sought to share the financial burden of sewer investments with the public in order to increase overall infrastructure investments. Although there was no consensus on how to pass these costs to users, two options were considered: cross-subsidization and legal regulations aimed at increasing municipal revenues for sewer investments. Cross-subsidization was an effective method to finance sewage costs but was only viable in large cities with sufficient income. For instance, revenue from Istanbul's bridges could be used to fund the city's sewage systems. The second method, taxing property owners, was a more practical and widely preferred way to distribute the financial burden of sewer projects. In line with this approach, the government introduced a sewer participation fee in the Revenue of Municipalities Law in 1948.⁸⁹

The Istanbul Municipality required property owners in the surrounding areas of Haliç to invest in infrastructure, such as roads and sewage systems. However, after owners objected to this decision, offering payment in installments was considered as an alternative. In 1933, the newspaper *Cumhuriyet* reported that the cost of road and sewer construction was equivalent to the price of a house.⁹⁰ By the following year, around 90% of the sewage system construction in Haliç was completed. The Istanbul Municipality charged a connection fee of approximately 30-40 Turkish lira per household, with the goal of increasing the number of homes connected to the sewage system. Despite being a costly investment, with the Haliç sewage project costing 4.5 million Turkish lira, it covered only a specific district of Istanbul.⁹¹ For these reasons, the expansion of sewage systems occurred gradually, starting from the city center

⁸⁸ BOA, DH.HMŞ., 22/32, 13 L 1329 (7.10.1911).

⁸⁹ *İller Bankası*, 131.

⁹⁰ *Cumhuriyet*, June 2, 1933.

⁹¹ *Cumhuriyet*, July 4, 1934.

and extending to the periphery, as well as from core cities to other regions. At times, the high cost of sewage systems influenced the investment decisions of municipalities. For example, the municipality of Istanbul abandoned plans to build a sewage system in part of the city and instead used the budget to construct canals in five neighborhoods—Kasımpaşa, Dolapdere, Feriköy, Tophane, and Şişhane.⁹²

The development of sewer systems lagged behind other infrastructural investments and progressed slowly. However, the lack of modern sewer systems posed a significant risk to public health. My main argument is that sewer systems should be seen as more than just an investment. The development of modern sewer systems can have multiple positive effects on public health, acting as a protective shield. This includes directly reducing waterborne illnesses, lowering mortality rates—especially among infants—and increasing life expectancy. Furthermore, untreated sewage leads to environmental pollution. Sewage from open lines flowed through the streets, and this contaminated water often drained into brooks and other water sources. Additionally, sewage from cesspools was frequently dumped onto lands and fields.⁹³

This caused an unhealthy environment for society, providing conditions for the growth of bacteria and viruses. Both individual petitions and collective demands regarding sewage systems are recorded in the Ottoman and Republican archives, often in response to deaths caused by contaminated water and the spread of epidemics. One frequent issue was the mixing of sewage with drinking water.⁹⁴ For example, residents of Kütahya complained about water shortages due to sewage contaminating their drinking water.⁹⁵ In another case, an Armenian woman named Beykozlu Topal Ebe filed a complaint about cesspools in front of her home, requesting that the pollution be addressed.⁹⁶ Furthermore, there were

⁹² *Cumhuriyet*, February 25, 1936.

⁹³ *İller Bankası*, 131.

⁹⁴ BOA, DH.HMŞ, 22/32, 13 L 1329 (7.10.1911).

⁹⁵ BOA, DH.MKT., 2543/117, 29 C 1319 (13.10.1901).

⁹⁶ BOA, MKT, 2584/120, 27 L 1319 (6.02.1902).

demands to clean the Kasımpaşa stream and construct a closed sewage system for wastewater.⁹⁷ It appears that the cleaning of septic tanks and repair of sewer lines were carried out based on individual demands— in other words, from the grassroots—rather than ensuring equal access for all. In conclusion, although the government recognized the link between inadequate sewage systems and waterborne diseases, limited state and financial capacity forced it to postpone infrastructure investments, particularly sewage systems, which were costly and required specialized expertise.

§ 3.5 Concluding Remarks

This chapter examines the development of sewage systems in Türkiye from the late 19th century to 1950, within a framework comparable to that of clean water infrastructure. This is the first study to reveal significant delays and inequalities in sewage infrastructure development both regionally and within cities in Türkiye. A key contribution of this chapter is the finding that sewage systems in use until 1950 were largely based on inadequate and unequal infrastructure inherited from the Ottoman Empire, with modernization during the Republican period proving slow and limited.

The development of sewage systems in Türkiye is analyzed from a macro perspective, divided into two periods: the "duality period" and the "reassessment period." Similar to the duality of clean water systems in the previous section, the duality of sewage systems underscores the inequalities in infrastructure inherited from the Ottoman Empire to the Republic. The first modern sewage systems within the present borders of Türkiye were constructed in the late nineteenth century in high-income areas of Izmir and Istanbul by water companies supported by foreign capital. This process led to disparities in infrastructure access not only

⁹⁷ BOA, Y.MTV., 306/53, 10 M 1326 (13.02.1908).

between cities but also within individual cities. Accordingly, I use the concept of the "duality of sewage systems" to highlight unequal access to infrastructure investments.

The reassessment period was characterized by the state taking a more active role in sewage investments, following two complementary laws enacted in 1930: the Law on Municipalities and the Law on Public Hygiene. These laws imposed significant responsibilities on municipalities, including the supply of clean water and the construction of sewage systems. Furthermore, municipalities became directly responsible for constructing and maintaining sewers and septic tanks in towns, with costs to be covered by municipal budgets. However, municipalities did not have the administrative and technical staff to fulfill these new responsibilities within a short run, as well as not enough the financial resources for extensive infrastructure investments. Consequently, the Municipalities Bank was introduced as a redistribution mechanism. Yet, limited resources due to the economic and political conditions of the period forced a prioritization among infrastructure projects.

In the early years of the Republic, the right to life took precedence over the right to welfare, as security and defense priorities overshadowed basic infrastructure investments such as sewage systems due to the impact of the war periods. With limited economic resources, the state could not prioritize all infrastructure investments equally, and sewage systems consequently lagged behind projects deemed of higher importance, such as railway infrastructure. Furthermore, low rates of urbanization until the 1950s prevented modern sewerage systems from being considered as a priority; due to the predominantly rural population and limited urbanization, the development of sewerage infrastructure did not stand out as an urgent need for the central government.

Throughout this early Republican period, cesspools and open sewers remained the most widely used forms of sewage method until 1950. A review of the regional distribution of sewerage systems in Türkiye reveals that only 16 out of 639 municipalities, about 3% of the total, had partial sewerage systems by 1950. However, even in these 16 municipalities—Kastamonu, Zonguldak, Ankara, Niğde, Erzurum, Balıkesir, Bilecik,

Bursa, Edirne, Istanbul, Izmir, Hatay, İçel, Adana, Mardin, and Siirt—sewage infrastructure was largely limited concentrated in urban centers.

The development of sewage infrastructure, by design depends on advancements in clean water systems. Additionally, sewage systems are a costly investment, requiring greater technical expertise and skilled labor than clean water systems. This higher level of technical knowledge created a shortage of qualified personnel, further restricting investments in sewage infrastructure. In response, the institutional and structural reforms implemented during this period laid the groundwork for the comprehensive infrastructure investments planned for 1950–1980.

The next chapter will examine the financial, technical, and administrative challenges related to clean water systems in Türkiye between 1950 and 1980. It will assess whether inequalities in clean water infrastructure between regions decreased during this period and explore which regions and cities received investment in clean water infrastructure.



Clean Water Systems in Türkiye: Towards the Multivocality of Institutions

This chapter offers a detailed analysis of the unequal distribution of clean water systems between 1950 and 1980, with a focus on the role of institutions in Türkiye. These disparities in clean water systems, similar to urban sewage systems, existed not only across different regions but also among cities and even within the same city. Indeed, the roots of disparities in clean water systems can be traced back to the Ottoman Empire period in the late nineteenth century, as I explain in detail in Chapter 2. Following the establishment of the Turkish Republic, the duality of clean water systems in Türkiye remained in place until the 1940s. During the interwar period, there was a notable transformation from the duality of clean water systems towards a centralized approach, a process realized through nationalization efforts from the 1930s until 1950. However, investment in clean water and sewage systems alike during this period was limited due to the economic and political conditions of the era.

The examination of the development of clean water infrastructure investments cannot be adequately addressed without taking into consideration the economic and political history of the country. Indeed, the country's economic conditions and state capacities affected the availability of resources for the construction of clean water systems and shaped public support for these investments. Developed countries began constructing clean water infrastructure in the second half of the nineteenth century, expanding these investments from the center to the periphery. The expansion of infrastructure expenditures in these countries helped alleviate disparities in access to clean water systems. In developing countries, European companies and experts played a key role in the development of clean water systems; however, the clean water infrastructure investments were delayed, similar to sewage systems. Furthermore, unlike in developed countries, significant inequalities in clean water and sanitation systems persist in developing countries.

In Türkiye, investments in clean water infrastructure have been unevenly distributed across regions, between urban and rural areas, and within urban areas themselves. For Türkiye, there is no comprehensive study on clean water systems that covers all cities in the literature. In this regard, this chapter fills this gap in the economic history literature of Türkiye by examining the development of clean water systems between 1950 and 1980. The temporal boundaries of this chapter span the period from 1950 to 1980. I conclude the research in 1980 due to both the change in economic policy in Türkiye and the transition to a new stage of governance in which municipalities took over water and sewerage administrations.

The development period in Türkiye between 1950 and 1980 was characterized by a concerted effort to advance both industrial and infrastructure investments, contrasting with the approaches of the 1930s and 1940s. This shift was influenced by the balanced development perspective prevalent worldwide. This perspective emphasizes simultaneous growth across sectors and regions rather than focusing on a single sector or region. Türkiye implemented this approach with the inauguration of its first five-year development plan in 1963. Within the time limits of the

thesis, this chapter will address only the first four five-year development plans. The development plans, under the influence of the balanced development perspective, included an effort to expand industrialization and infrastructure investments across the country, and this also affected the development of clean water systems. Well, did these five-year development plans mitigate inequalities in the distribution of clean water systems across Türkiye between 1950 and 1980? How did political and social factors shape clean water investment in Türkiye during this period? What factors contributed to increased investment in clean water? Did the authorities of multiple institutions to develop clean water systems enhance or hinder these efforts? Finally, was there a correlation between clean water investments and public health improvements? This chapter addresses these questions, analyzing the distribution of clean water investments among regions and their impact on public health.

Recent international studies have concentrated on the unequal distribution of clean water systems and their impacts on public health and infant mortality. Unfortunately, the unequal distribution of sanitation investments and their outcomes has not been extensively addressed in Turkish research. I have examined clean water systems from a macro perspective, considering both urban and rural aspects as far as the available data allows. This chapter presents two main arguments. First, it examines the reasons for the slow and limited development of clean water systems in Türkiye between 1950 and 1980. I argue that one significant factor in the gradual progress of urban clean water infrastructure was institutional multivocality—a term I use, as in my analysis of urban sewage systems in Chapter 5, to describe the presence of multiple authorities and the resulting conflicts that hindered cohesive development.

The second argument of the chapter demonstrates that inequalities in access to clean water systems persisted both between regions and cities and within the same city. Between 1950 and 1980, the development of clean water systems began in the western parts of Türkiye and later spread to the eastern regions. In addition to regional disparities, clean water systems within cities in western and central Anatolia generally ex-

panded from city centers or upper-income areas to the periphery. However, the trend of urban water systems expanding from the center to the periphery remained limited in the urban centers of eastern Türkiye. It is important to note that this did not mean all city dwellers in the western parts of the country had access to clean water systems. In other words, as with urban sewage systems, inequalities in access to clean water existed also within the same city between 1950 and 1980.

The organization of this chapter is as follows: The first section (4.1) explores the term of the multivocality of institutions in clean water systems in Türkiye. The second section (4.2) discusses the roles and responsibilities of institutions in developing clean urban water systems among regions. The third section (4.3) elaborates on regional disparities in clean water access by considering time series data of the Bank of Provinces in addressing these inequalities. While clean water systems in rural areas are discussed in the fourth section (4.4), their health impacts are analyzed in the fifteenth section (4.5). The impact of international institutions on water systems will be discussed in (4.6), and (4.7) is the conclusion section.

§ 4.1 The Multivocality of Institutions in Clean Water Systems

4.1.1 *The Transition from the Bank of Municipalities to the Bank of Provinces*

The Bank of Provinces played a significant role in the construction and expansion of clean water systems across regions in Türkiye between 1945 and 1980. This section examines the reasons behind the transformation from the Bank of Municipalities to the Bank of Provinces. I argue that the Bank of Provinces was an important contributor to the multivocality of institutions. During the statist period of the 1930s and 1940s, municipalities were assigned responsibilities for the construction and development of clean water systems. This strategy aimed to empower local governments, allowing them to play an active role in the nation's re-

building efforts. Although the Law of Municipalities in 1930 granted municipalities greater authority and responsibility for infrastructure investments, many lacked the financial and technical capacity to fulfill these duties, as discussed in Chapter 2. Moreover, the Municipalities Bank's scope was limited, as it could only provide financial support to municipalities rather than entire cities. An analysis of the number of municipalities in Türkiye between 1935 and 1945 shows a steady increase. In 1935, there were 505 municipalities, rising to 549 in 1940, and reaching 583 by 1945. Despite the increase in the number of municipalities between 1935 and 1945, the proportion of the municipal population to the total population remained stable. In both 1935 and 1940, 29% of the total population lived in municipalities, with this ratio rising slightly to 31% by 1945.¹

In addition to the limitation posed by the relatively small proportion of the population living in municipalities, the Municipalities Bank was designed solely to provide financial support. However, municipalities required not only financial assistance but also technical expertise and a qualified labor force to effectively carry out their responsibilities. According to a survey, which I estimate to have been conducted between 1965 and 1970, only 127 architects and engineers were employed across 1,077 municipalities outside of Istanbul, Izmir, and Ankara. Furthermore, 478 of these municipalities had no technical personnel at all, highlighting a significant shortage of expertise.² The limited technical expertise of municipalities and the uneven distribution of clean water systems in Türkiye underscore the need for redistributive policies and institutions to ensure access to clean water for all citizens. For these reasons, the Municipality Bank was compelled to broaden its role beyond solely providing financial support.

¹ Calculations were based on the number of municipalities, the population within these municipalities, and the total population. See: Devlet İstatistik Enstitüsü, *İstatistik Göstergeler = Statistical Indicators 1923-2013* (Ankara: Devlet İstatistik Enstitüsü, 2002), 6-8.

² *İller Bankası*, 4.

In 1945, the Bank of Municipalities—renamed the Bank of Provinces—was reorganized with an expanded mandate and an initial capital of 100 million Turkish lira. This capital was sourced from three contributors: forty million lira from special provincial administrations, thirty million from municipalities, and thirty million from villages. Article 2 of the 1945 Law allows the bank's capital to be increased up to double its initial amount through a decision by the Council of Ministers. Additionally, the bank's capital can be supplemented by income from other sources. Furthermore, Article 8 of the Law emphasized workforce training and educational opportunities, granting the Provincial Bank the authority to train a qualified workforce, including engineers and technicians. This authority included the ability to send students or interns abroad for further training and to produce relevant publications in the field.³ The lack of technical expertise among municipalities and the unequal distribution of clean water systems across Türkiye underscore the need for redistributive policies to ensure universal access to clean water. In conclusion, the transformation of the Bank of Provinces expanded its role beyond simply providing financial support. In essence, the Provincial Bank aimed to provide financial, educational, and technical support to all provinces in Türkiye, addressing infrastructure and technical capacity deficiencies as part of its redistributive mission.

4.1.2 *Navigating the Multivocality of Clean Water Systems: An Examination of Institutional Authority and Coordination*

Developing access to clean water systems is a complex task requiring close coordination and cooperation among multiple institutions. In Türkiye, various institutions held responsibilities and authority over clean water infrastructure investments. I use the term *multivocality* to describe the complex relationships among these institutions. This section aims to examine the institutions involved in the construction and development of clean water systems in Türkiye between 1950 and 1980, as well as the

³ *İller Bankası Kanunu*, Law No. 4759, June 13, 1945, *Resmi Gazete*, June 23, 1945.

distribution of authority and responsibility within this multivocality framework. In this way, the underlying reasons for inequalities in clean water infrastructure investments are revealed, opening discussions on the roles of various institutions. By analyzing the responsibilities and roles of different institutions, this study aims to provide an understanding of the challenges involved in establishing water networks.

§ 4.2 Who's in Charge? Understanding Institutional Roles and Responsibilities in Clean Water Systems

Between 1950 and 1980, various institutions in Türkiye held authority and responsibility for developing and investing in clean water infrastructure. This study aims to examine the roles and responsibilities of these institutions, which can be categorized as ministries, municipalities, the Bank of Provinces, village administrations, and the Directorate General of State Hydraulic Works.

The Ministry of Public Works has played a significant role in the construction and development of infrastructure in Türkiye. Formerly called *Nafia Nezareti* the Ministry oversaw a wide range of infrastructure investments during the early republican era. Its responsibilities included constructing and maintaining rail systems, ports, highways, bridges, and clean water systems, as well as operating postal and telecommunications facilities. During the early Republican period, the government sought to advance water infrastructure development through municipal management. To achieve this objective, *Nafia Nezareti* was assigned the task of auditing and supporting the provision of municipal drinking water in 1934.⁴

The name and authority of the ministry changed expediently as the process of the zeitgeist. In 1958, the Ministry of Development and Housing (*İmar ve İskan Bakanlığı*) was established under Law No. 7116 to oversee the planning and development of regions, cities, towns, and villages, as well as to establish urban infrastructure. Moreover, regulating

⁴ *Nafia Vekaleti'nin Vazife ve Teşkilatlarına Dair Kanun* Law No. 2443, May 29, 1934.

relations with municipalities became another responsibility of the new Ministry.⁵ In 1972, the Ministry of Development and Housing, like the Ministry of Public Works underwent reorganization and was renamed.⁶ Currently, the functions of the Ministry of Development and Housing are incorporated under the Ministry of Environment, Urbanization, and Climate Change.⁷

Municipalities hold a prominent role among the institutions shaping the development of clean water systems. Following the establishment of the Republic, the emerging nation-state viewed municipalities as essential actors in the country's development. As discussed in Chapter 2, a legal framework was established with the enactment of the Law on Municipalities in 1930. Prior to this, the 1926 Water Law had already transferred authority and responsibility for all water sources to municipalities. In areas without municipalities, this authority was assigned to village councils under the Village Law.⁸

Article 7 of the Municipalities Law of 1930 stipulated that municipalities should be established for settlements with populations exceeding 2,000 to enhance governance and public services. This decision aimed to improve the standard of living and well-being of residents in these areas by enabling more effective and efficient local government services.⁹ Hence, the number of municipalities increased.

⁵ *İmar ve İskan Bakanlığı'nın Kuruluş ve Vazifeleri Hakkında Kanun* Law No. 7116, May 9, 1958.

⁶ *Bayındırlık Bakanlığı Kuruluş ve Görevleri Kanunu* Law No. 1609, July 13, 1972.

⁷ T.C. Çevre, Şehircilik ve İklim Değişikliği Bakanlığı. "Tarihçemiz." Accessed November 7, 2024. <https://csb.gov.tr/tarihcemiz-i-7012>.

⁸ *Sular Hakkında Kanun* Law No. 831, December 10, 1926.

⁹ *Belediyeler Kanunu* Law No. 1580, April 3, 1930.

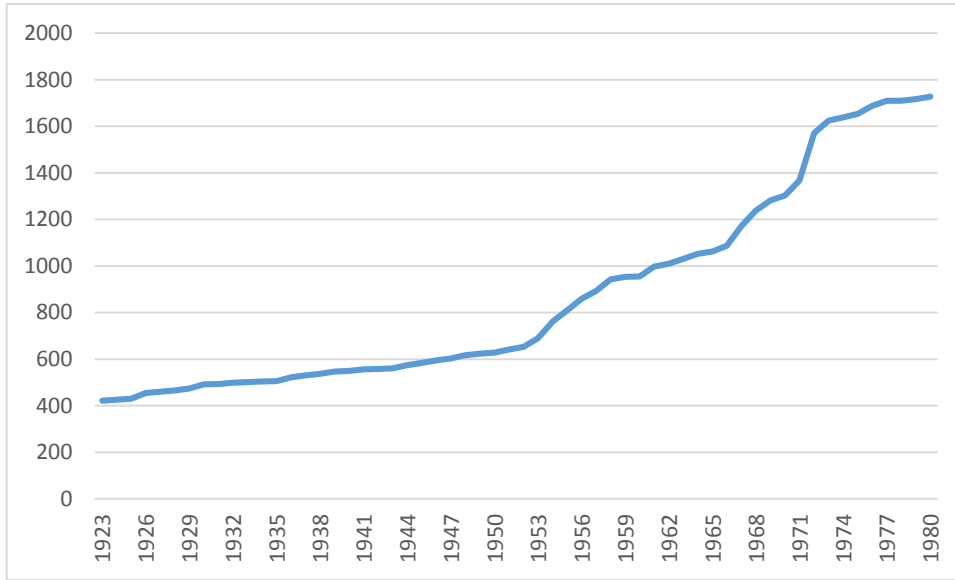


Figure 4.1 Number of municipalities, 1923-1980. Sources: Mustafa Dönmez, *Cumhuriyet'in 75. Yılında Belediyelerimiz* (Ankara: Seçkin Yayınevi, 1998), 7-9; *İller Bankası, Kuruluşundan Bugüne kadar İller Bankası*, 99-101.

Figure 4.1 shows the number of municipalities in Türkiye from 1923 to 1980. It can be seen that the number of municipalities gradually increased over the years, starting from 421 municipalities in 1923 and reaching 1727 municipalities in 1980. However, there were some fluctuations, where the increase in the number of municipalities slowed down and then accelerated again. The number of municipalities increased by around 300 between 1923 and 1940 and then increased by around 700 between 1940 and 1960. The highest increase in municipalities was seen between 1972 and 1973, from 1571 to 1624 municipalities. The number of municipalities increased rapidly after 1973, reaching a peak of 1727 in 1980.

During this period, both the number of municipalities and their legal responsibilities grew. The government empowered municipalities to manage various public utilities, including establishing clean water systems and ensuring the cleanliness of water sources to protect public health. All municipalities are obligated to fulfill the basic responsibilities

outlined in the 1930 Municipalities Law. While municipalities were tasked with providing a range of public services, they were specifically entrusted with the construction and maintenance of water infrastructure. For example, municipalities are responsible for maintaining and cleaning shared water channels in gardens, fields, and orchards within their boundaries, as well as repairing any damaged channels. Ensuring the cleanliness and upkeep of these water channels, puddles, and waterways supports agricultural productivity and helps prevent waterborne illnesses, thus contributing to public health.¹⁰

In 1934, the municipality's authority was further expanded through additional articles in the Water Law. For instance, municipalities were given control over the repair, cleaning, and improvement of water sources located outside their boundaries, extending their responsibilities beyond municipal limits.¹¹ In addition, municipalities were classified based on their income levels (50,000, 200,000, and 500,000), with additional responsibilities assigned to those with higher incomes.¹²

According to the 1930 law, for settlements with populations under 50,000, if the revenue generated was insufficient to provide essential infrastructure services—such as water, electricity, mapping, and town planning—assistance would be provided by the Ministry of Interior. Thus, in addition to municipalities, the Ministry of Internal Affairs was also involved in water investments.¹³ It can be observed that the range of services municipalities were obligated to provide became increasingly diverse and numerous, while their financial burdens grew significantly. Despite these rising expenses, it is evident that municipal revenues were insufficient to cover these obligations. The capability of municipalities to provide clean water systems varied depending on their sources of income, resulting in differences between municipalities regarding the effectiveness of their clean water systems. For instance, dedicated water

¹⁰ *Belediyeler Kanunu*, Law No. 1580.

¹¹ *Sular Hakkında Kanun*, Additional Article 1 Law No. 2659, 1934.

¹² *Kuruluşundan Bugüne Kadar İller Bankası 1945–1973* (Ankara: Doğu Matbaası), 15.

¹³ *Belediyeler Kanunu*, *Ek Madde* added June 18, 1947, by Law No. 5116, Article 1.

administrations were established in major cities such as Istanbul, Izmir, and Ankara.¹⁴ However, other municipalities required greater financial support from the state. Municipal revenues were reorganized by laws enacted in 1948. The 1948 legislation aimed to increase municipal revenues, allowing the state to provide financial support to municipalities by allotting them a portion of public revenue.¹⁵

Moreover, the government took action to ensure that the cost of water infrastructure would be shared with property owners through legal arrangements. One-third of the construction expenses for the distribution and improvement of water systems in cities and towns were to be collected from the owners of buildings and land within the areas where the water was distributed or where benefits were gained.¹⁶ Although this provision aimed to ensure that the costs of improving water infrastructure would be shared among those benefiting from it, it is unclear whether it was enforced in practice. All these efforts served not only to increase municipal income but also to diversify revenue sources. Especially, the allocation of a certain percentage of state revenue sources, such as road taxes, income tax, and customs duties, to municipalities strengthened their financial position compared to villages and special administrations.¹⁷ However, these regulations did not provide the necessary workforce for technical infrastructure investments, such as clean water infrastructure, within municipalities.

The Bank of Municipalities was established in 1933 to provide financial support to municipalities, as mentioned in Chapter 2. However, municipalities required not only financial assistance but also technical support. Consequently, the Municipalities Public Improvements Committee (Belediyeler İmar Heyeti) was organized in 1935 to provide technical as-

¹⁴ DPT İçme Suyu ve Kanalizasyon Raporu [State Planning Organization Drinking Water and Sewerage Report], 3.

¹⁵ *Belediyeler Kanunu* Law No. 5383, June 3, 1948.

¹⁶ *Ibid.*, Article 13.

¹⁷ *İller Bankası 1945-1973*, 16.

sistance under the jurisdiction of the Ministry of Interior. Considering Türkiye's changing infrastructure needs after the Second World War, the Bank of Municipalities, established in 1933, was reorganized in 1945 with expanded authority and scope as the Bank of Provinces.¹⁸ In contrast to the Bank of Municipalities, the Ministry of Public Works and Settlement played a significant role in managing the governing bodies within the Bank of Provinces. Specifically, the General Director was appointed by the President of the Republic upon the recommendation of the Ministry of Public Works and Housing and the decisions of the Council of Ministers.¹⁹

The Bank of Provinces, distinct from the Bank of Municipalities, was also responsible for infrastructure investments related to Provincial Special Administrations and villages. The initial capital of 100 million Turkish Liras was distributed as follows: 40 million Turkish Liras to Provincial Special Administrations, 30 million Turkish Liras to municipalities, and 30 million Turkish Liras to villages.²⁰ Furthermore, the government aimed to alleviate financial, technical, and personnel disparities among municipalities through the establishment of the Bank of Provinces. The Bank of Provinces was designed to serve as a redistribution mechanism for water infrastructure investments not only in municipalities but also in villages. This change can be approached from multiple perspectives.

This change in approach can be viewed as a means to address inequalities not only between regions but also between rural and urban areas. Additionally, although Türkiye was not directly involved in the Second World War, wartime conditions and taxation deeply impacted rural areas. Due to experiences from the First World War, the government sought to establish a source of revenue through taxation, rather than creating budget deficits by printing money during this period. This preference placed particular pressure on small-scale farmers and producers,

¹⁸ All debts, assets, goods, and revenues from the Municipalities Bank, established in 1933, were transferred to the Bank of Provinces, known today as İlbank.

¹⁹ *İller Bankası Atatürk'ün Doğumunun 100. Yılı*, 20–29.

²⁰ *İller Bankası 1945–1973*, 18.

eventually damaging the relationship between the single-party government and the rural population. To improve its relationship with small-scale farmers and producers, the government implemented a Land Reform bill, granting it the authority to redistribute land plots larger than 50 *dönüm* in Turkish (5 hectares). In the postwar period, this land distribution is recognized in the literature as a step toward reconciling with small producers.²¹ I argue that the assignment of the Bank of Provinces to develop villages can also be seen as a step toward rebuilding relationships.²² According to Article 19 of Law No. 4759 in 1945, 50% of the bank's annual net profits was allocated to village development.²³ Additionally, 30% of the net profit was designated as the village capital share in the annual minutes of the general meeting of the Bank of Provinces.²⁴

Cross-subsidy is an important method used by the government to promote the development of low-income municipalities and villages. The goal of cross-subsidy is to reduce disparities between different regions and promote a more equitable distribution of wealth and resources. The Bank of Provinces was designed to provide not only financial support but also technical and educational assistance as a redistribution mechanism for all cities and villages.²⁵ Before the establishment of the Bank of Provinces, the Village Law of 1924 was the only legal framework for village development. The law designated settlements with fewer than 2,000 inhabitants as villages. Moreover, Article 13 of the Village Law stipulated

²¹ Pamuk, *Uneven Centuries*, 225.

²² Muzeffer Akalın, "İller Bankası," *İdare Dergisi*, no. 177 (1945): 8.

²³ In accordance with Article 19 of the 1945 Law on the Bank of Provinces, it is evident that the requirements of this provision were fulfilled in all general assembly minutes from 1968 to 1980.

²⁴ According to page 13 of the 1975 general meeting minutes of the Bank of Provinces, the net profits were allocated as follows: 10% to the Ordinary Provident Fund, 5% to Extraordinary Funds, 5% as bonuses for civil servants and employees, and 30% to the capital account for the village capital share. Additionally, half of the net profit was earmarked for village development. For further details, refer to Article 19 of the 1945 Law on the Bank of Provinces and the 1975 general meeting minutes of the Bank of Provinces.

²⁵ *İller Bankası Kanunu*, Law No. 4759, Article 8.

mandatory tasks that villagers were required to perform. Upon examining the articles in the law, it can be stated that villagers were held responsible for certain basic public services. For example, villagers were required to construct covered channels to prevent wastewater from flowing from houses into wells, fountains, and streams.

Additionally, it was the villagers' responsibility to bring potable water to the village through covered channels.²⁶ Under the Village Law, villagers were expected to provide or construct basic services for themselves, such as roads and access to drinking and irrigation water; however, a planned investment policy for these infrastructures was lacking. During the single-party period, infrastructure investments in villages were not prioritized due to economic and political issues. New legal arrangements became necessary to address the needs of villages, which became more visible to politicians, especially after the Second World War.²⁷

The Directorate of Land and Resettlement (Toprak ve İskan Müdürlüğü), which operated under various names and ministries between 1923 and 1980, was an important institution during the early Republican era. Since its inception, the Directorate's primary focus has been on providing infrastructure services to rural areas.²⁸ Its responsibilities included developing projects for infrastructure services such as roads, drinking water, and electricity to support village development.²⁹ Starting in 1924, the General Directorate of Land and Resettlement, initially under the Ministry of Interior, was transferred to the Ministry of Health, Social

²⁶ 1924 Köy Kanunu, Article 13.

²⁷ Şefik Yaşar, "Köy Kalkınma Davası ve Köylerin Yönetimi," *İdare Dergisi*, no. 176 (1945).

²⁸ Under Law No. 5840, the General Directorate of Soil and Settlement was placed under the authority of the Prime Ministry. Subsequently, with Law No. 7116, it was transferred to the Ministry of Housing and Settlement, and on July 16, 1964, it became affiliated with the Ministry of Rural Affairs. In 1984, it was restructured under the Ministry of Agriculture, Forestry, and Rural Affairs. For detailed information see: *Toprak ve İskan Genel Müdürlüğü: Kuruluşu, Görevleri, Hizmetleri*, Tarım Orman ve Köy İşleri Bakanlığı Toprak ve İskan Genel Müdürlüğü (Ankara, 1984).

²⁹ For other duties, see 16.07.1964, decision no. 6/3349, Ministry of Village Affairs (*Köy İşleri Bakanlığı*).

Services, and Social Assistance (Sağlık İşleri ve Sosyal Yardım Bakanlığı, Department of Health and Social Welfare, Sıhhat ve İctimai Muavenet Vekaletine) on November 18, 1935, under Law No. 2829. In 1950, the General Directorate of Resettlement Affairs (İskan İşleri Genel Müdürlüğü) under the Ministry of Health and Social Assistance was merged with the General Directorate of Land and Resettlement (Toprak ve İskan Genel Müdürlüğü) under the Ministry of Agriculture. Following this merger, the newly unified agency began operating under the name of the General Directorate of Land and Resettlement Affairs (Toprak ve İskan İşleri Genel Müdürlüğü) within the Ministry of Agriculture. This reorganization aimed to provide more comprehensive and effective services to rural areas by integrating the resources and expertise of both agencies. Furthermore, in 1963, the Ministry of Village Affairs was established to assume responsibility for developing rural infrastructure.³⁰

Table 4.1 The ratio of the villages in total population, 1927-1980

Year	The Ratio of the Villages in Total Population
1927	76
1935	76
1940	76
1945	75
1950	75
1955	71
1960	68
1965	66
1970	62
1980	58

SOURCE Statistic Yearbook of 1993.

Table 4.1 shows the proportion of Türkiye's population residing in villages, expressed as a percentage of the total population, over the period from 1927 to 1980. Although there was a gradual decline in the proportion of the population living in villages over these 53 years, the ratio remained notably high. In the 1960s, the government undertook efforts to advance rural development, focusing on infrastructure and essential services through various institutions, as a large portion of the population lived in these areas.

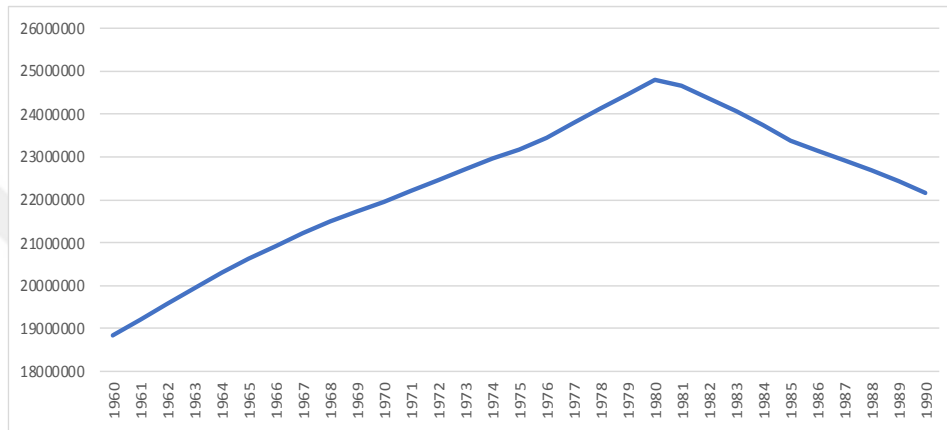


Figure 4.2 Rural Population in Türkiye (absolute), 1960-1990. SOURCE: *World Bank (2022a)*.

Figure 4.2 shows that, while urban populations continued to increase until 1980, rural populations in Türkiye also experienced growth. Rural and urban populations in Türkiye reached equal sizes for the first time in the early 1980s. Additionally, during this period, the rural population, which had steadily grown until then, began to decline for the first time since the war years. Although the proportion of the rural population within Türkiye's total population decreased between 1950 and 1980, the absolute number of people living in rural areas rose significantly. The demand for infrastructure development in villages became a pressing issue, leading to legal reforms and institutional support for infrastructure investments in rural areas.

In addition to the activities of the Bank of Provinces supporting villages, one of the significant efforts was the establishment of the General

Directorate of Land and Water (Toprak ve Su Genel Müdürlüğü) in 1960, aimed at improving irrigation opportunities in agriculture. The primary focus of this organization was to develop and implement projects related to land and water management, as well as to provide technical assistance and education to farmers in the agricultural sector.³¹ Another initiative was the establishment of the General Directorate of Road, Water, and Electricity Development in 1965, aimed at providing basic infrastructure services to villages.³² Both organizations were founded with the goal of improving living conditions and fostering development in Türkiye's rural areas. These efforts reflect the government's recognition of the importance of addressing the needs of the rural population and providing essential resources and infrastructure to improve their livelihoods.

Lastly, the Directorate General for State Hydraulic Works (Devlet Su İşleri, DSI in Turkish acronym) should be noted as a crucial institution in the development of water systems. As awareness grew in the early 1950s that urban water resources would be insufficient for drinking and other uses, the Directorate General for State Hydraulic Works was established on December 18, 1953, through Law No. 6200. It was primarily financed by the Central Government Budget (98% from the Treasury) and supplemented by its own resources (2%). DSI's responsibilities included supplying drinking, utility, and industrial water to settlements, implementing flood prevention measures, developing irrigation projects, and enhancing hydroelectric energy potential. Nowadays, the State Hydraulic Works (DSİ) primarily focuses on dam construction; however, between 1954 and 1980, DSİ developed urban water systems to provide clean water networks. During this period, responsibility for water systems was divided between the Bank of Provinces and the General Directorate of State Hydraulic Works.

Between 1950 and 1980, multiple institutions held authority and responsibilities over water systems, as previously mentioned. Although the

³¹ *Topraksu Genel Müdürlüğü*, 5–8.

³² *Köy İşleri ve Kooperatifler Bakanlığı YSE Genel Müdürlüğü Köy Yolları Ulaştırma Ana Planı Hakkındaki Görüşleri* (Ankara, 1982), 3.

government aimed to assign these institutions complementary roles in basic infrastructure investments, conflicts emerged in areas of overlapping authority and responsibility. In other words, the institutions were unable to effectively cooperate in sharing the investment burden. These problems were trying to be overcome by drawing the authority and duty distribution of the institutions with sharp lines with the laws enacted later. For instance, both the Provincial Bank and the DSI were authorized to manage clean water infrastructure investments. Over time, the specific responsibilities of each institution were clarified, allowing targeted investment distribution across provinces. Notably, Law 6200 of 1968 assigned the General Directorate of State Hydraulic Works (DSİ) the responsibility of supplying drinking, domestic, and industrial water to major metropolitan areas, such as Ankara and Istanbul. Additionally, the DSI was tasked with providing clean water systems to cities with populations exceeding 100,000.³³

Another example was the Ministry of Village Affairs' Road, Water, and Electricity General Directorate, which was responsible for water infrastructure investments in villages. The differing requirements for supplying water to villages versus urban areas created significant challenges, especially in regions experiencing population growth and needing expanded clean water systems. The Bank of Provinces criticized the water systems implemented by the Ministry of Village Affairs' Road, Water, and Electricity General Directorate, deeming them inadequate and poorly adapted to meet local needs. The Bank of Provinces has criticized the water systems implemented by the Ministry of Village Affairs Road, Water, and Electricity General Directorate, stating that they were unadaptable and inadequate. They claimed that municipalities or central institutions have dismantled or abandoned, these facilities and made new ones due to inadequate. It was necessary to establish a standardized approach to the development of water systems for all institutions responsible for

³³ *Belediye Teşkilatı Olan Yerleşim Yerlerine İçme, Kullanma ve Endüstri Suyu Temini Hakkında Kanun*, No. 1053, 3 July 1968.

clean water infrastructure.³⁴ Evidently, government spending on these investments was often wasted due to inefficiencies. Given the high costs associated with modern water infrastructure projects, these initiatives should be executed with greater care. To this end, institutions must collaborate closely and ensure their projects are efficient and feasible before implementation. Consequently, I use the term *multivocality* in this chapter to describe the ambiguous distribution of authority and responsibility among institutions.

The term *multivocality* refers to the coexistence of multiple institutions with overlapping investment responsibilities for the same region at the same time. The government initially assumed that institutions established to develop clean water systems would complement and support each other. However, I argue that this multivocality had a negative impact on investments in clean water networks. As issues and conflicts arose between institutions over clean water investments, the government sought to address or manage these conflicts through legal regulations between 1950 and 1980. The effects of institutional multivocality on regional water systems will be further examined in subsequent sections.

§ 4.3 Regional Disparities in Access to Clean Water: An Analysis Based on the Bank of Provinces Data

4.3.1 *From Policy to Practice: The Role of Institutions in Implementing Clean Water Systems, 1950-1980*

This section examines the development of clean water systems in Türkiye from 1950 to 1980, focusing on the roles of institutions such as the Bank of Provinces, municipal authorities, the Ministry of Village Affairs, and the General Directorate of State Hydraulic Works. As noted in Chapter 2, Section 2.3, until 1950, only around 13.3% of the population had access to clean water systems. Moreover, access to clean water systems was both

³⁴ *İller Bankası*, 162.

limited and inequalities across various cities and regions. Notably, significant disparities existed between Türkiye's western and eastern regions: in the densely populated and urbanized western areas, clean water infrastructure extended beyond major city centers to peripheral cities, even though overall access remained limited. In contrast, in the eastern regions, clean water infrastructure was generally restricted to city centers, underscoring a lack of core-to-periphery development in water access. This section examines the impact of institutional investments on remedying disparities in clean water access within cities and across regions from 1950 to 1980.

After World War II, international, political, economic, and demographic factors, as well as infrastructural needs, pushed Türkiye toward significant change. In 1950, Türkiye's population was approximately 20 million, with projected growth expected to increase demand for infrastructure in metropolitan and rapidly developing cities. This anticipated population increase underscored the need to address future infrastructure requirements and allocate resources accordingly. These shifts impacted the scope, responsibility, and authority of various institutions. In the early republican era, the Municipalities Bank was established by the state in 1933, followed by the creation of the Municipal Public Improvements Committee in 1935 to support municipalities in city and infrastructure planning. As discussed in detail in Chapter 2 and previous sections, these early efforts represented a preparatory phase, aimed at assessing the country's needs and building experience for expanding infrastructural investments.

Although legal regulations enacted in the early Republican era aimed to guide infrastructure investments in Türkiye, actual progress was limited by a shortage of qualified personnel, as well as economic and political priorities. For instance, the Municipal Law required municipalities to prepare zoning plans within five years; however, achieving this goal was unrealistic given the period's constraints. During the early republican era, foreign experts were engaged to support city planning and infrastructure projects, including clean water systems. Institutions founded after 1945 focused on addressing the shortage of qualified personnel by

building expertise and identifying specific needs. To this end, efforts from 1950 to 1980 prioritized training a new generation of engineers, technicians, and architects, with a particular emphasis on increasing the number of engineers. The engineers trained during this period actively contributed to the development of Türkiye's infrastructure, with some, like Demirel and Özal, eventually becoming influential figures in Turkish politics. Additionally, foreign engineers and experts helped meet the need for qualified personnel during this period. Notable individuals, including Prof. Jansen, Prof. H. Prost, J. Lambert, H. Elgözt, Prof. Walger, and Prof. G. Oelsner, made significant contributions to zoning and infrastructure investments in Türkiye.³⁵

The Bank of Provinces was established in 1945 with an initial capital of 15 million to meet the financial, technical, and educational needs of cities across both urban and rural areas, functioning as a redistribution mechanism. In addition to these institutional changes, 1950 marked a turning point as the Democrat Party, led by President Celal Bayar and Prime Minister Adnan Menderes, came to power following its electoral victory. The Democrat Party adopted a liberal economic policy with an emphasis on agriculture. As the government prioritized agricultural policies, it supported the expansion of the agricultural frontier through the Land Reform Law of 1946, which facilitated the allocation of state-owned lands to small farmers.

Moreover, aid from the Marshall Plan financed the importation of tractors, significantly expanding the amount of cultivated land. These efforts had a positive impact on agricultural production in the early 1950s, leading to prosperity and rising incomes across all economic sectors. Pamuk notes that the Gross National Product (GNP) increased at an average annual rate of 8% from 1947 to 1953. While urban inhabitants experienced wage and salary increases, the largest gains occurred in the agricultural sector, particularly among market-oriented producers.³⁶ The government needed to invest in clean water systems and irrigation to

³⁵ 50 Yılda İmar ve Yerleşme 1923-1973 (Ankara: İmar ve İskan Bakanlığı, 1973), 15-18.

³⁶ Pamuk, *Uneven*, 205-210; Yenil, *Cumhuriyet'in İktisat Tarihi*, 109-113.

meet the growing demand of a rapidly urbanizing population. In response to this need, the government established the General Directorate of State Hydraulic Works in 1953. The construction of dams became a priority, not only to provide clean water but also to support irrigation efforts. The establishment of the General Directorate of State Hydraulic Works aimed to address these investments and support other institutions' activities.³⁷

The period of agriculture-based development, often referred to as the 'golden years,' was short-lived. Internationally, the end of the Korean War led to a decline in demand for export commodities, causing a drop in prices. Simultaneously, limitations within the agricultural sector became apparent. In the 1950s, most farming in Anatolia still relied on dry farming techniques, with only a small proportion—approximately 5.5%—of the total cultivated area able to be irrigated. Combined with unfavorable weather conditions, these factors led to a decline in agricultural yields and a slowdown in the expansion of cultivated areas in the latter half of the 1950s. Although the government had established the General Directorate of State Hydraulic Works in 1953 to support irrigation and clean water system construction, this institution required time to fully implement its initiatives. In response to declining commodity prices, the Democrat Party government introduced a price support program for wheat in the mid-1950s. The subsidies from this program were a major contributing factor to the inflationary trend that emerged in the mid-1950s. Shortages of goods and the formation of long queues became common, negatively impacting society. In 1960, following the IMF-led devaluation of 1958 and the military coup, the State Planning Organization (SPO) was established to implement structured development planning. The concept of development planning was widely supported and the planning methodology and target setting were heavily influenced by Jan Tinbergen, who

³⁷ *DSİ Kuruluşunun 20. Yılı* (Ankara: Devlet Su İşleri Genel Müdürlüğü, 1974).

was invited as the chief consultant to the SPO to assist with the preparation of the First Five-Year Plan.³⁸



Photograph 4.1 The infrastructure services of Izmir Municipality.
SOURCE: *Beyaz Kitap*, Izmir Belediyesi DDY Matbaası (1954).

The progress in clean water systems across regions became more observable and trackable during the period of development plans. I strongly believe that it would be beneficial to compare the investment policies of the Republican People's Party (RPP) and the Democrat Party (DP) toward clean water systems prior to discussing the investments made by various institutions. Despite the differing priorities for infrastructural investments between the Republican People's Party and The Democrat Party, similarities exist in their approaches. First of all, both parties recognized the significance of transportation investments, and they placed emphasis on the development of transportation networks, albeit in different ways.

³⁸ Boratav, *Türkiye İktisat Tarihi*, 90–93.

During the early Republican era, the Republican People's Party prioritized railroad construction, with a focus on connecting the eastern part of the country to the center and other regions. However, this investment was not accompanied by highways and paved roads. Conversely, The Democrat Party prioritized the construction of highways and secondary roads as its main infrastructural investment.

Secondly, investments in electricity infrastructure were also placed as a priority for both party policies. Clean water systems were relegated to third place among the infrastructural investments. The development of clean water systems was a significant concern among other infrastructure investments. Following the increase in urbanization rates, particularly in metropolitan areas such as Istanbul and Izmir, after 1950, the provision of clean water systems became a vital community service requirement. Despite the priority placed on electricity infrastructure investments over water infrastructure investments, it is clear that water infrastructural investments are demonstrated more effectively and programmed through development plans. The Bank of Provinces, municipalities, state hydraulic works were key components of the development of clean water systems in Türkiye.

4.3.2 *The Role of the Bank of Provinces in Financing Clean Water Infrastructure: An Analysis of Its Impact on Clean Water Systems Development*

This section examines the role of the Bank of Provinces in financing and constructing clean water infrastructure from 1945 to 1980, with a particular focus on its investments in both urban and rural areas. My primary aim is to assess the significance of clean water infrastructure within the bank's total investment portfolio. Until 1976, the bank provided services across five main categories: maps, construction plans, various structures, clean water systems, and electric facilities. In response to evolving needs, these categories were expanded to ten after 1976, adding Electrical Machinery and Equipment, Cement and Pipe Factories, Sewer Systems, Auto Maintenance and Repair, and Land Use Plans. Another im-

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portant point is that the Bank of Provinces' annual board reports categorize investments into program investments, cash expenditures, and physical investments. The realization rate of the Bank of Province's program investments between 1968 and 1980 was notably high.

Table 4.2 The inflation-adjusted expenditures of the Bank of Provinces in eight categories during the period of 1968 to 1980, excluding the year 1970, in Turkish Lira.

Sectors	1968	1969	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Map	12,361.7	10,835.2	6,749.3	6,620.9	8,610.2	11,903.6	12,925.8	13,007.8	17,095.2	14,270.9	11,400.1	8,643.3
Construction plan	7,709.3	5,285.9	3,848.0	2,523.9	4,012.5	3,501.1	4,198.1	5,068.0	5,265.2	5,578.8	4,552.5	3,622.9
Various Structure	24,367.5	12,364.8	26,962.7	34,161.7	56,946.7	75,093.1	131,317.9	123,428.5	178,919.5	74,638.9	56,899.5	57,538.7
Clean Water Systems	129,423.6	101,721.9	109,689.0	109,106.5	173,804.2	257,512.0	309,937.5	319,993.6	439,568.2	213,248.6	155,045.9	203,419.8
Electric Facilities	208,940.5	196,687.5	108,282.8	97,395.0	106,404.8	177,959.8	221,839.8	308,012.6	345,831.9	278,388.7	221,376.0	270,087.9
Electrical Machinery and Equipment	-	-	-	-	-	-	-	-	7,286.7	8,716.5	20,658.8	17,368.9
Cement and Pipe Factories	-	-	-	-	-	-	-	-	466.2	16.2	127.3	72.3
Sewer Systems	-	-	-	-	-	-	-	-	-	160,057.0	145,430.8	147,864.8
Total	382,802.6	326,895.3	255,531.8	249,808.0	349,778.4	525,969.5	680,219.1	769,510.5	989,167.8	754,915.6	615,490.8	708,618.7

SOURCE Prepared by the author using the balance sheet profit and loss records of the Bank of Provinces for the years 1968 to 1980, except the year 1970.

Table 4.2 shows the inflation-adjusted expenditures of the Bank of Provinces across eight categories from 1968 to 1980, excluding 1970. It is important to note that from 1974 to 1978, expenditures for clean water and sewerage were grouped under a single category; for these years, I calculated clean water water expenditures by excluding those related to sewerage projects and facilities. Among all categories, electricity and water were two key infrastructure investments made by the Bank of Provinces over this twelve-year period, with the exception of 1970. Notably, spending on clean water systems changed considerably, rising steadily from 1968 and peaking in 1977, followed by a decline over the next three years until 1980.

The increased spending on clean water systems until the mid-1970s can be attributed to population growth and urbanization in Türkiye, which aimed to expand access to clean water across the country. However, Türkiye encountered economic challenges in the mid-1970s, particularly due to the depletion of foreign exchange reserves. In response, the coalition government encouraged private firms to borrow externally

with exchange-rate guarantees. When the government was unable to honor the increased short-term external debt, Türkiye's Import Substitution Industrialization (ISI) economic policy led to inflationary pressures after the mid-1970s.³⁹ These economic issues negatively impacted funding for clean water systems, resulting in a decline in expenditures from 1978 to 1980.

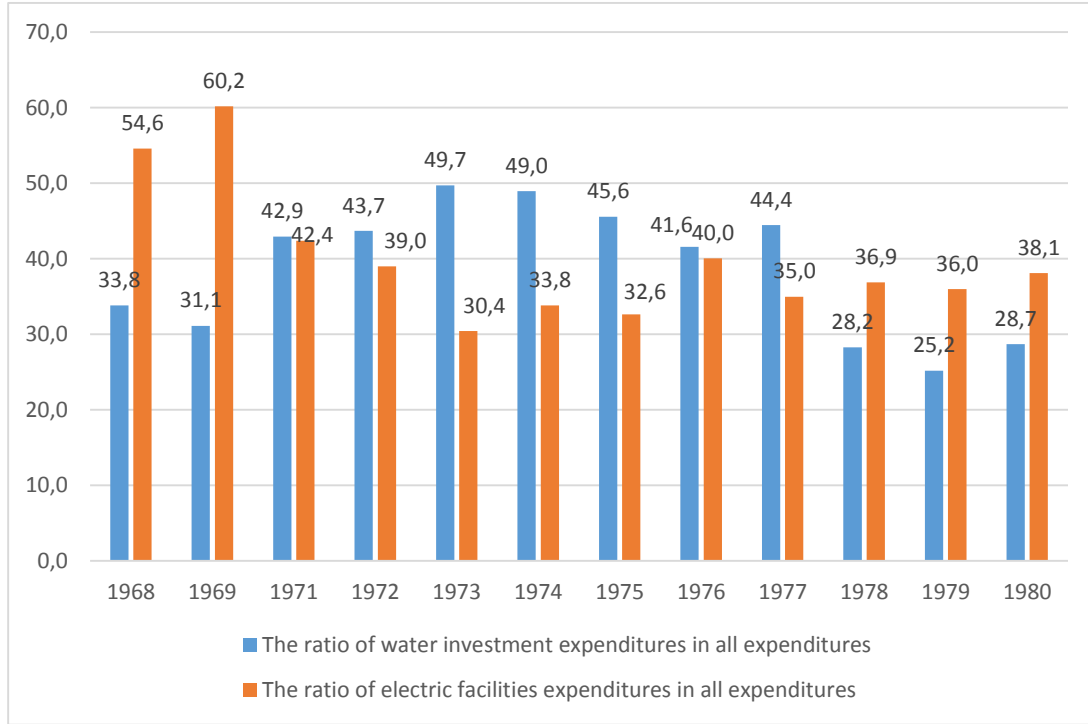


Figure 4.3 Comparison of Clean Water Systems and Electric Facility Expenditures as Ratios of Total Expenditures in the Bank of Provinces, 1968–1980. *SOURCE:* Compiled by the author using the balance sheet and profit and loss records of the Bank of Provinces from 1968 to 1980, except the year 1970.

A closer examination of the Bank of Provinces' expenditures in the sectors of clean water systems and electricity reveals that these two categories constituted a high percentage of total expenditures compared to

³⁹ Şevket Pamuk, "İthal İkamesi, Döviz Darboğazları ve Türkiye, 1947–1979," in *Krizin Gelişimi ve Türkiye'nin Alternatif Sorunu*, 37–68, 1984.

other categories. Figure 4.3 shows the ratio of water system and electric facility investments to total expenditures by the Bank of Provinces in Türkiye from 1968 to 1980, excluding 1970. The ratios for both water system and electric facility expenditures fluctuated from year to year. The ratio of water investment expenditures showed an upward trend from 1968 to 1973, peaking at 49.7% in 1973. However, from 1974 to 1980, this ratio significantly declined, reaching a low of 25.2% in 1979 before increasing slightly to 28.7% in 1980. In contrast, the ratio of electric facilities expenditures decreased steadily from 1968 to 1971, which may be attributed to the establishment of the Turkish Electricity Administration (TEA), *Türkiye Elektrik Kurumu (TEK)*.

The increase in the ratio of electric facilities expenditures to total expenditures in the early years of this period indicates that the Turkish government prioritized the development of the electric sector. After the establishment of the Turkish Electricity Administration (TEA), the ratio of electric facilities expenditures by the Bank of Provinces continued to decline. Although this ratio showed a downward trend from 1971 to 1974, the Bank of Provinces continued its investments in electricity despite the presence of TEA. This illustrates the multivocality of institutions.

Institutions provided to municipalities and villages financial assistance in the form of loans and grants to support clean water infrastructure investments. Figure 4.4 indicates the amount of granting loans for clean water infrastructure investments to municipalities and also villages between 1945 and 1980 by the Bank of Provinces. The information regarding financial support provided by the Bank of Provinces to municipalities and villages was available, however, the data regarding loans specifically given to villages was only detailed for a six-year period. It should be noted that during these six years, the loans given to villages constituted less than 0.1% of the loans given to municipalities of the same year. In subsequent years, loans provided to both municipalities and villages were combined and referred to as total clean water loans. Given the low percentage of loans allocated to villages and also limited information about details, I preferred to present the data collectively for both municipalities and villages.

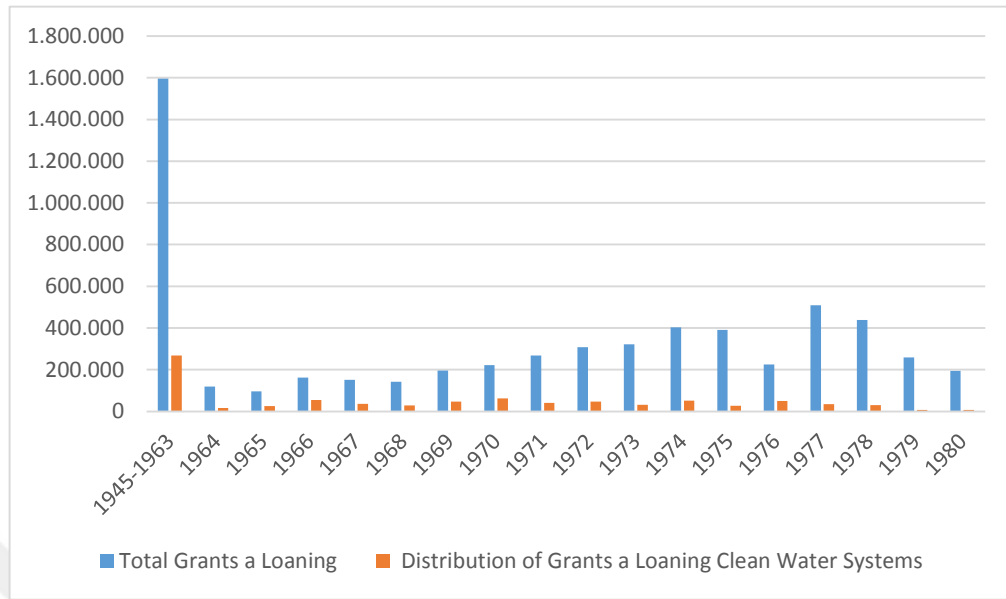


Figure 4.4 Distribution of grants and loans (ikraz) for clean water systems and total grants and loans by the Bank of Provinces (in Turkish Lira, Inflation-Adjusted), 1945–1980. SOURCE: Compiled by the author using inflation-adjusted data from the Bank of Provinces Committee Reports, 1968–1980.

Figure 4.5 is derived from grant loan records in the Bank of Provinces Committee Reports from the time series perspective between 1945 and 1980 based on Figure 4.4. Although there was always a grant loan ratio for clean water systems from 1945 to 1980, the allocation of loans to clean water systems varied greatly over the years. The highest clean water systems percentage of total loans had the years mid-1960s until the 1970s. Especially, whereas the highest clean water system ratio of total grant loans was 33.7% in 1966, and the lowest was 2.7% in 1979. These

grant loans were important for some municipalities and villages that needed support financially.

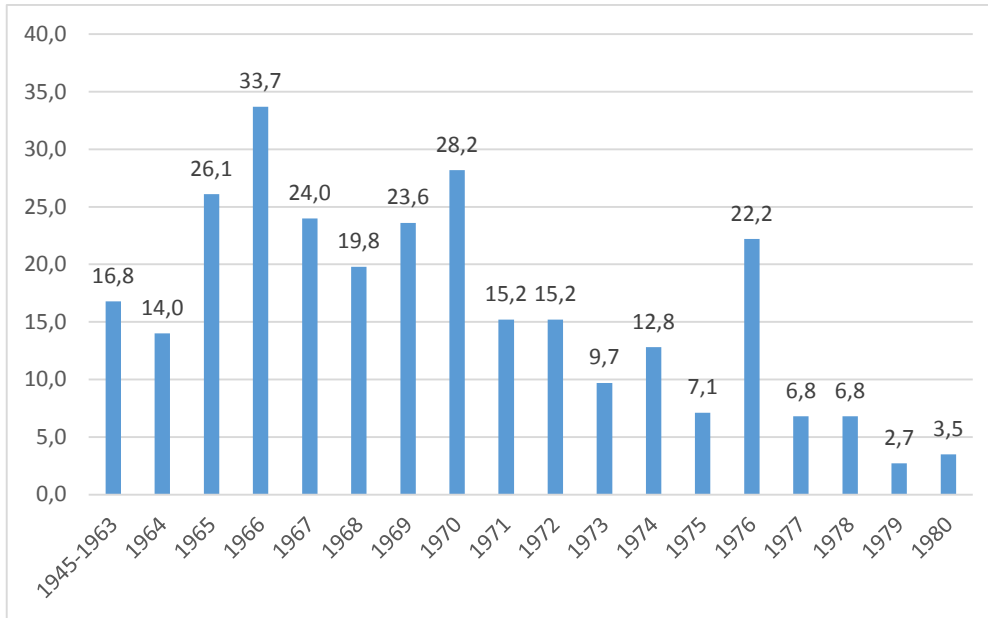


Figure 4.5 Ratio of Grant Loans (Ikraz) Given to Municipalities and Villages for Clean Water Systems to Total Loans by the Bank of Provinces. SOURCE: Compiled by the author using data from the Bank of Provinces Committee Reports, 1968–1980.

The provision of aid to villages by the Bank of Provinces was not limited to grant loans alone. Annually, 30% of the bank's net profit was earmarked as a village capital share, while an additional 50% was designated as a village development share. The manner of payment to villages in 1959 and 1980 is recorded in Table 4.3. Unfortunately, detailed information regarding the investments made with these funds in villages is unavailable. As previously mentioned, the period between 1950 and 1980 was characterized by overlapping authority and responsibilities among institutions, which I refer to as the multivocality of institutions. The Bank of Provinces annually set aside a portion of its profits for the benefit of villages, while other institutions, such as State Hydraulic Works

and the Ministry of Village Affairs, were established by the government to share the burden and responsibilities. However, during the multivocality of institutions between 1950 and 1980, it was quite difficult to follow clean water investments in villages or cities due to the lack of adequate information in archives. Therefore, the Bank of Provinces Committee Reports, between 1968 and 1980 were as significant sources in order to demonstrate the distribution of clean water infrastructure investments.

Table 4.3 Details of the Profits, Expenditures, Village Capital Share, and Village Development Share of the Bank of Provinces (in Turkish Lira)

Years	Paid Capital	Reserves	Profits	Village Capital Share	Village Development Share
1959	202,129,721	8,256,846	16,027,469	4,808,241.0	8,013,734
1960	233,682,057	10,660,966	5,654,409	1,696,323.0	2,827,204
1961	270,287,912	11,509,128	22,961,896	6,848,048.0	11,413,413
1962	314,865,090	14,953,412	22,349,674	6,665,462.0	11,109,103
1963	361,857,000	18,305,863	23,138,621	6,900,753.0	11,501,256
1964	377,967,576	21,776,656	21,518,899	6,417,695.0	10,696,159
1965	474,080,077	25,004,491	18,358,549	5,475,167.0	9,125,279
1966	523,748,976	27,958,274	17,143,471	5,112,788.0	8,521,314
1967	575,353,430	30,329,794	33,133,918	9,881,704.0	16,469,506
1968	646,156,901	35,299,882	23,690,632	7,065,382.0	11,775,638
1969	706,573,697	38,853,477	17,099,308	5,099,617.0	8,499,362
1970	778,737,157	41,418,373	15,448,751	4,607,363.0	7,678,938
1971	861,949,646	43,735,686	24,347,157	7,304,147.10	12,101,969
1972	950,609,459	47,387,759	31,888,002	9,510,128.00	15,850,213
1973	1,077,147,434	52,170,960	29,676,608	8,850,612.00	14,751,020
1974	1,200,000,000	56,622,451	35,620,182	10,623,196.00	17,705,326
1975	1,378,770,493	61,965,478	41,178,815	12,280,976.00	20,468,293
1976	1,554,247,400	68,142,300	57,957,868	17,285,082.00	28,808,469
1977	1,778,238,251	76,835,981	71,108,506	21,207,066.00	35,345,110
1978	2,000,000,000	87,502,257	113,999,567	33,998,694.00	56,664,490
1979	2,000,000,000	104,602,192	84,194,876	25,109,884.00	41,849,806
1980	2,000,000,000	117,231,423	150,933,261	45,013,627.00	75,022,078

SOURCE: Compiled by the author using the Bank of Provinces Committee Reports, 1968-1980.

The activities of the Bank of Provinces from 1945 to 1980 can be divided into two distinct periods: the initial period, from 1945 to the end of 1962, and the planned period, from 1963 to 1980, beginning with the first five-year development plan. The first two decades of the Bank's operations primarily focused on mapping, urban planning, and project development. Additionally, the information available regarding the Bank's clean water systems from 1945 to 1968 was limited.

Table 4.4 illustrates the number of completed clean water systems and the corresponding expenditures incurred from 1945 to 1980. According to Table 4.4, a total of 458 water facilities were completed during the Bank of Provinces' initial period, from 1945 to the end of 1962. I adjusted expenditures based on average price changes. From a time series perspective, the number of completed water facilities fluctuated between 1963 and 1980. After peaking in 1968, the number of completed facilities showed a downward trend until 1972. The decrease in 1973 may be attributed to the OPEC crisis. However, the increase in completed facilities from 1974 to 1980 suggests that efforts to improve access to clean water continued during this period.

The Bank of Provinces' spending on clean water systems increased significantly, rising from 63,383 in 1963 to 203,398 in 1980. This trend reflects a clear need for continued investment in clean water systems to meet the growing demand driven by population growth and urbanization. The number of clean water facilities constructed between 1945 and 1980, alongside their associated expenditures, illustrates the institution's commitment to investing in clean water systems. Although Table 4.4 provides data on the number of completed clean water systems and their associated expenditures from 1945 to 1980, details on the locations of these facilities within specific cities and regions are unavailable until 1968. Consequently, the regional distribution of clean water systems could not be examined for the period between 1945 and 1968 due to lack of information. Therefore, more detailed information on investments in clean water systems becomes available only for the period after 1968.

Table 4.4 The Number of Completed Clean Water Systems and the Price Change Adjusted Inflation in the period between 1945 and 1980, Turkish lira.

Years	Number of Completed Water Facilities	The Price Change Adjusted Inflation
1945-1962	458	919,244
1963	25	63,383
1964	15	68,820
1965	40	62,701
1966	56	92,585
1967	40	108,169
1968	64	120,282
1969	45	101,722
1970	42	85,171
1971	37	103,792
1972	47	98,736
1973	18	143,270
1974	38	193,958
1975	49	224,289
1976	43	235,962
1977	47	269,383
1978	48	213,249
1979	41	155,046
1980	62	203,398

SOURCE: Compiled by the author using the Bank of Provinces Committee Reports, 1968-1980.

The Bank of Provinces' investments in clean water infrastructure followed a two-phase approach. The initial phase involved developing a drinking water project for each region, which was an obligatory step. Once these projects were prepared for cities, towns, and villages, the bank would proceed with constructing the corresponding clean water facilities. For example, according to the 1949 municipal yearbook, clean water projects were developed for several municipalities. However, in

cases such as Erzincan, Burdur, and Seyhan, the Bank of Provinces had not yet implemented these projects.

Table 4.5 presents the distribution of clean water projects across Türkiye's seven regions from 1968 to 1980, excluding 1970, based on the Bank of Provinces' general assembly reports. Each region exhibits a fluctuating trend in the number of clean water projects. Over this eleven-year period, the Aegean region led with the highest concentration of projects, representing approximately 22.4% of the total. This was followed by Central Anatolia and the Marmara region, accounting for 20.6% and 16.2%, respectively. With 193 projects, the Aegean region recorded the highest number of clean water projects among all regions.

The Central Anatolia and Marmara regions followed closely with 178 and 140 projects, respectively. The relatively lower level of infrastructure investment in the Marmara region, despite its rapid urbanization and population density growth since 1950, suggests that the region may face significant challenges in meeting its expanding infrastructure needs. The Black Sea and Mediterranean regions accounted for 124 and 106 clean water projects, respectively, while Eastern Anatolia and Southeastern Anatolia had the lowest numbers, with 70 and 51 projects, respectively. The distribution of clean water projects from 1968 to 1980 supports the argument that the development of clean water systems primarily began in the western parts of Türkiye.

Table 4.5 Distribution of Clean Water Projects Across the Seven Regions of Türkiye, 1968–1980

	1968	1969	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Aegean Region	26	13	11	14	17	10	25	22	10	19	14	12
Afyon	3	1	1	2	3	1	5	3	2	2	2	2
Aydın		2	2	1			3	4	2	3	2	
Denizli	5	5		1	3	3	5	2	2	1	3	3
İzmir	12	3	2	3	4	2	3	5		4	2	4
Kütahya	1	1	2	3	3	1	6	3	1	3	1	
Manisa	3	1	2	2	2	2	1	5	2	4	2	3
Muğla	1			2	2	1	2			1	1	
Uşak	1		2						1	1	1	
Black Sea Region	16	7	9	7	5	12	13	17	9	10	7	12
Amasya	1					1	1	1	1	1	2	
Artvin		1				1		1			1	4
Bolu								2	1	1		
Çorum	1	1	2			2	1	2			1	1
Giresun	2		1	1	2				1	1		1
Gümüşhane	1	1				1						1
Kastamonu	1		2	3					1	2		
Ordu	2		1	1		1	2	3	1	2	1	1
Rize	1				1		2	2				
Samsun	4			1		1	4	1	1	2		2
Sinop	1				1		1				1	2
Tokat	1	2				2	1	2	2			
Trabzon			3	1	1	2	1	1	1		1	
Zonguldak	1	2				1		2		1		
Central Anatolia Region	20	9	11	3	15	15	21	21	24	14	15	10
Ankara	2	2	2		2	2	5	4	2	2	1	2
Çankırı			1	1		1	1		2		2	
Eskişehir	2	1			1		2	1	1			
Kayseri	1		2		1	4	1	2	6	2		1
Kırşehir	2	1			1		1	1			2	
Konya	6	3	2		5	3	8	4	6	3	5	3
Neşehir	4		2		2	2	2	3	1		2	
Niğde	1						1	4	2	2		2
Sivas	2		1		2	1			2	3	3	2
Yozgat		2	1	2	1	2		2	2	2		
Eastern Anatolia Region	5	4	1	5	4	10	10	9	7	9	4	2
Ağrı		2			1	1	1			1		
Bingöl			1	1			1	1		1		
Bitlis		2				1		1		1		
Elazığ						1	1				2	
Erzincan						1	1	1	1			1
Erzurum	1			1		2		4	1	2		1
Hakkari						2						
Kars	1			3			2	1	1	2		
Malatya	1				2	1		1	1	2	2	
Muş	2						1					
Tunceli						1			1			
Van					1	1	2		2			
Marmara Region	7	10	26	10	13	6	13	13	9	11	13	9
Balıkesir		2	10	2			2	1	3	2	2	1
Bilecik					1				1	1		1
Bursa	1	2	3		1	1		2	2		1	2
Çanakkale			2		1	2	1	1			1	3
Edirne		1		1	1		2	1	1			
İstanbul	3	2	5	1	4	1	5	1	1	4	1	1
Kırklareli	2		1	3	2		1		1	1	3	
Kocaeli	1					1	2	3		1	4	1
Sakarya		3	1	1	2	1		2				
Tekirdağ			4	2	1			2		2	1	
Mediterranean Region	7	4	9	6	7	6	15	16	9	13	7	7
Adana				1	1	3		3		2		1
Antalya	1	1	1		2		1	2	1	3	3	2
Burdur			2	1			2	2		2		2
Hatay	1		2	1	1	1	2	4		1		1
Isparta	3	3		2	1			2	2	2	2	1
Maraş			2	1	1	1	1	2	3	2	2	
Mersin (İçel)	2		2		1	1	7	1	3	1		
Southeastern Anatolia Region	4	4	1	1	5	5	4	2	9	7	3	6
Adıyaman	1	1	1					2	1			
Diyarbakır	1				1	1			2		1	1
Gaziantep	1						1		2			1
Mardin	1			1		1		1		4		4
Siirt		2			3	1			1	2	1	
Urfa		1			1	2	1		4	1	1	
Grand Total	85	51	68	46	66	64	101	100	77	83	63	58
Estimation Cost	1,481,891	1,174,446	3,255,793.58	603,659	712,362	1,196,570	3,530,234	3,803,760	10,584,040	5,618,432	8,873,027	13,891,439

SOURCE: Compiled by the author based on General Assembly reports of the Bank of Provinces, 1968 and 1980.

The second phase related to clean water systems focused on clean water facilities. Table 4.6 presents the distribution of clean water facilities across Türkiye's seven regions from 1968 to 1980, excluding 1970. The data reflects facilities completed by 1975, with supplementary details on partially completed projects from the 1975 General Assembly reports of the Bank of Provinces. To avoid double-counting, partially completed projects were excluded from the analysis. This approach ensures that the table accurately reflects the total number of clean water facilities completed by the Bank of Provinces between 1968 and 1980, with the exception of 1970.

From a macro perspective, the Bank of Provinces completed a total of 540 clean water facilities between 1968 and 1980. Notably, approximately 43% of these facilities were completed during the second five-year development plan (1968–1972), when 235 clean water systems were established. Despite the impact of the OPEC crisis on investments, 195 clean water facilities were completed during the third five-year development plan (1973–1977). From a micro perspective, the Aegean Region had the highest number of investments by the Bank of Provinces, with a total of 130 completed clean water facilities. This region accounted for 24.1% of Türkiye's total clean water facilities during that period. In contrast, the Marmara Region, where there was an increasing trend of the population since 1950, and the Central Anatolia Region, received 100 and 89 completed clean water projects, respectively. These projects constituted 18.5% and 16.5% of the total clean water facilities serviced during this period.

Furthermore, the Black Sea and the Mediterranean Regions had a total of 84 and 71 completed clean water facilities, respectively. These two regions accounted for 15.6% and 13.1% of the total clean water facilities constructed in Türkiye during the eleven-year period. There were only 40 completed clean water systems in the Eastern Anatolia Region while the Southeastern Anatolia Region had the lowest number of clean water facilities investments among the seven regions, being 4.8% of the total number of clean water facilities during an eleven-year period.

Table 4.6 Clean water facilities distribution in seven regions of Türkiye, 1968-1980.

	1968	1969	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Aegean Region	14	10	8	7	3	10	11	14	15	17	9	12
Afyon	2	2	2	1			1	3	1	2		1
Aydın	1	2		1		1	1	2	2	3	2	1
Denizli		1	1				2	1	4	5	3	2
İzmir	6	3	2	2	1	3	3	1	5	4	1	5
Kütahya	1	1	1				1	1	2			1
Manisa	3	1	1	1	2	4	1	2		3	2	2
Muğla			1	1		1	1	3	1		1	
Uşak	1			1		1	1	1				
Black Sea Region	14	4	4	6	4	2	9	8	10	5	9	9
Amasya	2			1								
Artvin				1								
Bolu	1		1	1							1	1
Çorum	1				1		1	1	1	2	1	1
Giresun	2			1					2	1		
Gümüşhane				1			2				2	
Kastamonu							1				1	1
Ordu	2	2			1	1	3	1				4
Rize							2		4			1
Samsun	1		2					2	1	1	1	
Sinop						1					1	
Tokat	2		1					1	1	1	1	
Trabzon	2	1		1	1			1	1		1	1
Zonguldak	1	1			1			2				
Central Anatolia Region	12	6	10	7	3	8	9	3	7	11	6	7
Ankara	3	2	1		1	1				1	1	1
Çankırı		1					1	1	1			
Eskişehir		1	1				1	2	1			1
Kayseri		1		1		3	1					2
Kırşehir			2						1	1		
Konya		1	4	2	2	1	4			6	3	
Nevşehir	1		1	1					1			1
Niğde	4		1	1		1				2	1	1
Sivas	1			1		2	1		3	1		
Yozgat	3			1			1				1	1
Eastern Anatolia Region	1	3	2	6		6	1	2	4	1	3	11
Ağrı									1	1		3
Bingöl		1										
Bitlis				2								1
Elazığ				1		1						
Erzincan								1			2	
Erzurum		1		1		1			2			2
Hakkari												
Kars			1	1		2					1	1
Malatya	1		1				1					1
Muş		1				1		1				
Tunceli						1						2
Van				1					1			1
Marmara Region	13	9	3	13	1	5	13	10	6	5	9	13
Balıkesir	3	1	1	1			1	3	1			2
Bilecik	2									1		2
Bursa	1	2		2		1	1	6	1		2	
Çanakkale		2		1					1	1	1	
Edirne		1					1			2		1
İstanbul	2	1		3			4	2		1	1	1
Kırklareli									1		2	2
Kocaeli	1	2		3			1		1			2
Sakarya	2		1	1		2	2	1	1		1	1
Tekirdağ	2		1	2	1	1	1		1			2
Mediterranean Region	6	9	7	4	4	6	5	5	5	8	4	8
Adana	1	2		1	1	1	1	2	2	3	1	1
Antalya		1	2	1		2			1			2
Burdur	1				1		1	1		1	1	
Hatay	2	2	2	1	1	2	1			1		1
Isparta		2	1	1		1		1		1	1	
Maraş	1				1		1	1		2		1
Mersin (İçel)	1	2	2				1		2		1	3
Southeastern Anatolia Region	4	4	3	4	3	2	1	1		1	1	2
Adıyaman					1		1					1
Diyarbakır	2	1	2	2	2							
Gaziantep		2										
Mardin			1	1		1						
Siirt		1				1						1
Urfa	2			1				1		1	1	
Grand Total	64	45	37	47	18	39	49	43	47	48	41	62

Source: Compiled by the author based on General Assembly reports of the Bank of Provinces from 1968 and 1980.

As shown in Tables 4.5 and 4.6, clean water systems consisted of two distinct phases: clean water projects and facilities. Completion of clean water projects for each town, village, and city was a prerequisite for establishing clean water facilities. The data indicate that these infrastructural investments in clean water by the Bank of Provinces were not equally distributed among regions. It is clear that the state prioritized certain regions in implementing clean water systems, which were constructed with limited resources between 1950 and 1980. The provision of clean water systems in urban areas was strongly influenced by population size and the degree of urbanization.

Based on data from the Bank of Provinces over the eleven-year period between 1968 and 1980, it can be observed that more investments were directed toward the western regions of Türkiye, specifically the Aegean and Marmara regions. Clean water systems, supported by institutions, developed progressively from west to east. While the western regions received the majority of clean water system investments, infrastructural investments remained limited in eastern Türkiye. The data indicate a relatively small difference in the number of clean water facilities between the Central Anatolia and Black Sea regions. Although these two regions had comparable ratios, they lagged behind the Marmara and Aegean regions in terms of completed facilities. The Mediterranean region also fell behind both Central Anatolia and the Black Sea regions regarding clean water infrastructure investment. However, the number of facilities in these regions was still higher than in eastern Türkiye. It should be noted that, despite high levels of investment, access to clean water in the Marmara and Aegean regions remained problematic, necessitating further efforts to ensure equitable access to clean water systems.

Table 4.7 Regional Population Share in 1975 and Clean Water Project Cost Allocation by Region, 1968-1980.

Regions	1975 Population Share (%)	1968-1980 Clean Water Project Cost Allocation by Region (%)	1968-1980 The Clean Water Facilities Cost Allocation by Region (%)
Aegean Region	9.3	22.4	24.1
Black Sea Region	14.6	14.4	15.6
Central Anatolia Region	14.7	20.6	16.5
Eastern Anatolia Region	3.4	8.1	7.4
Marmara Region	17.8	16.2	18.5
Mediterranean Region	13.9	12.3	13.1
Southeastern Anatolia Region	8.0	5.9	4.8

SOURCE Compiled by the author using 1975 population data from TurkStat and balance sheet data from the Bank of Provinces.

Table 4.7 shows the relationship between the regional distribution of clean water projects and the facilities of the Bank of Provinces in relation to population density. A similarity exists between the regional distribution of project costs and facility costs, indicating that the Bank of Provinces follows a holistic strategy in both the planning and implementation phases of Türkiye's clean water investments. This table also indicates that Türkiye's efforts to develop clean water infrastructure between 1968 and 1980 were guided by a development approach targeting the implementation phase rather than remaining project-based.

The Aegean Region received a high level of investment relative to its population share. The elevated project and facility costs indicated that clean water infrastructure was a strategic priority in this region. Given its significant agricultural and tourism potential, the region may have been supported to meet the demand for water resources. Although the Marmara Region had the highest population share in Türkiye at 17.8% in 1975, it could not receive the largest share of clean water project funding. The need for clean water infrastructure investments was increasing in the Marmara Region, where rapid urbanization was occurring due to industrialization and migration. Investments in the Black Sea and Mediterranean Regions were generally in line with the population ratio.

Eastern Anatolia, which had the lowest population ratio in Türkiye, received 8.1 percent of the budget. Despite receiving a higher budget share relative to its population, Eastern Anatolia still required sanitary

investment in infrastructure. Furthermore, Southeastern Anatolia received only 5.9 percent of the budget, despite having 8 percent of the population. This indicated that water infrastructure was under-resourced and not prioritized in regional development strategies.

The unequal distribution of clean water systems across regions in Türkiye may be attributed to various factors, including political, economic, and ethnic influences. Economically, the state prioritized metropolitan cities and industrial areas, where water played a multifunctional or multidimensional role. Between 1950 and 1980, infrastructure issues became more prominent as rural-to-urban migration intensified in major cities. Consequently, the inadequacy of existing water resources became evident, prompting efforts to address the problem through dam construction. Even in regions with significant state investment through municipalities and institutions during this period, clean water systems remained insufficient. Economic capacity was undoubtedly a key factor in developing and extending clean water systems from urban centers to peripheral cities and villages. However, I contend that this unequal distribution among regions cannot be explained by economic factors alone. Institutional challenges, shortages of qualified labor, and limitations in necessary equipment, such as pipes, also caused to the unequal distribution of clean water systems.

4.3.3 *Building a Skilled Workforce for Clean Water Systems: The Necessity of Education*

The development of infrastructural investments is essential for ensuring that communities have access to clean and safe drinking water. In Türkiye, municipalities were responsible for managing the water supply within their jurisdictions. However, organizing municipalities to effectively construct and manage water systems posed challenges, especially given the wide range of economic and administrative capacities among them. Government efforts, including laws, legal arrangements, and financial support, were made to coordinate municipalities within the water network, but these efforts often fell short due to variations in economic resources, staffing, and management capacities. Each municipality faced

unique challenges and constraints; some required financial support to upgrade infrastructure or acquire necessary equipment, while others needed technical assistance to improve water systems. Establishing an institution that recognized these diverse needs and adopted a tailored approach was crucial to developing effective water systems. The Bank of Provinces was created not only to provide financial support, like a traditional bank, but also to offer technical and educational assistance based on each municipality's specific needs.

The construction and development of modern water infrastructure is a complex process requiring expertise across multiple disciplines. A critical component of this process is project management and construction, which necessitates a skilled labor force with qualifications and education in water infrastructure construction and maintenance. The field encompasses a wide range of technical disciplines, including civil engineering, hydrology, and environmental science, all of which are essential for designing and constructing water supply systems, wastewater treatment facilities, and related infrastructure. Additionally, the maintenance and operation of water systems are equally vital. Infrastructure must be regularly maintained, which involves ongoing repairs and the replacement of outdated mechanical components. Without consistent maintenance, clean water facilities quickly become inoperable.

The Bank of Provinces, as a redistribution mechanism, prioritized the training and development of a qualified workforce to support the needs of various municipalities and villages. This objective was essential to the bank's mission and critical for advancing water systems in Türkiye. Additionally, building a skilled workforce—from engineers to technicians—in the water sector was crucial not only for municipalities but also for addressing regional disparities in clean water access. To this end, the Course Directorate (*Kurs Müdürlüğü*) was established in 1961 to provide municipalities with a trained workforce. As more municipalities began to benefit from these courses, demand for training grew, prompting the

transformation of the Course Directorate into the Training Center Directorate (*Eğitim Merkezi Müdürlüğü*) in 1970 to meet the increasing need for personnel development.⁴⁰

With the launch of the first development plan in 1963, Türkiye transitioned to a planned economy with new economic policies. During this planned period, a skilled and qualified workforce was recognized as essential, leading to the establishment of the Directorate of Statistics, Research and Planning, Coordination, and Training in 1970. This training initiative offered a wide range of programs, including domestic seminars, conferences, foreign language courses, and scholarships, along with support for international training, seminars, and conferences. Between 1963 and 1980, the Bank of Provinces sent 72 employees to various countries in Europe, as well as to Japan and the United States, for education in infrastructure investments. The duration of these training programs ranged from a minimum of 2.5 months to a maximum of 27 months.⁴¹ The Bank of Provinces played a significant role in supporting employee participation in international seminars. Between 1963 and 1980, 334 bank employees attended seminars, conferences, and technical congresses held abroad. Moreover, in 1966, the bank sent selected personnel to participate in courses offered by French and American cultural associations. While the bank continued to provide foreign language support for its employees, the Ministry of National Education also supported foreign language studies. From 1971 to 1980, 57 employees successfully completed courses in English, French, and German.⁴²

Between 1963 and 1966, the bank provided in-house training, resulting in 101 individuals successfully completing education as water and construction surveyors. Furthermore, in the 1960s, as awareness of environmental issues grew, the bank introduced educational programs on environmental health. These programs varied in length from one to three

⁴⁰ *İller Bankası*, 172.

⁴¹ *İller Bankası Atatürk'ün 100. Yıl*, 234.

⁴² From 1971 to 1980, 57 employees successfully completed courses in English, French and German. *İller Bankası Atatürk'ün 100. Yıl*, 235.

semesters, with a total duration of three months, and were attended by 420 individuals. In 1973, the bank also organized a training program on chlorine treatment, in which 33 individuals participated.⁴³ Overall, between 1961 and 1973, a total of 2,482 individuals participated in eight different training programs designed for both municipal and bank personnel.⁴⁴

Since its establishment, the Bank of Provinces has recognized the need for qualified personnel as a critical issue. To attract highly skilled individuals, the bank offered scholarships to students at technical universities, aiming to cultivate a generation of engineers by providing both financial support and job opportunities in public institutions. Notably, engineers such as Süleyman Demirel and Turgut Özal, who later played influential roles in Turkish politics, were among the beneficiaries of these scholarships. This supportive policy toward engineers, architects, and craftsmen aimed to retain talent within the country. Despite these efforts, there remained a shortage of qualified personnel in Türkiye. Brain drain assessments from the 1970s indicated that 7 percent of architects and 5.3 percent of mechanical engineers migrated abroad. Additionally, 88,000 artisans left the country between 1965 and 1970. In the context of the time, this rate of migration was considered alarming and was highlighted in development reports.⁴⁵

⁴³ Ibid, 236.

⁴⁴ More details about the list, see *İller Bankası 1945-1973*, 175-183.

⁴⁵ *Türkiye'nin 3. Beş Yıllık Kalkınma Planı*, 81.

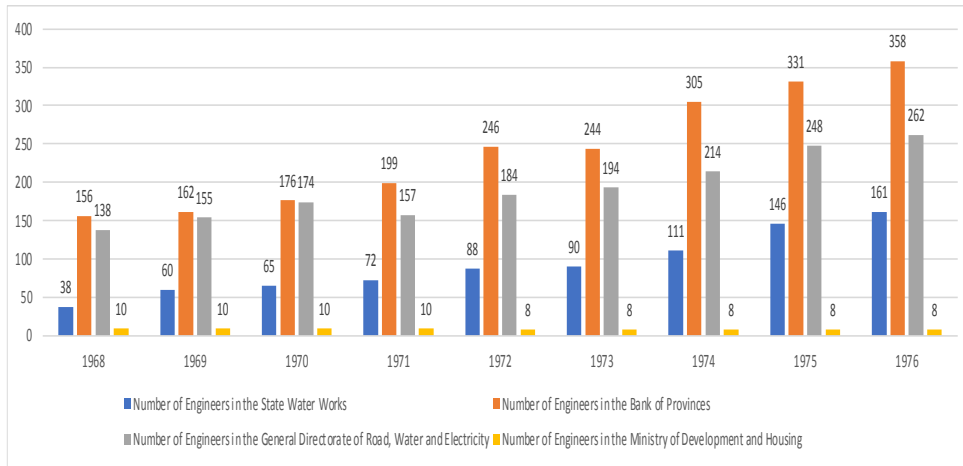


Figure 4.6 Number of Engineers in Four Institutions in Türkiye, 1968–1976. SOURCE: Compiled by the author based on the *Fourth Five-Year Development Plan Special Expertise Commission Report*, 1977.

The employment of engineers is especially important for developing infrastructure related to waterworks, electricity, and other essential services. Figure 4.6 shows the number of engineers employed across four key institutions between 1968 and 1976. In the State Water Works, the number of engineers increased from 38 in 1968 to 146 in 1975, while the Bank of Provinces employed 156 engineers in 1968 and 331 by 1975. Additionally, the General Directorate of Road, Water, and Electricity and the Ministry of Development and Housing employed a substantial number of engineers. The number of engineers in the General Directorate of Road, Water, and Electricity rose from 138 in 1968 to 262 in 1976, while the Ministry of Development and Housing employed relatively fewer engineers. These figures underscore the importance of engineers in national reconstruction efforts.⁴⁶ However, the Bank of Provinces' records indicate a higher number of engineers than reported in the State Planning Organization reports.

⁴⁶

IV. Beş Yıllık Kalkınma Planı Özel İhtisas Komisyonu Raporu (Ankara: Devlet Planlama Teşkilatı, 1977).

Table 4.8 Analysis of Personnel Data for the Bank of Provinces in Türkiye, 1945–1980.

Personnel of the Bank of Provinces between 1945 and 1980	1945	1960	1965	1970	1975	1980
GENERAL ADMINISTRATION SERVICES	46	342	381	658	862	1020
Advocacy Services	2	6	7	8	13	11
Health Assistance		1	2	4	6	10
Technical Services						
Civil Engineer (and engineer msc)	5	90	108	143	312	346
Electrical Engineer (and engineer msc)	4	47	105	140	146	205
Mechanical Engineer (and engineer msc)		25	28	27	55	88
Survey Engineer (and engineer msc)	3	19	20	38	80	75
Architect and Master Architect	4	43	50	68	135	156
Technician		48	109	180	185	160
Other	4	3	33	76	136	119
Assisted Services	12	162	169	260	466	586
Workers		185	397	634	884	930
Total (Center in Ankara)	80	694	910	1410	1988	2053
Total (Regions)		277	499	826	1292	1653
General Total	80	971	1409	2236	3280	3706

SOURCE *İller Bankası Atatürk'ün Doğumunun 100. Yılı*, 226.

The data presents the personnel composition of the Bank of Provinces between 1945 and 1980, categorized by job positions and services. As shown in Table 4.8, the total workforce at the Bank's establishment was 80 employees. Notably, while only 20% of the personnel held positions as engineers, architects, or technicians in 1945, this proportion rose to 28% by 1980. In general administration services, the number of employees grew significantly, from 46 in 1945 to 1,020 in 1980. Both the number of employees in advocacy services and those providing health assistance remained consistently low.

Noteworthy, in technical services, there was a substantial increase in the number of employees, particularly in civil, electrical, and mechanical engineering. The number of architects and master architects, as well as technician employees, also rose over the years. In assisted services, the number of employees grew significantly, from 12 in 1945 to 586 in 1980.

Similarly, the workforce expanded, reaching 930 employees by 1980. The total number of employees at the Ankara headquarters rose from 80 in 1945 to 3,280 in 1980, while personnel in regional offices reached 1,653 by 1980. Following the regional expansion beginning in 1965, the overall number of employees grew from 971 in 1965 to 3,706 in 1980.

4.3.4 *Creating Self-Sufficiency: An Overview of the Import Substitution Policy in the Bank of Provinces' Subsidiary Companies*

Modern clean water systems were developed as part of the government's adopted development strategy between 1960 and 1980. This section aims to analyze how the characteristics of clean water systems transformed under a new development approach focused on import-substituting industrialization. In Türkiye, economic planning and development policies were set by the State Planning Organization (SPO), established in 1960. While these policies and guidelines were legally binding for the public sector, they served as recommendations for the private sector. Nonetheless, Pamuk argues that, in practice, SPO policies significantly influenced private sector decision-making processes, even without legal enforcement.⁴⁷

In 1960, the Turkish economy began transitioning from an agriculture-based system to one focused on import-substituting industrialization. Unlike the Democratic Party, a broad coalition comprising the Republican People's Party, the bureaucracy, industrialists, and international agencies emphasized import-substituting industrialization through policies led by the State Planning Organization (SPO). Medium-term planning was considered essential to achieve this goal, resulting in the development and implementation of the Five-Year Plans. These plans prioritized promoting domestic production, supporting industrialization, and reducing reliance on imported goods. The emphasis on import substitution aimed to boost domestic production and strengthen self-sufficiency, sup-

⁴⁷ Pamuk, *Uneven*, 215.

porting Türkiye's long-term economic growth. This economic development policy also influenced the production process of clean water systems as part of the import-substitution strategy.

Türkiye was dependent on foreign sources for technical manufacturing goods, such as pipes, for clean water systems, which directly impacted the development of infrastructure investments like these systems. In the early republican era, the government sought to facilitate the import of essential pipes and materials for clean water infrastructure by exempting them from customs duties. For instance, in 1933, with the enactment of Law No. 2268, customs duties were waived on specific parts and accessories for pipes used in clean water systems.⁴⁸ To reduce this foreign dependency, the Font Pipe Factory (Font Boru Fabrikası) was established in 1939 as a subsidiary of the Karabük Iron and Steel Enterprises (Karabük Demir Çelik İşletmeleri). Although the factory was unable to meet the full demand for pipes nationwide until the 1950s, it represented a critical initial step toward reducing reliance on imported pipes and enhancing domestic production of clean water infrastructure components. The establishment of the Water, Construction, and Electricity Limited Company (Su, İnşaat, Elektrik Limited Şirketi, or SIMEL) on August 25, 1959, represented a second step in reducing Türkiye's reliance on foreign sources for clean water systems. SIMEL's capital was funded 99.33% by the Bank of Provinces and 0.67% by the Turkish Red Crescent Society. The company undertook a wide range of activities related to infrastructure investments and material production. Its primary objective was to domestically produce various infrastructure components that had previously been imported and to distribute these products within Türkiye. Under this policy, clean water infrastructure was prioritized as the third most significant investment focus, based on activities between 1979 and 1980.⁴⁹

⁴⁸ *Umumî İhtiyaçlar İçin Hariçten Getirilecek Madenî Su Boruları ile Aksam ve Teferruatından Gümrük Resmi Alınmamasına Dair Kanun*, Kanun No. 2268, kabul tarihi 3 June 1933, *Resmî Gazete*, 12 June 1933, No. 2425.

⁴⁹ *İller Bankası Atatürk'ün Doğumunun 100. Yılı*, 57.

Table 4.9 Pipe mills established in Türkiye between 1950 and 1980: Names and dates of establishment.⁵⁰

The Name of Pipe Mills	Establishment Date
Sümerbank-Mannesmann	1957
Pipe Industry	1958
Pimaş Plastic Construction Materials Inc.	1963
Superlit Fibre Cement Industry and Trade Inc.	1964
Göktepe Hard Plastic Industry	1964
Eternit Industry Inc.	1967
Ümran Spiral Pipe Industry Inc.	1968
Ankara Cement Industry Inc.	1968
Pilsan (Bossa)	1971
Keban Holding	1972
Doğusan Asbestos Pipe Inc.	1976
Mardin Asbestos Pipe Inc.	1976

SOURCE *İller Bankası 1945-19773*, 105-107; *İller Bankası Atatürk'ün Doğumunun 100.Yılı*, 59.

⁵⁰ According to records from İller Bank, Niğde Beton Sanayi ve Ticaret A.Ş. (NİĞBAŞ) is listed among the established pipe factories. Founded in 1969, the company remains operational today. Although it was intended to produce colored tiled asbestos pipes, no pipe production took place at the factory. Instead, the factory produced concrete poles and shifted its focus to prefabricated building production after 1978. Based on this information provided by company officials, I removed NİĞBAŞ from the list of pipe companies established between 1950 and 1980. Additionally, Göktepe Plastik, included in this list, went bankrupt in 2013. Source; <https://www.milliyet.com.tr/ekonomi/turkiye-nin-ilk-plastik-boru-ureticisi-iflas-etti-1807078>. Ankara Cement Industry was sold to Limak Holding. See: <https://www.cumhuriyet.com.tr/turkiye/ranta-acilmisti-limak-turk-orman-ciftliginde-zehir-sacacak-1915436>. Today, some companies on the list continue their operations, including Borusan-Mannesmann, Pimaş Plastik, and Ümran Plastik. However, Doğusan and Mardin Asbestos Pipe Factories have shifted their activities to other sectors, such as prefabricated construction and roofing materials. The use of asbestos in Türkiye has been banned due to the discovery of its harmful effects on human health.

As part of the import-substitution industrialization strategy, factories were established to produce intermediate goods, such as pipes, that had previously been imported. Indeed, one significant area of import dependence for Türkiye was in pipe production for infrastructure projects like clean water systems. As shown in Table 4.9, twelve pipe mills were established between 1950 and 1980. The foundation of Türkiye's pipe-manufacturing industry began in 1957 with a joint venture between Sümerbank and the German company Mannesmann.⁵¹ This venture was followed by the establishment of additional pipe-manufacturing factories, as detailed in Table 4.9.

As the government adopted import substitution policies, the Bank's primary focus shifted to domestic production of a wide range of infrastructure and products, including those related to water, electricity, and building construction. According to records from the Bank of Provinces, by 1965, Türkiye was able to produce the necessary pipes for clean water systems domestically, eliminating the need for imports. While import substitution industrialization enabled domestic pipe production, Türkiye still depended on imports for certain components essential to clean water systems. Although pipes could be manufactured locally, pumps and motors continued to be sourced from abroad. Additionally, due to limitations in producing chlorination devices domestically, these were also imported.⁵²

More details; Eşref Atabey, "Türkiye Asbest Haritası (Çevresel Asbest Maruziyeti-Akciğer Kanseri-Mezotelyoma)," *Tüberk Toraks* 63, no. 3 (2014): 199–219.

⁵¹ In 1957, a joint venture between Sümerbank and the German company Mannesmann resulted in the establishment of a steel pipe factory in İzmit, which aimed to reduce Turkey's foreign dependency on technical manufacturing goods such as pipes. These companies continue their operations under the name Borusan Mannesmann. <https://www.borusanmannesmann.com/borunun-tarihcesi>

⁵² *İller Bankası 1945-1973*, 105-107.

4.3.5 Evaluating the Access to Urban Clean Water Systems in Türkiye, 1960–1980: A Statistical Analysis of Building Permits

The Bank of Provinces made investments in clean water infrastructure over the period from 1960 to 1980, despite the multivocality of institutions about clean water systems. A key question is the extent to which citizens could access this expanded infrastructure, which grew in line with balanced development strategies in Türkiye during this period. I have relied on data from the Turkish Statistical Institute (TurkStat) to examine urban residents' access to clean water systems. Figure 4.7 presents a time series from 1964 to 1980, showing the percentage of new dwellings with water systems based on occupancy permits across 11 cities (Istanbul, Ankara, Izmir, Samsun, Konya, Erzurum, Malatya, Diyarbakır, Gaziantep, Adana, and Bursa) using city-specific data from TurkStat. It is important to note that this time series includes only data on newly constructed buildings based on occupancy permits. In other words, it does not indicate the percentage of all buildings with access to clean water between 1964 and 1980.

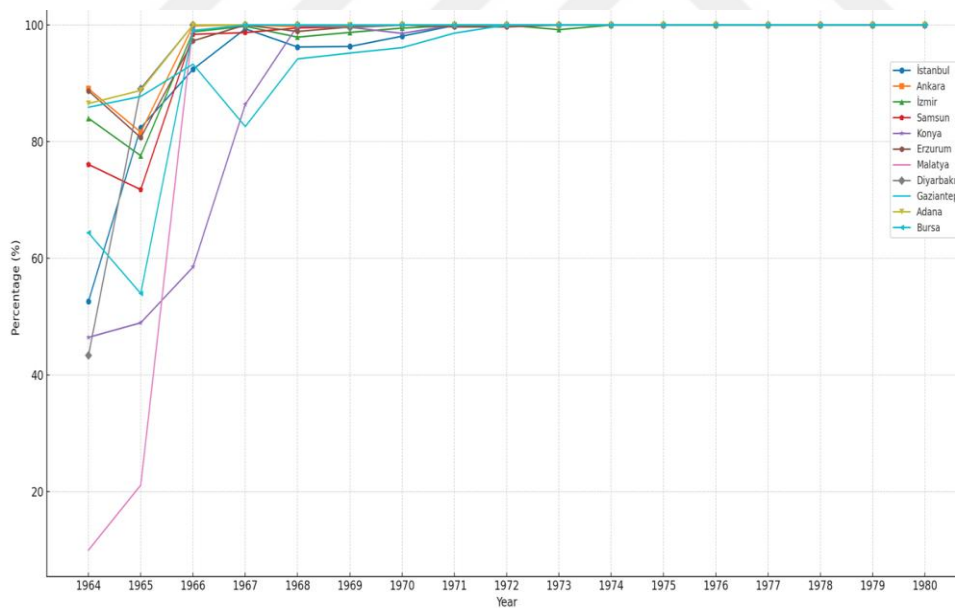


Figure 4.7 Percentage of new dwelling water systems based on occupancy permits in Türkiye, 1964–1980. SOURCE: Compiled by the author using the TurkStat data, 1968-1980.

In 1964, the first year of the time series, access to clean water systems did not reach 100% in any of the 11 cities, even for new buildings with occupancy permits. According to Figure 4.8, access rates for households in Istanbul, Diyarbakır, Malatya, and Konya were below 60% in 1964. However, these rates rose significantly between 1964 and 1967, with access to clean water reaching over 80% for all newly permitted buildings. From 1968 to 1980, more than 90% of all new buildings with occupancy permits in these 11 cities had access to clean water systems.

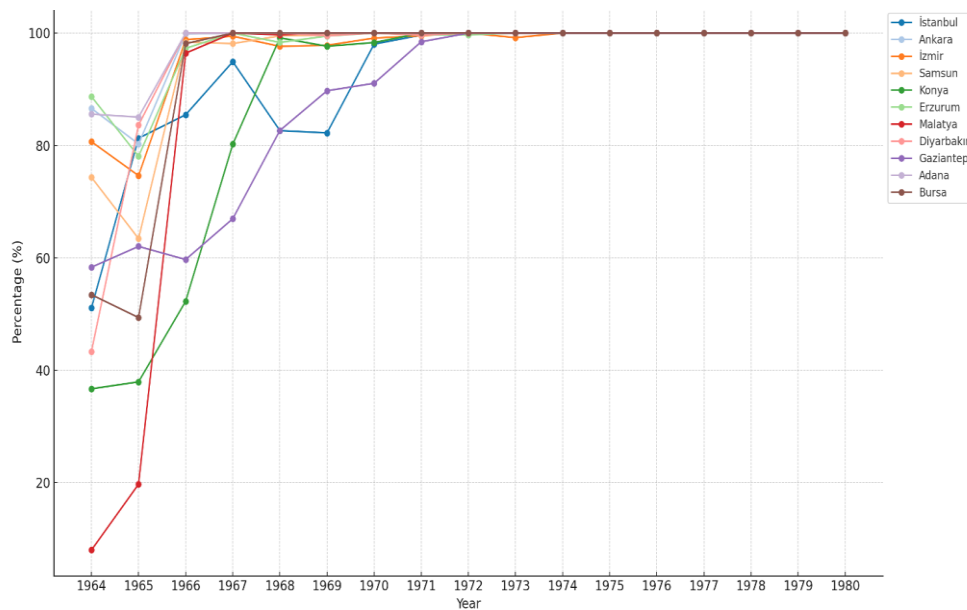


Figure 4.8 Percentage of new dwellings with indoor piped clean water based on occupancy permits, 1964-1980. SOURCE: Compiled by the author using TurkStat data, 1964-1980.

The inequalities across cities became more pronounced when I adjusted the criterion for access to clean water in newly constructed houses with construction permits to require clean water access inside the dwelling. Figure 4.8 illustrates the percentage of newly constructed buildings in 11 cities with direct indoor access to clean water from 1964 to 1980. According to Figure 4.8, Malatya had the lowest access rate in 1964, followed by Erzurum, Diyarbakır, Istanbul, and Bursa. Between 1964 and

1969, the percentage of cities with access to modern clean water systems rose to over 80%, reaching above 90% from 1970 to 1980. Figures 4.7 and 4.8 indicate that even new buildings with occupancy permits faced challenges in accessing clean water during the 1960s. By 1980, however, all new buildings with permits in the 11 cities had achieved access to clean water. A planned approach to urban development between 1950 and 1980 could have further improved access to clean water systems over time.

§ 4.4 Multivocality of Institutions: Rural Water Systems in Türkiye, 1950–1980

In contrast to urban clean water systems, rural water systems in Türkiye primarily consisted of village fountains. These fountains were constructed for communal household use and could not be extended into individual homes. This section examines rural water systems in Türkiye between 1950 and 1980. In contrast to the silence of institutions in rural sewage systems, rural water systems, like urban clean water and urban sewage systems, were characterized by a multivocality of institutions. Between 1950 and 1980, five institutions —the Ministry of Health and Social Welfare, the Bank of Provinces, the General Directorate of State Hydraulic Works, the Ministry of Rural Affairs, the Directorate of Roads, Water, and Electricity — shared responsibility for supplying clean water to rural areas. The first of these was the Ministry of Health and Social Welfare, established by the 1930 Law on Public Health and Sanitation and the 1936 Law No. 3017 on the Organization and Civil Servants of the Ministry of Health and Social Welfare. This ministry was tasked with inspecting drinking water in rural areas.⁵³

Secondly, the Bank of Provinces, which made substantial investments in urban water and sewerage systems, established a provincial organization to deliver water infrastructure services to rural areas. An analysis of

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Sağlık ve Sosyal Yardım Bakanlığı Kanunu, Kanun No. 3017 (1936); *Umumi Hıfzısıhha Kanunu*, Kanun No. 1593 (1930).

the Bank of Provinces' balance sheets from 1968 to 1980 reveals that 30% of the institution's annual profit share was allocated to village capital and 50% to village development. However, it was not possible to determine the specific localities or infrastructure projects where these funds were directed due to the lack of data and information.⁵⁴

In addition to the Bank of Provinces, the provincial branch of the General Directorate of State Hydraulic Works managed investments in village drinking and potable water until 1964, when this responsibility was transferred to the newly established Ministry of Rural Affairs in 1963. Subsequently, by ministerial approval dated July 1, 1965 (No. 6611), the responsibility for village drinking water within the Ministry of Rural Affairs was transferred to the Directorate of Roads, Water, and Electricity. This directorate was tasked with providing clean drinking and potable water to towns and rural areas with municipal organization and populations up to 3,000.⁵⁵ An examination of the personnel distribution within the Directorate of Roads, Water, and Electricity, which played a significant role in rural infrastructure investments, reveals that, unlike other institutions, it employed a higher number of temporary workers.

According to a 1977 specialization report on water and sewerage, Türkiye had 35,096 villages. An inventory conducted by the Directorate of Roads, Water, and Electricity in 1976 indicated that only 53% of these villages had access to water, while 24% had insufficient water supplies, and 22% had no access to water at all. Within the framework of balanced development policies, the government aimed to expand water investments in rural areas as part of its five-year development plans.⁵⁶

⁵⁴ *İller Bankası Genel Kurul Raporları ve Bilançoları, 1968–1980.*

⁵⁵ *Köy İşleri Bakanlığı, 1963.*

⁵⁶ *İçmesuyu ve Kanalizasyon Özel İhtisas Raporu, 1977.*

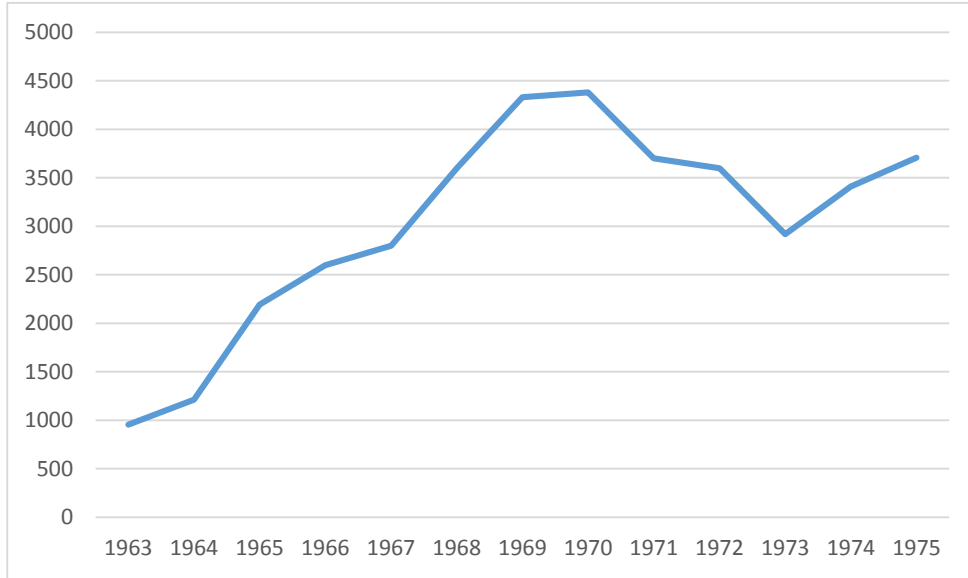


Figure 4.9 Population in rural areas with access to water, 1963–1975.
SOURCE: *İçmesuyu ve Kanalizasyon, IV. Beş Yıllık Kalkınma Özel İhtisas Komisyonu Raporu* (January, 1977).

Figure 4.9 shows the rural population with access to water over a 13-year period as a result of infrastructure investments. Water infrastructure built in 1963 and 1964 was constructed by the General Directorate of State Hydraulic Works. According to Figure 4.9, water investments increased steadily until the 1970s, when economic challenges began to negatively impact these efforts. The data indicates the extent of rural access to clean water, while a survey conducted by the Ministry of Health assessed water quality. Analyses of rural water systems revealed that one-third of the drinking water sources were not safe for health. Similarly, between 1971 and 1975, approximately one-third of the samples from rural spring water sources were found to be unsafe. These unsanitary water sources led to waterborne diseases such as typhoid, dysentery, and hepatitis within communities.⁵⁷

⁵⁷ *İçmesuyu ve Kanalizasyon Özel İhtisas Raporu*, 1977.

§ 4.5 The Impact of Clean Water Systems on Public Health: Protection or Risk?

This chapter aims to discuss the public health implications of clean water systems constructed up to 1980. Population growth, particularly urbanization between 1950 and 1980, increased the need for modern clean water infrastructure investments in Türkiye. While the government supported municipalities in expanding their infrastructure investments, it also authorized various institutions to establish and develop clean water infrastructure. These processes are summarized under the concept of the multivocality of institutions, as discussed in the previous section. Conflicts over responsibilities and authority among institutions were addressed through new regulations, with efforts made to provide institutional support in cases of insufficient financial resources. The primary objective of these water systems, designed to meet the needs of the time, was to supply water to citizens through enclosed pipes.

Significant efforts have been made to improve this infrastructure service, including addressing financial and technical challenges, as well as the shortage of qualified personnel. These initiatives aimed to provide citizens with access to clean water through enclosed piping systems. The absence of clean water infrastructure posed serious public health risks, as waterborne diseases such as diarrhea tended to spread rapidly in communities lacking clean water. In this context, clean water systems have played a critical role in safeguarding public health.

Table 4.10 Analysis of drinking water samples conducted by the Bank of Provinces, 1964–1980.

Years	Drinking Water Analysis	Land and Heavy Metal Analysis	Chlorine Demand Analysis	Irrigation Water Analysis	Water Quality and Corrosion Study
1964	181				
1965	248				
1966	365				
1967	319				
1968	364		32		
1969	264		69		
1970	235		74		3
1971	457		76		1
1972	502		71		2
1973	543		111		1
1974	604		98		3
1975	739	332	115		9
1976	846	1018	135		3
1977	646	574	125		2
1979	612	1848	129		3
1979	502	618	104	26	9
1980	526	1170	150	2	5

SOURCE: Compiled by the author using data from the Bank of Provinces for the years 1964–1980

The laboratories at the Bank of Provinces, established in 1962, were instrumental in conducting chemical, bacteriological, and general water analyses of drinking water, serving as a crucial tool for ensuring water safety. Chemical analysis capabilities began in 1964, followed by chlorine demand analysis in 1968, and, finally, heavy metal analysis in 1975. Table 10 presents the number of water quality analyses conducted from 1964 to 1980, which aimed to monitor and evaluate the quality of drinking water, irrigation water, land, and heavy metals.

Over the years, the number of drinking water samples analyzed grew, along with an increase in land and heavy metal analyses. This trend suggests a growing concern for water quality and an effort to establish regulatory measures to ensure safe drinking water during the 1964–1980 period. Despite these advancements, regulatory updates are needed. Indeed, institutions should collaborate more closely, with the Ministry of Health and Social Assistance playing a more active role in auditing clean water systems. However, in 1980, the capacity for water quality analysis remained significantly limited relative to Türkiye's population of 44,736,957, comprising 67 provinces, 554 district municipalities, 1,108 neighbourhoods, and village municipalities. This limitation underscores a critical challenge in monitoring and ensuring the safety of the nation's

water resources, posing potential risks to public health and the environment.

Between 1950 and 1980, institutions sought to protect public health by expanding clean water infrastructure investments in both urban and rural areas. Closed pipes played a crucial role in protecting water quality, as they allowed water to be transported from primary sources without contamination, ensuring safe access for citizens. In this context, the installation of closed piping systems was essential for maintaining water quality. However, these clean water systems unintentionally posed public health risks due to the use of asbestos-cement pipes. The term "asbestos" emerged in my research on pipe factories from the import substitution period. For example, during this period in Türkiye, factories such as Doğusan Asbestos Pipe Inc. and Mardin Asbestos Pipe Inc. were established to produce asbestos-cement pipes for water systems. Consequently, as water networks expanded, asbestos-cement products became widely distributed throughout the country, as shown in Table 9.

Asbestos-cement pipes (ACP) were widely used in Türkiye's water supply systems from the 1960s until 2010. These pipes were employed to transport water from sources to distribution systems and ultimately to homes and buildings. Asbestos, a naturally occurring mineral, was added to cement to enhance pipe durability and strength. While asbestos-cement pipes were widely used not only in Türkiye but in many other countries, asbestos is now recognized as a carcinogen, with long-term exposure to asbestos fibers linked to serious health issues, such as lung cancer.

The connection between asbestos exposure and mesothelioma was first identified by Christopher Wagner and colleagues in 1960, in a study of workers at a South African asbestos mine. Wagner's research revealed that not only workers handling asbestos but also individuals living near the mine were at heightened risk of developing mesothelioma.⁵⁸ Over time, countries have gradually recognized the health hazards of asbestos exposure, leading to greater awareness and regulation.

⁵⁸ J. C. Wagner, C. A. Sleggs, and P. Marchand, "Diffuse Pleural Mesothelioma and Asbestos Exposure in the North Western Cape Province," *Occupational and Environmental Medicine* 17, no. 4 (1960): 260–71.

Asbestos-cement pipes were favored for their low cost, durability, and ease of installation. However, as the health risks of asbestos exposure became more widely understood, the use of asbestos-cement pipes declined. In Türkiye, the Ministry of Environment and Forestry banned the production, use, and sale of asbestos and asbestos-containing products as of December 31, 2010, due to its carcinogenic effects.⁵⁹ Regarding asbestos exposure through drinking water, asbestos fibers can become dislodged from pipes and enter the water supply if the pipes are damaged or disturbed. Additionally, asbestos fibers were released into the air during the installation, repair, or replacement of these pipes. In conclusion, despite efforts by the government and institutions to establish clean water systems and prevent waterborne illnesses, the use of asbestos-cement pipes inadvertently placed public health at risk from the 1960s to 1980s due to asbestos exposure hazards.

§ 4.6 From National to International: Türkiye's Clean Water Systems, 1950–1980

The period from 1950 to 1980 was significant for Türkiye, marked by the emergence of a "multivocality" among institutions involved in clean water systems. Municipalities and institutions such as the Bank of Provinces played central roles in implementing these systems, while foreign experts also influenced water projects during this time.

Clean water infrastructure investments were divided into two main categories: urban and rural. Providing clean water systems in urban areas required careful planning and substantial financing. Planning involved identifying water sources, designing water treatment and distribution systems, and estimating necessary investment costs. Securing adequate financing was essential, especially for large-scale projects in major cities. For example, Hidayet Sinanoğlu, a Member of Parliament representing İçel, highlighted the inability of municipalities to develop

⁵⁹ "Bazı Tehlikeli Maddelerin, Müstahzarların ve Eşyaların Üretimine, Piyasaya Arzına ve Kullanımına İlişkin Kısıtlamalar Hakkında Yönetmelikte Değişiklik Yapılmasına Dair Yönetmelik," *Resmî Gazete*, 29 August 2010, no. 27687.

areas within their jurisdiction. He emphasized that many municipalities lack basic infrastructure, including sewer systems, electricity, and pressurized water supply.⁶⁰ For instance, drinking water plans for large cities like Istanbul often depended on support from international organizations.⁶¹ Due to the high investment costs of constructing urban drinking water facilities, it was also crucial to ensure their maintenance and repair. Once constructed, municipalities were responsible for maintaining, repairing, and operating these facilities. Despite investments in urban clean water infrastructure during this period, they were insufficient, and funding distribution was uneven across regions and within cities. Consequently, some urban areas lacked access to clean drinking water, posing significant public health risks.

The United Nations designated 1981 to 1990 as the International Drinking Water Supply and Sanitation Decade, aiming to bring global attention and support to the improvement of access to clean water and sanitation. The primary objective of this initiative was to provide investment support to countries to ensure adequate access to clean water within the decade. Developing countries, in particular, were expected to face challenges in financing water and sanitation infrastructure; thus, the program framework included provisions for both technical and financial assistance. Following this initiative, Türkiye's State Planning Organization requested reports from institutions responsible for clean water infrastructure investments. These reports were compiled under the Türkiye Working National Committee, established to identify deficiencies in the country's clean water infrastructure and propose solutions. Representatives from WHO and UNDP also participated in the committee meetings in Türkiye. According to the committee's report, an investment of 660 billion Turkish liras would be required to address Türkiye's water and sewerage infrastructure challenges over the next ten years.⁶²

⁶⁰ T.B.M.M Zabıt Ceridesi, 64.İnikat, 4.05.1960, p.375.

⁶¹ *Master Plan and Feasibility Report for Water Supply and Sewerage for the Istanbul Region*, prepared for the World Health Organization, 1971.

⁶² *Türkiye'de İçmesuyu ve Hıfzıssıhha Çalışmaları, Uluslararası İçmesuyu ve Hıfzıssıhha On Yılı 1981-1990*, 5 July 1982.

According to the report, there were 949 towns and cities in Türkiye with populations between 3,000 and 100,000. By 1980, the Bank of Provinces had included 280 cities in its clean water investment program, covering approximately 30% of these locations. Among the remaining 669 towns and cities, 30 lacked any clean drinking water infrastructure, while 290 required repairs or upgrades to their existing systems. The remaining 349 towns and cities were scheduled to gain access to clean water systems under the program's framework from 1980 to 1990.

For rural areas, the report indicated that, based on the 1980 population, 62% of the rural population had access to adequate, high-quality drinking water. However, 20% relied on insufficient sources, and the remaining 18% obtained water from sources unsuitable for consumption. The state prioritized rural clean water investments based on several criteria, including drinking water needs, population density, cost per capita for implementing infrastructure, and local involvement in construction. While rural communities were expected to contribute to water infrastructure investments until 1977, public participation in these projects was eliminated afterward. In 1980, Türkiye's total water consumption reached 11.8 billion cubic meters, comprising 1.6 billion cubic meters for drinking and potable water, 9 billion cubic meters for irrigation, and 1.2 billion cubic meters for industrial use. The report indicated that Türkiye was utilizing only 11.3% of its total water resource potential in 1980, underscoring the need for further development of clean water systems.⁶³ Consequently, expanding and enhancing clean water infrastructure in both rural and urban areas remains essential.

4.6.1 *Obstacles to Clean Water System Development in Türkiye*

The period between 1950 and 1980 marked a crucial phase in the development of clean water systems in Türkiye. This era saw the emergence of numerous institutions that played significant roles in infrastructure investment projects. The construction and expansion of clean water systems involved new institutions established by the government, alongside

⁶³ Ibid, 11.

contributions from foreign experts, engineers, and international agencies. Although these public institutions were intended to promote the development of clean water systems, inequalities in access persisted both across regions and within individual cities in Türkiye.

One of the main factors hindering the development of water systems in Türkiye was the multivocality of institutions, as I mentioned before sections. During this period, the government sought to support municipalities in clean water infrastructure investments. For this purpose, authority and responsibility for clean water systems were shared among institutions, including various Ministries, the Bank of Provinces, Village Administrations, and the Directorate General of State Hydraulic Works. This overlap in authority and responsibility, which I argue created multivocality in clean water systems, ultimately affected investment efficiency and coordination.

Rapid urbanization and population growth from 1950 to 1980 increased the demand for clean water infrastructure investments. Additionally, despite rural-to-urban migration, the growth of the rural population until 1980 created a need for clean water infrastructure in both urban and rural areas. This rapid urbanization and population expansion often rendered infrastructure investments inadequate within a short period. Moreover, the complexity of clean water infrastructure required a qualified labor force, which led to efforts to train a generation of engineers and skilled technicians between 1950 and 1980. Trained technicians were also essential for maintaining and repairing these facilities. Once clean water facilities were constructed, management responsibilities were transferred to municipalities. However, many municipalities lacked the organizational, financial, and labor resources needed to effectively manage these facilities. Furthermore, the absence of standardized regulations for facility operations led to inconsistencies in management practices, deepening existing inequalities across regions and within cities.⁶⁴

Between 1950 and 1980, municipalities in Türkiye were in a developmental phase concerning their authority, responsibilities, and sources of

⁶⁴ *İçme Suyu ve Kanalizasyon*, IV. Beş Yıllık Kalkınma Raporu, 1977.

income. Reports from this period frequently highlighted the limited financial resources available to municipalities. Notably, legal provisions for citizen contributions toward financing and maintaining high-cost infrastructure investments, including clean water infrastructure, remained unsettled. Although municipal revenues, along with support from the state and various institutions, helped to some extent, these efforts were insufficient to address the unequal distribution of clean water systems across regions and within cities.

§ 4.7 Conclusion

The interaction between the unequal distribution of clean water systems, the multivocality of institutions, and development plans set the scene for this chapter. Türkiye's transition to a planned development period, influenced by balanced global development policies, positively impacted investments in clean water systems. The implementation of five-year development plans reflected a balanced development perspective, aiming to reduce regional disparities and promote simultaneous growth across various sectors. One of the key conclusions of the chapter is that clean water systems lagged behind other essential infrastructures, such as transportation and electricity, despite efforts to develop them through institutional collaboration between 1950 and 1980. A review of the development plans indicates that investments in clean water systems are prioritized above sewage infrastructure but fall behind electricity and transportation infrastructure in importance.

Another result demonstrates that inequalities in clean water systems continue to sustain between the eastern and western regions of the country, as well as disparities among cities and even within the same city. Unplanned migration from rural to urban areas has resulted in inadequate investments in clean water infrastructure. In particular, inequalities in clean water infrastructure within the same city were evident among the city center, its periphery, and shantytowns.

Efforts to improve clean water systems did not suffice to eliminate inequalities. The chapter details various reasons for these disparities. The

chapter discussed numerous reasons behind the inequalities in clean water systems. An important contribution of this chapter is its examination of the impact of institutional multivocality on the development of clean water systems between 1950 and 1980, including urban sewage systems. This term refers to the conflicts and ambiguities surrounding the authority and responsibilities of institutions involved in developing water systems. Similar to sewage systems, clean water systems rely on complex, costly infrastructure investments that require collaboration among multiple experts.

To contextualize the development of clean water systems in Türkiye, the chapter examined the emergence of the concept of development alongside the country's national development policies. Rather than focusing on a single region or city, a macro perspective is presented, encompassing all cities to the extent that data availability permits. This approach aims to illustrate the impact of clean water systems on public health. Although this relationship cannot be shown econometrically due to the scope of the thesis and lack of data, investments in clean water systems are expected to positively affect waterborne diseases, life expectancy, and infant mortality. In the next chapter, I focus on the development of sewage systems in Türkiye between 1950 and 1980, highlighting the differences and similarities with the clean water system.

5

Sewage Systems in Türkiye: Towards the Multivocality of Institutions

This chapter explores the unequal distribution of sewage systems in Türkiye between 1950 and 1980 from an economic history perspective. During this period of rapid population growth and urbanization, driven by significant rural-to-urban migration, the demand for urban infrastructure increased dramatically. However, the development of sewage systems lagged behind other basic infrastructure investments such as electricity, roads, and clean water systems. This disparity in investment created inequalities in access across the country, with serious consequences for both the environment and public health. By drawing on historical data and recent scholarship, this chapter provides a comprehensive analysis of the factors behind the unequal distribution of sewage infrastructure, examining the complex relationship between sanitation investments, urbanization, and health outcomes in mid-twentieth-century Türkiye.

The uneven distribution of sewage infrastructure investments in Türkiye manifested across regional, urban versus rural, and intra-urban levels. For Türkiye, there is no comprehensive study on sewage systems that covers all cities in the literature. In this regard, this chapter fills this gap in the economic history literature of Türkiye by examining the development of sewage systems between 1950 and 1980. The temporal boundaries of this chapter span the period from 1950 to 1980. I concluded the research in 1980 as sewage administrations were integrated into municipal water administrations, being an important transition in governance. This shift led to the establishment of institutions such as the Istanbul Water and Sewage Administration (İSKİ) and the Ankara Water and Sewage Administration (ASKİ), which, while affiliated with municipalities, retained autonomy over their internal organization and financial affairs.

From 1950 to 1980, there were notable disparities in sewage infrastructure investments between rural and urban areas in Türkiye. This chapter presents three main arguments, building on the discussion in the previous chapter about clean water systems. My first argument is that similar to clean urban water systems, there was a multivocality of institutions responsible for urban sewage systems during this period. I use the term 'multivocality of institutions' to refer to the fact that, although multiple agencies held responsibility and authority for urban sewage systems, their mandates and jurisdictions were ambiguous. Thus, I argue that this multivocality of institutions negatively impacted the development of sewage systems in Türkiye. Consequently, this situation revealed the necessity of legal arrangements to clearly define the roles of institutions in the investment, supervision, operation, and maintenance of urban sewage systems between 1950 and 1980.

In contrast to urban sewage systems, I argue that there was an institutional silence regarding rural sewage systems. This silence stemmed primarily from the absence of any institution or legal regulation directly responsible for rural sewerage infrastructure investments between 1950 and 1980. Notably, until 1980, the majority of Türkiye's population lived in rural areas; however, the lack of equal and comprehensive provision of

basic infrastructure services—such as roads, electricity, and clean water—delayed investments in sewerage systems. Thus, sewerage systems in rural areas lagged behind other basic infrastructure services in terms of priority. As a result of the rising rates of urbanization and urban populations, the state has prioritized sewage infrastructure investments in urban areas. It is challenging to find records of rural areas and the sewage system demands of citizens living in these regions in the institution's archives. Due to the absence of reports or petitions in archives documenting the sewage needs and investments of rural villagers between 1950 and 1980, I have sought to fill this gap through newspaper research. This research has illuminated the demands and needs of rural citizens for the first time, offering new perspectives.

Finally, I argue that an examination of sewage systems during this period revealed significant inequalities between regions, urban and rural areas, as well as within the same city. Similar to clean water systems, as discussed in Chapter 4, inhabitants of urban centers, especially high-income neighborhoods, often had access to modern sewerage systems. On the other hand, residents of the majority of cities, particularly in low-income districts, squatter settlements, and rural areas, relied on cesspools. This section focuses on the causes and consequences of these disparities. Similar to clean water infrastructure, the division of responsibility and authority among multiple institutions in urban sewage systems led to institutional multivocality. Furthermore, these unequal distributions and slow development of sewage systems are not merely a matter of technological investment but also a result of insufficient resources and limited state capacity to implement these projects. With each passing day, the growing population and increasing rates of urbanization underscore the need for substantial investments in sewage infrastructure. The lack of equal access to these systems represents more than just an investment shortfall; it poses a significant risk to public health, with waterborne diseases being particularly prevalent in urban areas. In this chapter, I argue that modern sewage systems are not merely infrastructure investments for society but essential protective shields against the spread of waterborne diseases.

This chapter is organized as follows: After the introduction, Section (5.1) examines the developmental state's role in shaping sewage systems in Türkiye. Section (5.2) analyzes historical inequalities in sewage infrastructure between urban and rural areas from 1950 to 1980, with Section (5.3) focusing specifically on urban sewage systems and Section (5.4) on rural sewage systems. Section (5.5) then discusses the critical role of sewage systems in protecting public health. Lastly, Section (5.6) concludes the chapter, summarizing key findings and preparing for the next chapter.

§ 5.1 The Role of the Developmental State in Shaping Sewage Systems

From 1950 to 1980, considerable discrepancies existed between the urban and rural development of sewage systems in Türkiye. However, these disparities began to emerge in the late nineteenth century, as discussed in Chapter 3. Foreign water companies in two cities constructed sewage systems that served only limited areas within those cities, causing to disparities in sewage infrastructure investment, both within and between cities. I conceptualized these disparities as a 'duality of sewage systems,' similar to the duality observed in clean water systems. In this regard, it highlights the unequal access to modern sewage infrastructure across regions, cities, and even within different parts of the same city. During the early Republican era in Türkiye, efforts to improve sewage systems could not be realized due to limited financial resources and technological capabilities.

Data from the 1949 Municipalities Yearbook, collected from 639 municipalities across 63 provinces, reveals that only 16 cities—Kastamonu, Zonguldak, Ankara, Niğde, Erzurum, Balıkesir, Bilecik, Bursa, Edirne, Istanbul, Izmir, Hatay, İçel, Adana, Mardin, and Siirt—had partial sewage systems.⁶⁵ Even in these cities, access to sewage infrastructure was limited, with significant disparities both between and within cities, as the

⁶⁵ *The Municipalities Yearbook of 1949*, chap. 3.

sewage systems were concentrated primarily in urban centers. Consequently, the construction and expansion of modern sewage infrastructure—extending from urban centers to peripheral and rural areas—remained unrealized during this period. Although these inequalities in sewage systems were not fully addressed during the early Republican period, new legislation was introduced, and institutions such as the Bank of Provinces were established. These developments laid the foundation for more substantial investments in Türkiye’s sewage infrastructure post-1950.

To gain a deeper understanding of the development of sewage systems in Türkiye and to situate it within its historical context, it is essential to assess it within the emergence of the concept of development and national developmental policies. Following the Second World War, a period of development initiatives by nation-states began. During this new era, Pamuk notes that Türkiye's GDP per capita grew at fluctuating rates between 2% and 3%, which aligned closely with the averages of other developing countries and global trends.⁶⁶ This economic growth likely had a positive impact on investments, particularly in infrastructure, during that period. According to Rosenstein-Rodan's Big Push Approach, nation-states in Southern Europe were advised to allocate 18% of their national income between 1946 and 1956 to achieve economic development and integrate the surplus agrarian population into the industrial workforce.⁶⁷

Between 1950 and 1980, developmentalism in Türkiye focused on industrial and infrastructure investments, in contrast to the 1930s and 1940s, which were shaped by a balanced development perspective.⁶⁸

⁶⁶ Şevket Pamuk, *Türkiye'nin 200 Yıllık İktisadi Tarihi: Büyüme, Kurumlar ve Bölüşüm* (İstanbul: Türkiye İş Bankası Kültür Yayınları, 2023), 18–31.

⁶⁷ Paul N. Rosenstein-Rodan, “Problems of Industrialisation of Eastern and South-Eastern Europe,” *The Economic Journal* 53, no. 210–211 (1943): 202–11.

⁶⁸ Ragnar Nurkse, “The Theory of Development and the Idea of Balanced Growth,” in *Developing the Underdeveloped Countries* (London: Palgrave Macmillan UK, 1971), 115–28; Walt Whitman Rostow, *The Stages of Economic Growth: A Non-Communist Manifesto* (Cambridge: Cambridge University Press, 1990).

This perspective aimed to develop multiple sectors simultaneously rather than focusing on a single sector, with the expectation that these sectors would mutually support each other's growth over time. Additionally, in line with national development policies, there was an effort to spread industrialization across the country, rather than concentrating it in a single region or city during this period. Consequently, infrastructure investments were planned to occur simultaneously in areas targeted for industrialization. However, an examination of the five-year development plans and investments reveals a hierarchy among the planned infrastructure projects.⁶⁹

In Türkiye, the government promoted the agricultural sector by prioritizing highway infrastructure as the main transportation network until the mid-1950s, as part of its economic policy. Since the mid-1950s, the Turkish economy transitioned from liberal policies to a planned period. Between 1960 and 1980, state planning organizations played a central role in developing infrastructure investments in Türkiye. An examination of the five-year development plans, prepared within the framework of import substitution economic policies, reveals a hierarchy of infrastructure priorities: roads, electricity, and clean water, followed by sewage systems. In some development plans, such as the first five-year development plan, no budget was allocated for sewage systems.⁷⁰

The first budget for sewage investments, amounting to 700 million TL at 1965 prices, was included in the Second Five-Year Development Plan.⁷¹ With a designated sum for sewage systems (categorized as sewerage and other investments), the specifics of these projects during the Second Plan

⁶⁹ Devlet Planlama Teşkilatı, *I. Beş Yıl Kalkınma Planı 1963–1967* (Ankara, 1963); Devlet Planlama Teşkilatı Müsteşarlığı, *II. Beş Yıllık Kalkınma Planı 1968–1972* (Ankara, 1968); Devlet Planlama Teşkilatı Müsteşarlığı, *III. Beş Yıllık Kalkınma Planı 1973–1977* (Ankara, 1973); Devlet Planlama Teşkilatı Müsteşarlığı, *IV. Beş Yıllık Kalkınma Planı 1979–1983* (Ankara, 1979); Devlet Planlama Teşkilatı, *Kalkınma Planı Birinci Beş Yıl (1963–1967), 1963 Yılı Programı Ek:2, İktisadi Devlet Teşekkülleri Yatırımları* (Ankara, 1963); Devlet Planlama Teşkilatı, *Kamu Yatırım Raporu (1981 Yıl Sonu- Kesin)* (Ankara, 1982).

⁷⁰ More details; *I. Beş Yıl Kalkınma Planı 1963–1967*, 34.

⁷¹ *II. Beş Yıllık Kalkınma Planı 1968–1972*, 611.

period can be traced through the balance accounts of the Bank of Provinces. The primary goal of the third plan period was to complete the sewerage projects initiated in previous years. By 1972, 26 sewerage projects had been included in the program, and this number increased to 110 by the end of 1977 with the continuation of ongoing projects. However, it is clear that the share of sewerage investments in total public investments remained relatively low throughout this period.⁷²

The Fourth Five-Year Development Plan marked a period in which the need for sewerage investments became more apparent due to increasing industrialization and urbanization. However, only 135 sewerage projects were planned, representing just 1.4% of the 9,346 total projects.⁷³ Although the demand for sewerage infrastructure grew alongside industrialization and urbanization, these investments continued to rank lower in priority compared to other infrastructure projects.

An analysis of the first four development plans, spanning from 1960 to 1980, reveals that the Turkish government prioritized infrastructure investments to support industrialization efforts in line with policies promoting balanced growth. When examining the plans specifically concerning sewage systems, it is evident that despite setbacks, the government made efforts to complete the planned sewerage infrastructure projects, as exemplified in the Third Five-Year Development Plan. Additionally, the government recognized the need to establish standards for sewage systems through specialized commissions. Furthermore, the need for specialist and technical personnel in sewerage systems was highlighted in each plan starting from the Second Plan. To address this deficiency, the expansion of educational opportunities was prioritized. Finally, the plans also included measures to prevent conflicts arising from the overlapping responsibilities of various institutions. For example, it was stated that the sewerage services of cities would be managed under the responsibility of the General Directorate of State Hydraulic Works. The works and services related to sewage systems within municipal borders were to be handled

⁷² III. Beş Yıllık Kalkınma Planı 1973-1977.

⁷³ IV. Beş Yıllık Kalkınma Planı 1979-1983, 175.

by the General Directorate of the Bank of Provinces, while those related to villages were assigned to the General Directorate of Road, Water, and Electricity Works. However, these efforts were insufficient to prevent conflicts of power and authority between these institutions—an issue I refer to as the "multivocality of institutions."⁷⁴

Another noteworthy aspect of the development plans was the important role institutions played in the construction of sewage systems and their transformation into national investments. Institutions such as the Directorate of Highways and State Hydraulic Works, established in the 1950s in line with balanced development policies, undertook key responsibilities in implementing national development strategies. Through these institutions, the state was able to provide essential infrastructure services to regions undergoing industrialization. These institutions employed the cross-subsidy mechanism to reduce infrastructure inequalities in high-cost investments, distributing resources across different areas in alignment with industrialization efforts, rather than concentrating them in a single region. This balanced development approach, however, was criticized by Hirschman, who argued that the attempt to invest in infrastructure universally exposed the financial, managerial, and human capital limitations of states. According to his thesis on unbalanced development, the ambition to invest everywhere was seen as inefficient and a misallocation of resources. On the other hand, the limited availability of financial, managerial, technical, and human capital during that period prevented the equal allocation of infrastructure expenditures across the entire country. Hirschman critiqued this issue in his thesis on unbalanced development, arguing that the ambition to invest in infrastructure universally was inefficient and a waste of resources, as it exposed the constraints faced by states.⁷⁵ Inequalities in sewage investments were not unique to Türkiye; they were also common in other developing countries,

⁷⁴ III. Beş Yıllık Kalkınma Planı 1973–1977, 628.

⁷⁵ Albert O. Hirschman, "Unbalanced Growth: An Espousal," in *Developing the Underdeveloped Countries* (London: Palgrave Macmillan UK, 1971), 129–41.

and even in developed nations that invested in infrastructure during the late nineteenth and early twentieth centuries.⁷⁶

In developed countries, the development of sewage infrastructure systems began primarily in urban areas, driven by urbanization. Initially, the construction of these systems focused on neighborhoods inhabited by high-income citizens, which led to inequalities in access. Over time, increased public investments helped reduce these disparities in access to water and sanitation systems in developed countries. Efforts to address these inequalities included strategies aimed at expanding investments from central urban areas to peripheral regions, thereby promoting a more balanced and equitable distribution of resources.

Post-World War II, a new phase began for developing countries as urbanization and industrialization spread, as previously mentioned. In Türkiye, these global economic growth trends influenced the evolution of sewage infrastructure investments, with improving economic conditions serving as a catalyst for the enhancement of sanitation facilities. However, the question remains: were these developments sufficient to reduce regional and urban inequalities in sewerage infrastructure systems in Türkiye between 1950 and 1980? In the following subsections, I focus on the factors contributing to the unequal development of sewage systems across regions, cities, and within cities in Türkiye, and explore the connections between these disparities and the economic policies of the time.

§ 5.2 Unveiling Inequalities in Sewage Systems: A Historical Examination of Sewage Infrastructure Development in Urban and Rural Türkiye, 1950-1980

After addressing the link between balanced development and sewage systems, I discuss the differences in sewage systems between urban and rural areas in Türkiye in this section. In contrast to the construction of

⁷⁶ Bo Burström et al., “Equitable Child Health Interventions: The Impact of Improved Water and Sanitation on Inequalities in Child Mortality in Stockholm, 1878 to 1925,” *American Journal of Public Health* 95, no. 2 (2005): 208–16; Joseph Molitoris, *Life and Death in the City: Demography and Living Standards During Stockholm's Industrialization* (2015).

clean water systems, the development and maintenance of sewage systems required a more complex and sophisticated framework. Therefore, collaborative efforts across multiple domains of expertise played a crucial role in the development of sewage systems. The construction of sewage networks and the development of systems for their consistent operation and maintenance involved multidisciplinary collaboration between engineers, environmental experts, and public health professionals. This highlights the need for coordinated teamwork. Furthermore, investments in sewage infrastructure were more costly for the state than those for clean water systems. In this regard, there were also no legal frameworks in place to share the financial responsibility for these sewage investments with citizens. The lack of legal frameworks to distribute the financial burden of sewage systems in Türkiye intensified the fiscal strain on government bodies, further complicating sewage infrastructure development. As a result, the disparities between urban and rural areas in sewage systems were more pronounced than those observed in clean water infrastructure.

This section will first examine sewage infrastructure investments in urban areas, followed by an analysis of investments in rural areas. The initial subsection (5.4) provides a detailed analysis of the "multivocality of institutions" concerning urban sewage systems in Türkiye from 1950 to 1980. Drawing comparisons with the dynamics of clean water systems discussed in Chapters 2 and 4, the term "multivocality of institutions" refers to the conflicts and overlapping responsibilities among various institutions involved in urban sewage management. In the subsequent subsection (5.5), I contrast this with the "silence among institutions" regarding rural sewage infrastructure. Unlike the complexities seen in urban and clean water systems, the term "silence of institutions" highlights the significant lack of investment in rural sewage infrastructure.

§ 5.3 Urban Sewage Systems in Türkiye, 1950-1980

This section provides a comprehensive analysis of the development and complex dynamics of the investments in urban sewage infrastructure in

Türkiye between 1950 and 1980. Through a critical perspective, it examines the institutional frameworks and policy changes that shaped the evolution of sewage systems. This analysis is meticulously organized into three subsections, each addressing the complexities and nuances of urban sewage system developments during this period. This approach highlights the intricate relationship between political economy and urban infrastructure policies.

In the first subsection (5.4.1), I delve into the "multivocality of institutions," a term that highlights the diverse and sometimes conflicting roles of the various entities responsible for the governance, funding, and implementation of urban sewage infrastructure investments in Türkiye, similar to clean water systems. The second subsection (5.4.2) explores how the political shift from liberal policy to import substitution industrialization influenced urban sewage infrastructure investments. The third subsection (5.4.3) provides a historical overview of the development of sewage systems in Türkiye, encapsulating the period's challenges, achievements, and milestones. In doing so, the subsections collectively aim to offer a perspective on how Türkiye's urban sewage systems were shaped by domestic and international influences, technological advancements, and shifting policies. The fourth subsection (5.4.4) examines the differences in urban sewage systems between 1960 and 1980. Finally, the fifth subsection (5.4.5) discusses the reasons behind the long-term use of cesspools in Türkiye, while the sixth subsection (5.4.6) focuses on the role of *çirkefsu* in delaying the development of sewage systems.

5.3.1 *Multivocality of Institutions: Who Is Responsible for Urban Sewerage Infrastructure Investments?*

The development of sewage systems in Türkiye between 1950 and 1980 faced numerous challenges similar to those encountered in the expansion of clean water systems, including the financial, technological, and infrastructural investments required. However, beyond these evident obstacles, a more subtle impediment emerged "the multivocality of institutions". I prefer this term because it comprehensively encapsulates the conflicts and communication breakdowns that occurred among the

various institutions responsible for the development, management, and resource allocation of sewage systems, similar to those for clean water systems. This section focuses on six key entities that played a prominent role in advancing urban sewage infrastructure: Municipalities, the Ministry of Public Works, the Bank of Provinces, the Ministry of Interior, State Hydraulic Works, and the Ministry of Health and Social Welfare.

Municipalities have been significant contributors to infrastructure development and expansion since the early Republican era. In 1930, Atatürk and other founding leaders passed the Laws on Municipalities and Public Hygiene, authorizing municipalities to construct sewage systems.⁷⁷ Furthermore, to support these laws, the Law on Municipal Structures and Roads was enacted in 1933.⁷⁸ According to this legislation, all cities were required to develop urban plans covering 50 years within five years. Despite the intention of fostering coordinated infrastructural development in collaboration with local governments, these efforts were ultimately unrealized due to the limited financial, physical, and administrative capacities of municipalities at the time. The economic and administrative capacities of municipalities varied across the country, preventing many from developing urban infrastructure plans under the conditions of the period. Even in municipalities that developed urban plans, these plans were inadequate in addressing the cities' needs. The construction of sewage systems was just one of many infrastructure responsibilities assigned to municipalities during the early Republican period. Although municipalities were granted extensive rights and responsibilities within a short time frame, they lacked the financial resources, administrative capacity, and technical personnel needed to execute these investments. As a result, they could only allocate funds to select infrastructure projects, as they were unable to meet all residents' needs simultaneously. Consequently, investments in sewage infrastructure lagged

⁷⁷ Umumi Hıfzıssıhha Kanunu, *Resmi Gazete* 1489 (May 6, 1930). Belediye Kanunu, *Resmi Gazete* 1471 (April 14, 1930). *Umumi Hıfzıssıhha Kanunu*, *Resmi Gazete* 1489; *Belediye Kanunu*, *Resmi Gazete* 1471.

⁷⁸ *Belediye Yapı ve Yollar Kanunu*, *Resmi Gazete* 2433.

behind improvements in transport, electricity, and clean water infrastructure for various reasons.

The development of sewage infrastructure is closely tied to the development of clean water systems. In other words, constructing sewage infrastructure in a region without clean water systems was technically unfeasible, so clean water was prioritized in city investment plans. Additionally, sewage infrastructure was more costly for the state compared to clean water systems. Although there were intentions in the early Republican period to pass sewage costs on to citizens, no legislation was introduced to require land or building owners to contribute to these expenditures. The first legal arrangement for citizen participation in sewage costs came in 1948. Article 13(b) of the Municipal Income Law, adopted that year, required building and landowners to contribute one-third of the cost of sewage infrastructure.⁷⁹ This provision aimed to improve sewage systems in newly constructed buildings. Furthermore, the 1956 Zoning Law, through Article 40, mandated the installation of sewer systems before construction licenses could be issued. In cases where the installation of traditional sewage systems was not feasible, constructing septic tanks became a mandatory requirement for obtaining building permits, providing an alternative solution for proper waste management.⁸⁰ To support these efforts, a municipal fund was established under the control of the Ministry of Housing and Settlement (later renamed the Ministry of Public Works), thereby involving another institution in the development of sewage systems

Atatürk and the other Republic's founding leaders initially granted municipalities sole responsibility and authority for infrastructure development. However, they soon realized the financial limitations of these local administrations. To address this, the Bank of Municipalities, *Belediye Bankası*, was established in 1933 with the specific mission of

⁷⁹ *Belediye Gelirleri Kanunu*, Resmi Gazete 6953.

⁸⁰ *İmar Kanunu*, Resmi Gazete 9359 (July 16, 1956). Specifically, Article 40 of the law pertains to the regulation of sewer plans.

providing financial aid to municipalities.⁸¹ This initiative aimed to ensure that municipalities, regardless of their economic, financial, or administrative capacities, could deliver uniform services to all citizens. In addition to the varying capacities of municipalities, the population sizes they served also differed. In 1935, the Ministry of Interior was granted oversight authority through additional legislation—Municipality Law No. 1580—over clean drinking water, sewage, and zoning plans in municipalities with populations exceeding 10,000. The Ministry delegated the allocation of funds for these projects to the Municipality Zoning Committee, *Belediye İmar Fen Heyeti*. In parallel, the Municipalities Zoning Science Committee was established to provide specialized support to municipalities in the areas of potable water, sewage management, and urban planning. By 1945, the Municipalities Bank had transitioned into a broader entity, the Bank of Provinces, *İller Bankası*, reflecting a more comprehensive approach to infrastructural development and support.⁸²

During the transition from the Municipalities Bank to the Bank of Provinces, many agencies and committees, including the Ministry of Interior, were granted authority over the establishment and advancement of sewage systems. Furthermore, a population-based classification system was introduced to delineate the areas of responsibility for institutions involved in sewerage investments. Under this system, urban areas are defined as settlements with populations over 10,000, while rural areas consist of those with fewer than 10,000 inhabitants. The State Hydraulic Works became the authority for sewerage investments in metropolitan areas due to this classification. Specifically, Law No. 1053, enacted in 1968, empowered the State Hydraulic Works Directorate to manage drinking water supplies in cities with populations exceeding 100,000. This led to the establishment of the Department of Drinking Water and Sewerage in 1978.⁸³ In line with its foundational aim and the Public

⁸¹ For further details regarding the establishment of the Municipalities Bank, please see; *İller Bankası* (Ankara: İller Bankası Genel Müdürlüğü Matbaası, 1981), 19–31.

⁸² *İller Bankası*, 35–52.

⁸³ *Devlet Su İşleri Kanun*, Resmi Gazete 8592.

Health Law, the Ministry of Health and Social Welfare has been responsible for inspecting sewage systems to protect public health.⁸⁴

The Ministry of Public Works, Bayındırlık Bakanlığı, is another institution authorized to construct sewage infrastructure. Historically, this ministry, initially called Nafia Nezareti since 1848, was re-established by the Establishment Law No. 2443, dated May 26, 1934.⁸⁵ Its wide-ranging responsibilities included the construction of railways, ports, highways, bridges, postal, telegraph, and telephone facilities, as well as water systems. In 1958, the Ministry of Housing and Settlement, İmar ve İskan Bakanlığı, was created to oversee regional, urban, and rural planning, formulate housing policies, and address building material issues. This ministry also assumed responsibility for developing urban infrastructure and managing relationships with municipalities.⁸⁶ With the enactment of the law on July 13, 1972, the organization was renamed the Ministry of Public Works and underwent a reorganization of its structure and responsibilities.⁸⁷ Consequently, it became an influential institution in overseeing sewage infrastructure investments in Türkiye.

The period from 1950 to 1980 saw a notable increase in the number of institutions taking on roles and responsibilities in sewage system management. Despite the expansion of authority intended to address the complexities of sewage system needs, the lack of a clear delineation of responsibilities among the involved organizations led to multivocality. This proliferation of institutions, without a robust legal framework for

⁸⁴ *Umumi Hıfzıssıhha Kanunu*, Resmi Gazete 1489 (May 6, 1930). For more details, see <https://www.saglik.gov.tr/TR-11492/tarihce.html>; Halil İbrahim Aksakal, "Dr. Refik Saydam Önderliğinde Cumhuriyet Dönemi Sağlık Hizmetlerini Modernleştirme Çabaları," *Fırat Üniversitesi Sosyal Bilimler Dergisi* 27, no. 1 (2017): 219–32.

⁸⁵ Nafia Vekâleti'nin Teşkilât ve Vazifelerine dair Kanun, *Resmi Gazete* 2713 (May 29, 1934).

⁸⁶ 7116 sayılı İmar ve İskân Bakanlığı Kuruluş ve Vazifeleri hakkında Kanun, *Resmi Gazete* 9906 (May 14, 1958).

⁸⁷ 1609 sayılı Bayındırlık Bakanlığı Kuruluş ve Görevleri Kanunu, *Resmi Gazete* (July 13, 1972).

effective communication and coordination, resulted in overlapping responsibilities and authorities. I argue that this condition produced a multivocality of institutions in urban sewage systems during this period. After exploring the responsibilities and authorities of institutions managing urban sewage systems, the next section will examine the evolution of urban sewage infrastructure investments within Türkiye's political context. It will trace the transition from state-led industrialization under a single-party regime to the era of liberal policies under a multi-party system. This shift will help illuminate whether political dynamics influenced the development and modernization of sewage infrastructure, reflecting broader economic and social transformations in the nation.

5.3.2 *Urban Infrastructure Evolution: A Historical Analysis of Sewage Systems in Türkiye, 1950-1980*

The multivocality among institutions regarding sewage investments, the Turkish government's policy priorities, and political parties' promises to the electorate provide the context for this section. The progress of infrastructure investments is closely linked to a nation's political and economic capacities. In Türkiye's case, the 1950 elections marked a shift from state-controlled industrialization to the adoption of liberal policies with the introduction of a multi-party political system. A comparison of the Republican People's Party (RPP) and the Democratic Party (DP) reveals significant differences in their infrastructure investment priorities. Unlike the RPP, the DP in the 1950s placed less emphasis on strategic planning. After the 1960 military coup, the Turkish economy shifted from liberal policies to a planned economy that prioritized import substitution industrialization.⁸⁸ The economic policies of the era, the ideologies of the ruling parties, and their promises to the electorate shaped the development of infrastructure investments in Türkiye from 1950 to 1980. During this period, the World Bank also supported changes in the Turkish economy, in line with economic trends seen in other developing countries. In this section, I examine whether the period between 1950 and

⁸⁸ Korkut Boratav, *Dünyadan Türkiye'ye, İktisattan Siyasete* (Istanbul: Yordam Kitap, 2021).

1980 witnessed a convergence of inequalities in sewage systems at both regional and urban levels in Türkiye, while also highlighting the socio-economic dynamics shaped by the policies of the ruling parties.

In this section, I scrutinize the inequalities in urban sewage infrastructure investments between regions, cities, and even within cities by analyzing newspaper archives, municipal records, and institutions' documents. The development of urban sewage systems in Türkiye between 1950 and 1980 can be divided into two distinct periods, similar to the development of clean water systems. The first period (1950–1960) is characterized by limited progress in sewage development, while the second period (1960–1980) saw a transition from local to national-scale sewage investments. From 1950 to 1960, urban sewage demands remained largely unaddressed at the national level. An examination of the Bank of Provinces' operations during this time shows that its priorities focused on mapping, zoning plans, electricity, and clean water projects. Consequently, the planning of sewage systems, particularly during the 1950s, lacked national coordination, leaving the responsibility for sewage infrastructure investment to local municipalities. In the second period, from 1960 to 1980, there was a significant increase in sewage infrastructure investments across Türkiye, supported by both national and international institutions. The Bank of Provinces also provided credit facilities for repair works, as demonstrated by the example of the flood disaster in Ankara, where the Minister of Development and Housing stated that damage to the region's drinking water and sewerage facilities was addressed through necessary credit provided by the bank.⁸⁹

A closer examination of the initial period from 1950 to 1960 revealed that the construction of sewage systems was exclusively undertaken by municipalities. During this decade, municipalities faced significant challenges in providing equitable infrastructure investments across urban populations due to disparities in financial and administrative capacities. Consequently, this period witnessed uneven development in sewage infrastructure across regions, cities, and even within individual cities. The demand of inhabitants from below played a crucial role in determining

⁸⁹ T.B.M.M Zabıt Ceridesi, 18.İnikat, 23.12.1959, 464.

the infrastructure investments made by municipalities. Evidence of such demands could be found in institutional archives and contemporary newspapers. However, during the research for my thesis, access to municipal archives, except for those of the Istanbul Metropolitan Municipality, was restricted due to several factors, including the lack of digitization or the unavailability of documents from the period. Thus, in the 1950s and 1960s, before the Bank of Provinces initiated investments in sewerage infrastructure, municipalities were solely responsible for constructing local sewerage systems within their jurisdictions. Given the unavailability of records from municipalities other than Istanbul, this analysis of sewage systems between 1950 and 1960 focused primarily on Istanbul, the city experiencing the most significant urbanization during this time. It is plausible to suggest that the challenges stemming from the absence of modern, comprehensive sewage infrastructure in Istanbul were likely encountered in other major cities, such as Izmir and Ankara.

Between 1950 and 1960, Istanbul experienced a substantial population boom and significant demographic shifts within its rural and urban areas. This surge positioned the city as a key case study for understanding the urgent need for investment in modern sewage systems. A review of the Istanbul Municipality archives revealed that residents actively engaged with the local government, frequently submitting petitions demanding the construction of sewage infrastructure. Additionally, newspaper columns often reflected the complaints and demands of Istanbul's citizens regarding the inadequacy of sewage systems. In response, the municipality entered into contracts with developers to construct sewage systems, particularly in the neighborhoods from which these appeals originated.

Studies on sewage infrastructure investments indicate that initial investments were preferentially allocated to areas inhabited by upper-income groups. Districts such as Nişantaşı, Cihangir, Beşiktaş, Şişli, and Kadıköy, predominantly home to wealthier residents, were notably prioritized in sewage infrastructure development in Istanbul. One example, reported in *Cumhuriyet* on March 13, 1957, described how streets in the

Nişantaşı area were frequently excavated for sewage construction.⁹⁰ Furthermore, an examination of public complaints in newspapers revealed uneven sewage infrastructure investments within certain districts, such as Kocamustafapaşa. In these areas, the municipality built sewage systems on some streets while blatantly bypassing others.



Figure 5.1 Where is this place? SOURCE: *Cumhuriyet* (Oct 3, 1955).

Despite the municipality's earlier prioritization of infrastructure investments in high-income areas, these neighborhoods were not immune to challenges related to water and sewage systems. Figure 5.1 illustrates an infrastructural issue in Istanbul's Cihangir neighborhood, a notable urban area in Türkiye. The image, published in a news report, captures the struggles of residents who endured prolonged water shortages due to an exposed sewage pit in the area. The sewage issue in Istanbul was not confined to Nişantaşı but affected other neighborhoods as well. In response to these conditions, citizens voiced their demands for sewage infrastructure through newspaper announcements, specifying their neighborhoods. For instance, a resident of Güzel Sebzeci Street on Cerrahpaşa

⁹⁰

Cumhuriyet Gazetesi, March 13, 1957.

Avenue, speaking on behalf of the entire street, reported that their septic tanks were full and requested the construction of a sewage system.⁹¹

Similar requests were received from other neighborhoods in Istanbul. Ahmet Bey, representing the residents of Sivritaş Street in Mecidiyeköy, submitted their sewage demands to the newspaper.⁹² It was observed that the neighborhoods where residents frequently appealed to the municipality for infrastructure improvements, or submitted their complaints and demands to newspapers, were predominantly upper-income areas of Istanbul. In the case of the Istanbul Municipality, it was evident that the municipality attempted to address these demands within the constraints of its budget. For instance, the archives of the Istanbul Municipality contain agreements with contractors for the construction of sewers in districts such as Beşiktaş and Şişli. However, it was apparent that these contracts were insufficient to meet the broader sewage infrastructure needs of Istanbul. The primary reason for this insufficiency was that the sewage infrastructure projects undertaken by the municipality were small, localized investments that covered only a few streets rather than entire neighborhoods. Furthermore, the sewage systems on these streets were not designed with consideration for the population or the short-term needs of the neighborhood, nor for the need to connect to sewage systems in nearby communities. Consequently, although several neighborhoods had sewage systems, establishing connections between them was not feasible. This situation led to conflicts among the institutions responsible for sewage infrastructure investments. Infrastructure deficiencies were also brought to the parliamentary agenda and addressed by members of parliament. For instance, on behalf of the CHP parliamentary group, Nevzat Arman highlighted the lack of sewerage facilities as the reason for the ongoing typhoid outbreaks in cities such as Ankara and Istanbul.⁹³

⁹¹ *Cumhuriyet Gazetesi*, April 29, 1955.

⁹² *Cumhuriyet Gazetesi*, January 5, 1955.

⁹³ T.B.M.M Zabıt Ceridesi, 48.İnikat, 26.11.1960, 736.

In the newspaper news written by Şahab Balcıoğlu titled “*Yolların zaman zaman delik deşik edilmesinin nasıl önüne geçilebilir?*”, the condition of Istanbul's sewage systems at the time was critically examined. The regions covered in the article included the Aksaray, Laleli, Yenikapı, Langa, Çapa, and Cerrahpaşa neighborhoods of Istanbul. The article highlighted the city's rapidly growing population and the parallel expansion of neighborhoods, each requiring new infrastructure. These developments increased the importance and scope of municipal services. The infrastructure investments recalled by the residents of Istanbul typically involved a situation where a small group of workers would arrive at a road, remove the paving stones or asphalt, and dig a hole. They would then lay gas pipes or repair existing ones, briefly cover the hole, and leave. Shortly after, another group of workers would return to the same location to work on water pipes; they would lay new pipes or repair them, quickly cover the pit, and depart. This cycle continued with telephone workers, followed by electricity workers, and so on. The author likened this process to surgical scars, noting that nearly every neighborhood and street bore these marks. This repeated activity resulted in continuous expenses for public finances. Moreover, the piecemeal construction of sewage infrastructure was merely a temporary fix, as these partial investments could not be integrated with those of other neighborhoods and streets. Balcıoğlu also emphasized the necessity of constructing small canals and integrating them with pipelines, as was the practice in Western countries.⁹⁴

Another issue highlighted in the newspaper article was that, by 1958, Istanbul was still relying on sewage plans devised in the 1930s. Between 1925 and 1930, engineer Wild, the director of public works in Berlin, had prepared a sewage project for Istanbul, which was approved and implemented by the Ministry of Public Works. According to the newspaper, the city's sewage system has been operating based on this project ever since. However, 30 years had passed since Wild's project was designed. During this period, the city's population, traffic, and residential areas had signif-

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Cumhuriyet Gazetesi, April 14, 1959.

icantly expanded, leading to substantial changes in the region's dynamics. In other words, the sewage project, developed to meet the needs of the 1930s, was no longer adequate for the conditions of 1958. Therefore, it became evident that Istanbul required new sewage plans. This need was acknowledged by municipal authorities, who invited Dr. Kerr, a professor of sewage systems at Hannover University, to address the city's sewage problems. The municipality also applied to the Ministry of Public Works for necessary assistance. Dr. Kerr, who was involved in the city's zoning plans, emphasized that sewage and other infrastructure investments should be consolidated.⁹⁵

Another point emphasized by Balcioğlu in his article was the necessity not only of undergrounding infrastructure investments but also of carrying out these operations simultaneously. This approach would prevent the repeated excavation of roads, minimizing inconvenience for citizens and reducing the financial burden on the public sector. He also proposed coordinating these infrastructure operations within a single, centralized system. The article further noted that a gallery system was planned for construction under the Eminönü-Unkapanı road to implement this coordinated approach in Istanbul.⁹⁶ The growing need for expert input on sewage infrastructure investments in large cities became increasingly apparent with each year's population growth.

In 1959, Prof. Care and Prof. Högg, sewage engineers from Hannover University, were invited to Türkiye by Kemal Aygün, the mayor of Istanbul. Following their meeting, a decision was made to involve the German engineers in the city's sewage projects. According to the newspaper, 100,000 lira had been allocated for this purpose in the municipality's budget.⁹⁷ However, the extent to which this plan was implemented cannot be determined from the available newspaper articles or the institution's archives. Following the meeting, a decision was made to engage the German engineers in sewage works. The newspaper reported that

⁹⁵ *Cumhuriyet Gazetesi*, April 14, 1959.

⁹⁶ *Cumhuriyet Gazetesi*, April 14, 1959.

⁹⁷ *Cumhuriyet Gazetesi*, May 6, 1959.

100,000 lira had been allocated for this purpose in the municipality's budget.⁹⁸ Unfortunately, the extent to which the plan was implemented cannot be determined from the newspaper articles or institutional archives.

The construction of sewerage infrastructure in Istanbul during the 1950s highlighted critical lapses in municipal oversight and public safety. According to a *Cumhuriyet* newspaper article dated December 8, 1955, there were reports of individuals falling into a sewer hole approximately 60 meters long and 3 meters deep, resulting in injuries. The article further noted that the hole had collapsed during a rainstorm, subsequently expanding in size.⁹⁹ A similar tragedy occurred in the Kocamustafapaşa neighborhood, one of Istanbul's oldest districts, where the lack of essential safety measures led to a landslide at a sewage pit, claiming the lives of two workers. These incidents underscore the severe consequences of inadequate safety protocols in municipal infrastructure projects.¹⁰⁰

Another news in *Cumhuriyet*, dated May 10, 1957, reported an incident in which the municipality hired a contractor to repair the sewage systems on Büyükdere Street in the Şişli district. The report highlighted that the contractor had prematurely ceased work, leaving sewer lines exposed, which posed significant public health risks, particularly to children who were at risk of falling into them. These concerns were raised by a resident named İsmail Hakkı Özbek, who voiced his grievances to the publication. This instance illustrates a broader issue: the municipality's failure to adequately audit contractors, thereby endangering the safety and health of the public.¹⁰¹ As previously mentioned, the period from 1950 to 1960 was marked by limited construction of sewage systems on an urban scale by municipalities.

The period from 1960 to 1980 witnessed a shift in Türkiye's sewage infrastructure investments, moving to a national scale. This transition

⁹⁸ *Cumhuriyet Gazetesi*, May 6, 1959.

⁹⁹ *Cumhuriyet Gazetesi*, December 8, 1955.

¹⁰⁰ *Cumhuriyet Gazetesi*, August 3, 1957.

¹⁰¹ *Cumhuriyet Gazetesi*, May 10, 1957.

was driven by the growing population and rapid urbanization, which underscored the need for more comprehensive sewage systems. Furthermore, these investments became more systematic with the establishment of the State Planning Organization in 1960, following the political and economic changes that emerged after the 27 May military coup. Development efforts in Türkiye during this period were also supported by international organizations such as the OECD.¹⁰²

Before the 1960s, municipalities had attempted to develop sewage systems using their resources, but these efforts were expected to become more effective within the framework of planned development programs. However, the urgent need for clean water and electricity infrastructure in the country caused sewage infrastructure investments to be relegated to secondary importance in development plans. For instance, the First Five-Year Development Plan (1963–1967) did not include provisions for sewage infrastructure improvements. This was a consequence of the prioritization of drinking water and electricity infrastructure development. The plan reported that 53 percent of villages and 55 percent of towns lacked access to drinking water, while 69 percent of the population did not have access to electricity.¹⁰³

In the Second Five-Year Development Plan, cities with populations exceeding 10,000 or with tourism potential were prioritized for sewage infrastructure investments. It was initially estimated that a budget of 6.4 billion Turkish lira would be necessary for cities meeting these criteria, but due to resource constraints, no specific funds were allocated for sewage investments.¹⁰⁴ Given the other infrastructure expenses of municipalities, a budget of 700 million Turkish lira was earmarked for sewage investments between 1968 and 1972, based on 1965 prices. Municipalities were identified as the primary executors of these plans.¹⁰⁵ Additionally, during this period, the Bank of Provinces began planning and developing

¹⁰² Pamuk, *Uneven*, Chapter 10.

¹⁰³ *Birinci Beş Yıllık Kalkınma Planı*, 2.

¹⁰⁴ *Özel Kanalizasyon Raporu*, 48.

¹⁰⁵ *İkinci Beş Yıllık Kalkınma Planı*, 611.

sewage-related projects. Thus, the initiation of urban sewage infrastructure investments on a national scale began with the Second Five-Year Development Plan. An analysis of the Bank of Provinces' actions reveals that the Bank primarily focused on investments in mapping, zoning plans, clean drinking water, and electricity infrastructure. In other words, the Bank could not allocate funds for sewage infrastructure investments until 1968.

An interesting point is the evolution of sewage systems becoming a separate category from other infrastructure. An analysis of the annual balance sheets and general assembly meeting minutes from 1968 to 1980 revealed the growing importance the Bank of Provinces placed on sewage systems over the years. Until 1972, sewage was not considered a separate sector in the balance sheets; instead, it was included under the clean water expenditure budget. From 1973 to 1977, sewage began to be recognized as part of a combined "water and sewage" expenditure. However, starting in 1978, sewage was treated as a distinct infrastructure category. This progression reflects the increasing significance of sewage infrastructure investments in Türkiye, as recognized by the Bank of Provinces. The implications of this shift are evident in the sewage plans and projects developed during this period.

Table 5.1 The regional distribution of the sewage projects carried out by the Bank of Provinces in Türkiye from 1968 to 1980.

	1968	1969	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Aegean Region		2	3	2	4			1	2	3	1	3
Afyon										1		
Aydın		1	1		1							
İzmir									1	1	1	2
Kütahya		1	2		2				1			
Muğla				2	1			1		1		1
Black Sea Region	1	2	3	3	5	1		3		2	1	
Amasya					1							
Artvin			1									
Bolu				2	1			1				
Çorum			1									
Giresun					1					1		
Gümüşhane					1							
Ordu		1				1						
Rize			1									
Samsun								1		1		
Sinop				1								
Tokat		1			1							
Zonguldak	1							1			1	
Central Anatolia Region	1	1	1	2	2	1	1			2	1	3
Ankara		1					1					1
Çankırı					1							
Kayseri						1						
Kırşehir										1		1
Konya			1	2	1							
Nevşehir										1	1	1
Yozgat	1											
Eastern Anatolia Region			2	1					2	1		
Erzurum			1									
Kars			1	1						1		
Van									2			
Marmara Region		1	4	2	5					3	1	4
Balıkesir			2	1								2
Bursa					1							
Çanakkale			1		1							
Edirne			1									
İstanbul				1	2					2	1	2
Sakarya					1					1		
Tekirdağ		1										
Mediterranean Region			1	1	3			1		3		
Adana					1					1		
Antalya					1			1				
Hatay										1		
Isparta			1									
Maraş										1		
Mersin				1	1							
Southeastern Anatolia Region				1	3		2			1	1	2
Adıyaman										1		
Diyarbakır					1						1	1
Gaziantep												1
Mardin				1			1					
Silvan					1		1					
Urfa					1							
Grand Total	2	6	14	12	22	2	3	5	4	15	5	12
Total Cost	15,000	204,751	579,847	592,508	740,726	59,790	249,613	493,804	295,000	4,007,231	1,478,500	7,470,000

SOURCE Compiled by the author using the Bank of Provinces Committee Reports, 1968-1980.

Table 5.1 presents the regional distribution of sewage projects constructed by the Bank of Provinces in Türkiye from 1968 to 1980. The analysis of the Bank's investments showed an increase in the number of sewage projects until 1974, followed by a slowdown due to the 1973 OPEC crisis. Additionally, the pie chart in Figure 5.2 illustrates the percentage distribution of completed sewage systems by the Bank across various Turkish regions over these 12 years. Notably, the Aegean, Marmara, and Black Sea regions exhibit similar investment levels, each accounting for approximately 20%. In contrast, the Eastern Anatolia Region received the lowest share, at 6%.

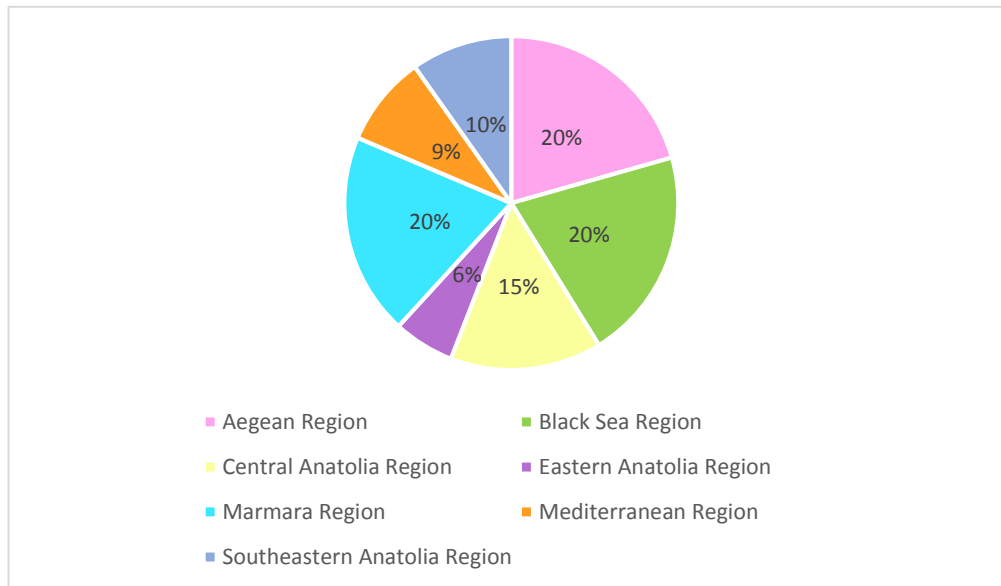


Figure 5.2 The percentage distribution of sewage systems across different regions in Türkiye by the Bank of Provinces in Türkiye from 1968 to 1980. SOURCE: Compiled by the author using the Bank of Provinces Committee Reports between 1968 and 1980.

Table 5.2 Regional Population Share in 1975 and Sewage Project Cost Allocation by Region, 1968-1980.

Regions	1975 Population Share (%)	1968-1980 Sewage Project Cost Allocation by Region (%)
Aegean Region	9.3	10.9
Black Sea Region	14.6	4.4
Central Anatolia Region	14.7	5.5
Eastern Anatolia Region	3.4	1.3
Marmara Region	17.8	13.2
Mediterranean Region	13.9	60.3
Southeastern Anatolia Region	8.0	4.3

SOURCE Compiled by the author using 1975 population data from TurkStat and balance sheet data from the Bank of Provinces.

The cities in which the Bank of Provinces invested in sewage projects between 1968 and 1980 represent 81% of Türkiye's population as of 1975, while the remaining 18.3% comprises cities without sewage projects. According to Table 5.2, for example, the Aegean region received a budget proportionate to its population, whereas the sewage projects in the Black Sea, Central Anatolia, Southeastern Anatolia, and Eastern Anatolia regions did not fully meet the needs of their populations. Although the Marmara Region has the highest population share at 17.8%, it received only 13.2% of the budget. In particular, international funding from institutions such as the World Bank may have been anticipated for Istanbul's sewage system, considering the city's rapid urbanization and population density.

In 1978, a sewage project was prepared for Adana, costing approximately 21 million TL in the currency of that period. This investment significantly increased the total infrastructure allocation for the Mediterranean Region. Hatay, Antalya, and Mersin are among the other cities in the region that benefited from sewage investments. Although the investment share appears notably high, this can be attributed to the prominence of both the region and Adana in agriculture-based industrial sectors, such as textiles and food, since the 1970s. However, I do not rule out the possibility of errors in the figures presented in the general assembly reports of the Bank of Provinces. Since I have not been able to verify these data with a second source, I approach the reported costs of Adana's sewage

infrastructure with caution. While such data provide an important basis for regional comparisons, it is sometimes necessary to approach them with skepticism.

It was observed that the Bank of Provinces increased the number of sewage projects toward the end of the 1970s. According to Figure 5.3, although the budget for sewage infrastructure investments rose in the late 1970s, the Bank's allocations for electricity and water remained higher in 1978, 1979, and 1980. Comparisons can be made for these years since sewage investments were accounted for separately from water investments starting in 1978.

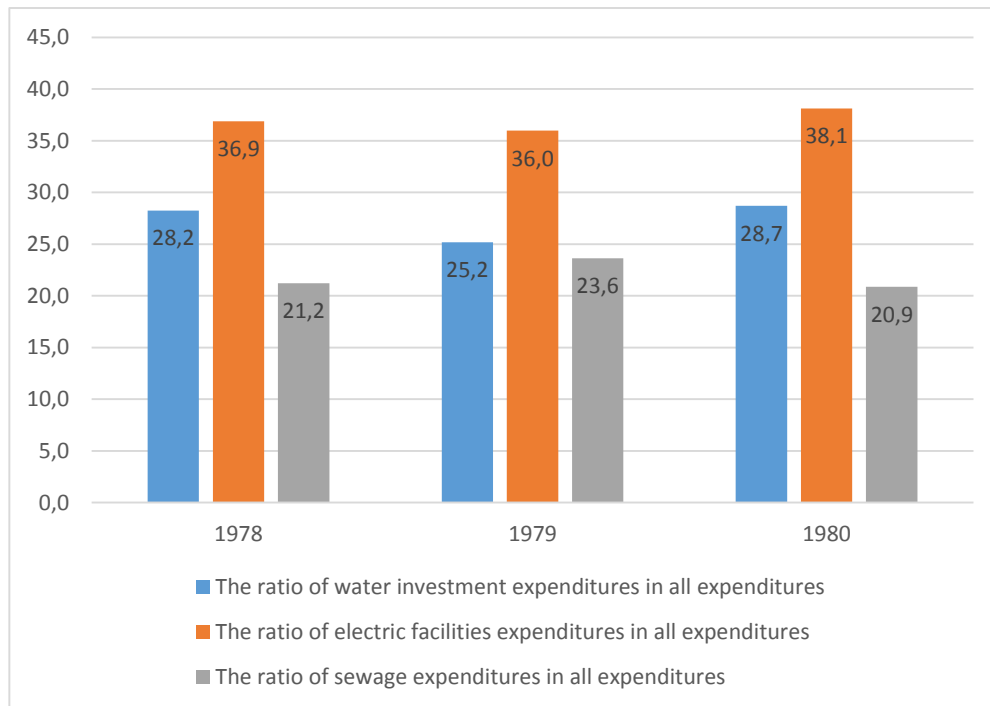


Figure 5.3 The ratio of water, electric, and sewage expenditures between 1978 and 1980 by the Bank of Provinces. *SOURCE: Compiled by the author using the Bank of Provinces Committee Reports between 1968 and 1980.*

The development of sewage infrastructure intensified with the Third Development Plan, which specifically emphasized the need for increased pipe production to support sewage systems. The surge in asbestos pipe

production was particularly significant for both water and sewage investments.¹⁰⁶ Alongside the rapid urbanization, industrialization, and tourism development during this period, the shortfall in sewage facilities became increasingly evident. There was a marked increase in sewage infrastructure investments. However, it is difficult to assert that these investments sufficiently met the needs or provided equitable access to sewage systems for all citizens. This gap prompted the government to take additional steps to strengthen sewage investment efforts. After 1975, sewage facilities also became part of the Bank of Provinces' responsibilities. The sewage facilities constructed by the Bank between 1975 and 1980 are listed in Table 5.3. Notably, cities with high urbanization rates are absent from the list.

Table 5.3 The budgets allocated for sewage plants in various cities and regions from 1975 to 1979.

The city of Sewage Plant	The region of Sewage Plant	1975	1976	1977	1978	1979
Tokat	Black Sea Region	18.000.000	30.000.000		30.000.000	
Hatay	Mediterranean Region		105.000.000			
Konya	Central Anatolia Region		60.000.000			
Çorum	Black Sea Region			22.000.000		
Artvin	Black Sea Region					19.800.000
Yozgat	Central Anatolia Region					30.400.000

SOURCE *Compiled by the author using the Bank of Provinces Committee Reports between 1975 and 1980.*

The Fourth Five-Year Development Plan featured a distinctive aspect supporting this argument. Unlike previous plans, it included more com-

¹⁰⁶ In the 1990s, as awareness of asbestos-related health risks increased, developed nations started banning its use. In the United States, asbestos mining ceased entirely by 2002 with the closure of its last mine. In contrast, some developing countries, such as Turkey, implemented asbestos bans later, in the 2010s. In Turkey, asbestos use was officially prohibited through the "Regulation on Health and Safety Precautions in Asbestos-Related Work," published in the Official Gazette on January 25, 2013. For more comprehensive information on asbestos use, see: Eşref Atabey, "Türkiye Asbest Haritası (Çevresel Asbest Maruziyeti-Akciğer Kanseri-Mezotelyoma)," *Tüberk Toraks* 63, no. 3 (2014): 199-219.

prehensive investment projects and strategies specifically for sewage infrastructure.¹⁰⁷ Within its framework, specialized commissions were established under Law No. 91 and Cabinet Decision No. 5/1722.¹⁰⁸ The 1977 report from the Water Supply and Sewage Specialized Commission provided further evidence of the state's growing focus on national sewage infrastructure investments. However, the primary objective of this report was to compile a comprehensive inventory of the country's sewage systems. The commission comprised a chairman, rapporteur, heads of the water supply and sewage sub-commissions, and 28 members. Alongside the Bank of Provinces, other key entities involved in Türkiye's infrastructure investments participated in the commission, including the State Hydraulic Works (DSİ), Road, Water and Electricity (YSE), the Ministry of Urbanization and Housing, the Ministry of Health, the General Directorate of Health Affairs, the Institute of Public Health, the Directorate General of Local Authorities from the Ministry of Interior, and the Ankara Water Administration General Directorate.

Additionally, three scholars from Middle East Technical University (ODTÜ) participated in the commission. The commission's purpose was to identify the necessary sewage infrastructure investments for the country and to engage in discussions aimed at addressing the related challenges.¹⁰⁹ It was also deemed imperative to involve international institutions and organizations to help improve the drinking water and sewage infrastructure in major cities such as Istanbul, Ankara, and Izmir.¹¹⁰ To

¹⁰⁷ 4. Beş Yıllık Kalkınma Planı.

¹⁰⁸ Special Expertise Commissions were established to gather information, conduct research, propose measures, provide guidance to the Department, support the development plan, and contribute to broader plan preparation efforts.

¹⁰⁹ The work of the Special Expertise Commission began on May 17, 1976 (January 1977, Ankara).

¹¹⁰ The 1972 WHO report holds particular significance. Istanbul received financial and technical support from international institutions to address its infrastructure issues. After 1950, the city's sewer problems were initially tackled through the Kehr Project, and

this end, the Turkish National Working Committee, working within the framework of the International Decade of Drinking Water and Sanitation (1981–1991), prepared a report. Finalized at the end of 1981, the document addressed Türkiye's water and sewage issues and proposed solutions.¹¹¹

5.3.3 *Evaluating the Access to Urban Sewage Systems in Türkiye from 1960 to 1980: A Statistical Analysis of New Dwellings Based on Occupancy Permits*

The period between 1960 and 1980 was marked by significant, though delayed, developments in Türkiye's sewage infrastructure, as discussed in Section 5.4. A critical question arose regarding the extent of urban dwellers' access to sewage systems following these investments. To assess the scope of access to sewerage services for urban residents during this period, data provided by the Turkish Statistical Institute (TurkStat) was a significant source. While the data from TurkStat enabled the construction of a city-based time series, this data was limited to information on new dwellings that had obtained building permits. In other words, TurkStat's datasets excluded information on the existing building stock, including squatter settlements, which were common during that era. Therefore, the data on houses connected to sewage systems covered only new constructions with occupancy permits in urban areas. Despite these limitations, the time series derived from the city-based datasets offered

plans were made to implement a separate system for stormwater and wastewater management. Between 1968 and 1970, the DAMOC Master Plan and feasibility studies were conducted to manage Istanbul's wastewater via pipelines; these studies were later revised by the Bank of Provinces. For Ankara, the Camp-Harris-Mesara firm prepared a Sewerage Master Plan covering a 2,733-hectare area. Moreover, according to reports, there was another master plan commissioned by the State Hydraulic Works (DSİ). In Izmir, an existing sewerage system, also designed by Camp-Harris-Mesara, serves approximately 315,500 people, with DSİ overseeing a master plan for the city's water and sewerage needs. The Bank of Provinces had to authorize the review and update of these master plans as needed. *İhtisas Raporu*, 46.

¹¹¹ *Türkiye'de İçmesuyu ve Hıfzısıhha Çalışmaları: Uluslararası İçmesuyu ve Hıfzısıhha On Yılı 1981–1991*, July 5, 1982.

valuable insights into the inequities in the distribution of sewage and clean water systems. Additionally, it enabled granular comparative analyses at both city and regional levels. This dataset focuses on the development of sewerage and clean water systems in Türkiye, allowing for a comparative analysis of urban and regional infrastructure between 1964 and 1980. The objective extends beyond documenting chronological progress; it also seeks to highlight disparities between various regions and cities.

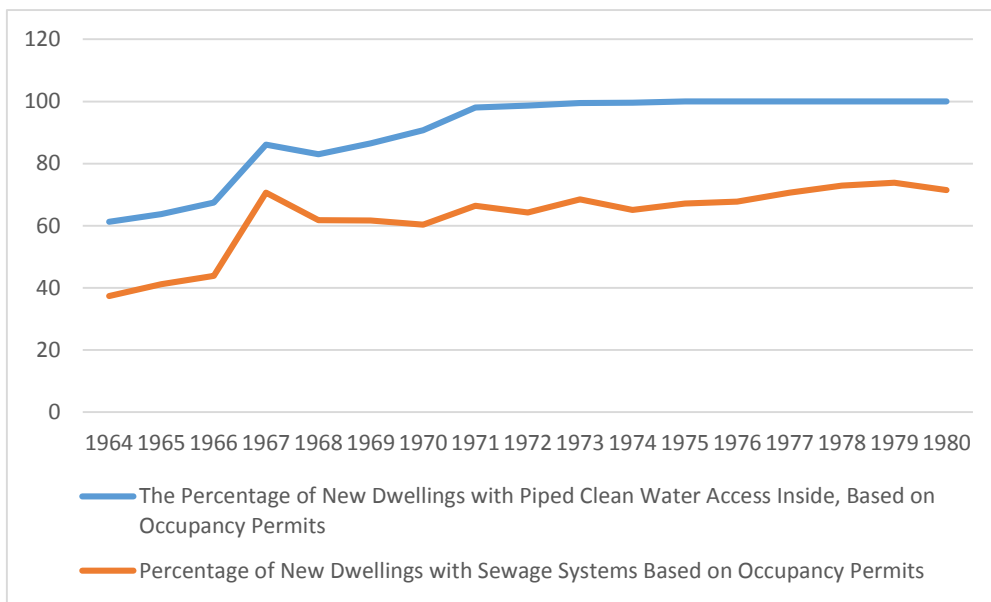


Figure 5.4 Proportion of New Dwellings with Access to Water and Sewage Systems Based on Occupancy Permits (1964-1980).
SOURCE: Compiled by the author using the data from Turk-Stat between 1968 and 1980.

Figure 5.4 shows a time series of the proportion of new dwellings in Türkiye, as determined by occupancy permits, that have access to piped clean water and sewage systems between 1964 and 1980. In 1964, approximately 60% of dwellings had access to piped clean water, a figure that rose to nearly 100% by 1980. On the other hand, the percentage of dwellings with sewage systems began at around 40% in 1964 and experienced a more gradual increase, reaching just under 80% by 1980.

The data demonstrate that, in comparison to the accessibility of clean water, the development of sewage infrastructure experienced a notable delay. The relatively flat curve from the early to late 1970s may reflect several factors, including potential financial constraints following the 1973 oil crisis. The divergence between the two lines throughout the time series highlights a disparity between the expansion of piped clean water systems and sewage systems in urban Türkiye during this period. As discussed in Chapter 4, the development of clean water systems played a crucial role in the later expansion of modern sewerage systems. Analyzing the time series data from 1964 to 1980 reveals that, as expected, the prioritization of clean water systems in Türkiye took precedence over the development of sewage infrastructure. This prioritization suggests that, from a governmental policy perspective, ensuring access to clean water was considered a more immediate and critical investment compared to the more complex and costly sewerage systems.

This disparity between the development of clean water systems and sewage systems is further illustrated by a detailed examination of 11 cities, based on TurkStat's data from 1964 to 1980 (Figure 5.5). Specifically, in 10 out of the 11 cities analyzed, the percentage of homes with access to clean water systems exceeded that of homes with access to sewage facilities. Gaziantep was the only exception to this pattern.

CLEAN WATER AND SEWAGE SYSTEMS IN TURKIYE 1880-1980



Figure 5.5 The differences of development of clean water systems and sewage systems based on eleven cities. SOURCE: Compiled by the author using the TurkStat's data from 1964 to 1980.

Unlike in all other cities, the reason why new buildings with occupancy permits in Gaziantep from 1964 to 1971 had greater access to sewerage systems than to clean water remains unknown. Indeed, it was generally expected that the proportion of new dwellings with access to clean water systems, based on occupancy permits, would surpass those with access to sewerage systems, contrary to the data from Gaziantep. This expectation stems from the fact that advancements in sewerage infrastructure are typically contingent on developments in clean water systems. Indeed, in 10 out of the 11 cities, the percentage of residences with access to clean water systems exceeded the percentage with access to sewerage facilities. Moreover, the data highlights significant disparities between the proportions of dwellings with access to clean water systems and those with access to sewerage systems across different cities.

This disparity is particularly pronounced in Adana. Following Adana, the cities with the most significant deficiencies in sanitary infrastructure are Istanbul, Konya, Izmir, and Diyarbakır. While this data does not provide insights into the existing building stock in these cities, it does offer information on the condition of newly constructed buildings based on occupancy permits in 11 cities. The data indicates that issues related to access to clean water and sewage systems persist even among buildings that have received permits. Addressing these infrastructure deficiencies is essential for improving public health outcomes and ensuring equitable access to basic services for all urban residents.

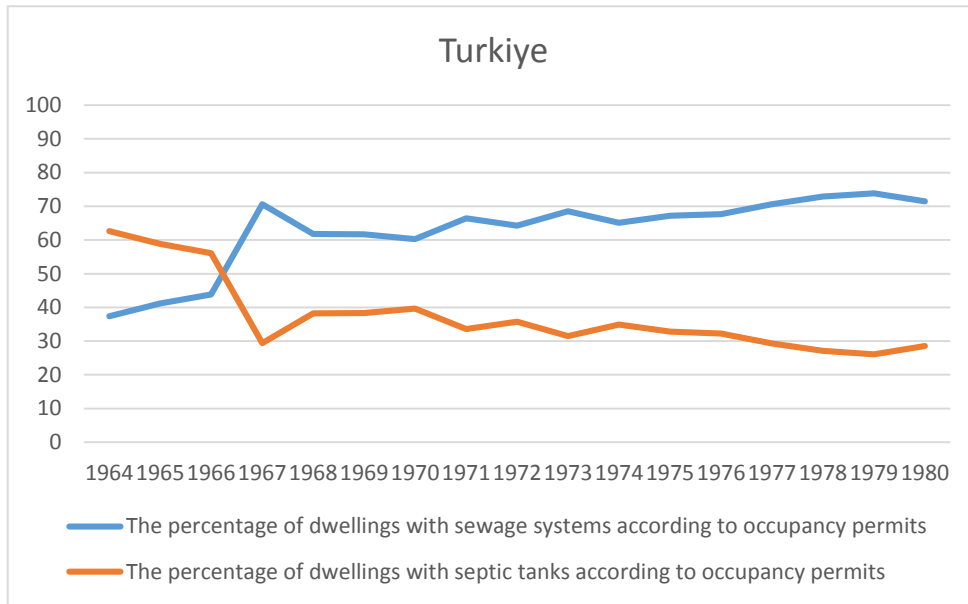


Figure 5.6 Proportion of new dwellings with sewage and septic systems in Türkiye, 1964-1980. SOURCE: *Compiled by the author using the TurkStat's data between 1968 and 1980.*

Figure 5.6 presents a comparative analysis of the proportion of dwellings equipped with sewage systems versus those utilizing septic tanks in Türkiye from 1964 to 1980, based on occupancy permits. The data, derived from these permits, illustrates the transition in sanitation infrastructure during this period, highlighting both the increasing adoption of modern sewage systems and the continued use of septic tanks in residential areas. In Türkiye, sewage systems and cesspools served as substitutes. Between 1964 and 1966, the proportion of residences equipped with septic tanks surpassed those with sewage systems, likely due to the cost-effectiveness and ease of installation of septic tanks, particularly in areas where sewage infrastructure had not yet been developed.

From 1964 to 1980, the proportion of new residences equipped with sewage systems increased from approximately 40% to over 70%, indicating a substantial improvement in sewage infrastructure, as reflected in occupancy permits. It is notable that, even among newly constructed dwellings that had obtained occupancy permits, access to sewage systems did not reach 100% by 1980, in contrast to clean water systems.

This suggests that the development of sewage infrastructure lagged behind that of clean water access during the same period.

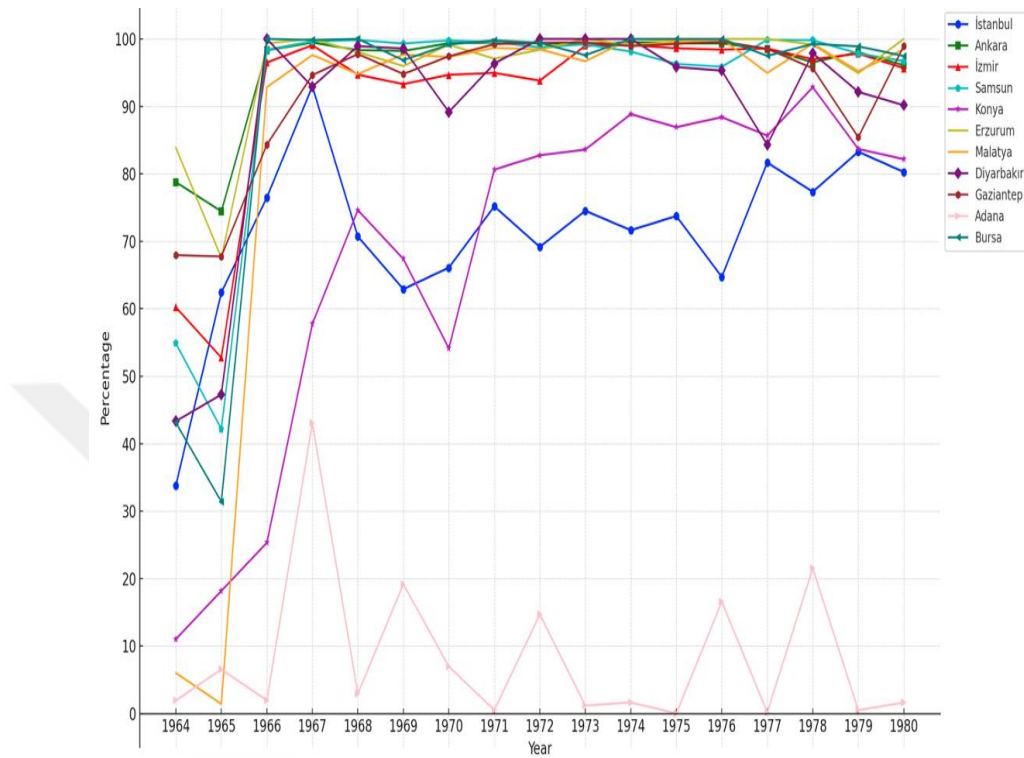


Figure 5.7 The percentage of new dwellings with sewage systems based on occupancy permits, 1964-1980. SOURCE: *Compiled by the author using TurkStat's data between 1968 and 1980.*

Figure 5.7 presents a time series depicting the proportion of new residences equipped with sewage systems, based on occupancy permits, across eleven major cities in Türkiye from 1964 to 1980. While the dataset does not encompass all new or existing urban construction during these years, it provides insight into the prevalence and distribution of sewage systems among authorized new residences. Over these 16 years, a notable trend toward increased availability of sewage systems is observable, although certain fluctuations in specific cities warrant closer examination.

According to the data, Istanbul and Bursa, located in the Marmara Region, had consistently high rates of new dwellings equipped with sewage systems based on occupancy permits compared to other regions. The case of Bursa is particularly remarkable, with the proportion reaching 100% since 1970. In Istanbul, the proportion of new dwellings with sewage systems rose sharply to over 90% by 1965. However, in the subsequent years, this proportion fluctuated around 80% until 1980. In Central Anatolia, Ankara stood out for its superior sewage access rate compared to other cities. Konya, initially one of the cities with minimal sewage access in 1964, increased this rate to approximately 80% by 1980. From the Black Sea region, data were only available for Samsun. In 1964, over 50% of new buildings with occupancy permits in Samsun were connected to the sewage system. Although this rate declined in 1965, it subsequently reached a relatively high level compared to other cities by 1980.

Similar to the Black Sea region, data are available for only one city in the Aegean region: Izmir. According to occupancy permits, about 60% of the buildings constructed in 1964 were equipped with sewage systems. After a decline in 1965, this rate fluctuated between 90% and 100% through to 1980. In Malatya, a city in the Eastern Anatolia region, the percentage of dwellings with sewage systems based on occupancy permits was below 10% in 1964 but surged to over 90% within two years. In contrast, Erzurum exhibited consistently high rates relative to other cities in the region.

Data from Gaziantep and Diyarbakır provide insights into the Southern Anatolia Region. In Diyarbakır, less than 50 percent of new buildings with occupancy permits included access to sewage systems in 1964. Despite fluctuations, an upward trend began in 1971. Conversely, Gaziantep had higher rates of access to sewage systems in 1964 and 1965 compared to Diyarbakır. On the other hand, Adana's access rates to sewage systems remained notably low and fluctuated between 1964 and 1980. Over this 16-year period, Adana's rates stayed below 20 percent, significantly lower than those of other major cities.

Although these ratios, based on occupancy permits in Türkiye, do not provide comprehensive information on the sewage access status of all new buildings in cities, they suggest that some newly constructed dwellings still lack access to sewage systems. A comparison of these data reveals that the Marmara and Central Anatolia regions generally exhibit higher and more stable rates of sewage access, whereas other regions experience more limited access. In one of Türkiye's most urbanized cities, Istanbul, access to the sewage system is restricted to 80 percent, even for new buildings with occupancy permits. Furthermore, as illustrated by the example of Adana, the lack of sewerage infrastructure in certain cities may have adverse public health implications, particularly given the low access rates in newly constructed buildings. Consequently, infant mortality rates and water-borne epidemics may be more prevalent in these cities compared to others.

The lack of sewage infrastructure systems emerged as a priority in Türkiye's development agenda starting with the Fourth Five-Year Development Plan. In this plan, a specialized commission report on drinking water and sewage infrastructure systems was prepared, emphasizing the need for improvements in these essential services.¹¹²

5.3.4 *Why Did Türkiye Experience Delays in the Development of Modern Sewage Infrastructure?*

This section explores the reasons behind the delay in modern sewage infrastructure investments in Türkiye. There are many reasons behind the uneven development of modern sewage systems across the country. One of the reasons for the delay in constructing the sewage infrastructure was the slow development of clean water systems. One primary contention of the chapter is that the slow and delayed development in the country's clean water system had a direct impact on the sewage infrastructure investments.

A fundamental prerequisite for the development of modern sewage systems is an advanced water network. The argument suggests that the

¹¹² Dördüncü Beş Yıllık Kalkınma Planı.

slow development of Türkiye's clean water systems has, in turn, hindered progress in sewage infrastructure investments. Certainly, other factors have also contributed to delays in sewage infrastructure investments. Some of them include the multivocality of institutions, limited financial resources, and the lower prioritization of sanitary infrastructures relative to other basic infrastructure projects. Moreover, the shortage of technical staff and experts in sewage systems emerged as a significant issue between 1950 and 1980.

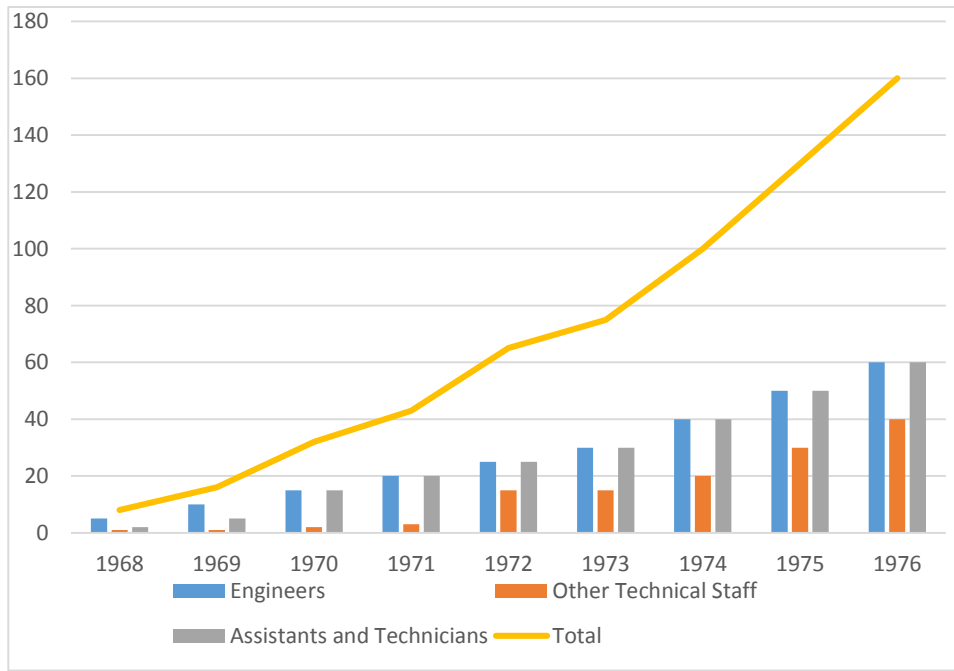


Figure 5.8 The total workforce employed at Bank of Provinces for sewage infrastructure developments, 1968-1976. SOURCE: Compiled by the author from *İçme Suyu ve Kanalizasyon IV.Beş Yıllık Özel İhtisas Komisyon Raporu*, 59.

Figure 5.8 illustrates the number of personnel employed in the sewage infrastructure of the Bank of Provinces, an entity assigned a pivotal role in the country's development, from 1968 to 1976. It is evident that Türkiye required a greater number of trained employees and specialists

to meet its sewage needs during this period. To address this issue, students at technical universities were provided with scholarship support and job security during their studies, and efforts were made to include them in institutional staff while they were still students. However, the development of intangible capital necessitates time.¹¹³

5.3.5 *Çirkef Su: A Key Factor in the Prolonged Use of Cesspools in Türkiye?*

To fully understand the factors that have contributed to the delayed development of sewage systems in Türkiye, it is essential to examine how society has historically used and engaged with these systems. This social perspective provides insight into the underlying reasons for the slow progress in infrastructure. Could the use of dirty or polluted water, known as *çirkef su*, be one of the reasons for the prolonged reliance on cesspools? "*Çirkef su*" refers to dishwater, laundry water, and other domestic wastewater. In other words, there is no fluid sewer waste for modern sewage system construction. Reports attribute the lack of progress in the development of sewage systems in Türkiye, in part, to the waterless nature of the sewage. The prolonged use of cesspools in Türkiye can be explained by several factors, including financial and administrative limitations, the scarcity of abundant clean water, and the failure to dispose of dirty water into toilets.

Unlike infrastructure investments such as electricity or roads, urban sewage infrastructure requires the collaboration of multiple specialists. Moreover, sewage infrastructure investments were quite costly, and this financial burden could not be passed on to the users or inhabitants of the cities. In fact, the 1948 Law on Municipal Revenues introduced provisions for cost-sharing of sewage infrastructure among buildings and landowners. Additionally, the Zoning Law of 1956 made the provision of sewage facilities, a requirement for obtaining a building permit. However, in practice, public participation could not be effectively secured. As with

¹¹³ Hüsamettin Onanç, *One Hundred Years of Development in Turkey with Intangible Capital* (PhD diss., Boğaziçi University, Atatürk Institute for Modern Turkish History, 2023).

other forms of infrastructure, it was not possible to invoke *angaryria* to expand sewage systems.¹¹⁴

According to reports, dishwater, laundry water, and other domestic water, referred to as *çirkef su*, were rarely flushed down lavatories. Initially, water used for dishwashing, as well as washing fruits and vegetables, was redirected for secondary uses, such as street sweeping and garden or field irrigation in Türkiye. Additionally, emptying this water into cesspools was avoided, as it would shorten their lifespan, a practice that may have evolved into a habit over time. When scrutinizing the factors that led to the failure of sewage being flushed down the pipes, this issue is closely associated with urbanization. With the proliferation of apartment buildings, water systems, and sewage began to merge and then become more fluid.¹¹⁵

Water used for dishwashing, as well as for washing fruits and vegetables, was frequently repurposed in Türkiye to address other needs, such as street cleaning and irrigation for gardens or fields. Furthermore, disposing of this water in cesspools was typically avoided, as doing so could shorten the cesspools' lifespan. Over time, this avoidance may have developed into a habitual practice. Indeed, reports from that era indicate that the disposal of *çirkef su* into cesspools was avoided due to religious beliefs, and this practice became deeply ingrained in society. I argue that the use of *çirkef su* may have potentially prolonged the service life of cesspools in Türkiye. The development of flush toilets connected to clean water systems in households significantly increased the amount of water used, making the sewage in Türkiye more fluid and causing cesspools to fill up more quickly. These two factors also facilitated the construction of modern sewage systems with more efficient piping.

¹¹⁴ Forced labor methods were frequently employed in road construction. İlhan Tekeli and Selim İlkin, *Cumhuriyetin Harcı: Modernitenin Altyapısı Oluşurken - Üçüncü Cilt* (Istanbul: Bilgi Üniversitesi Yayınları, 2004); Nuray Özdemir, "Cumhuriyet Döneminde Türkiye'de Yol Vergisi," *Tarih Araştırmaları Dergisi* 32, no. 53 (2013): 213–248.

¹¹⁵ *İhtisas Raporu*, 44.

The fact that the urbanization rate in Türkiye remained below 35% until 1960 allowed cesspools to meet sewerage needs effectively. However, the population growth in both rural and urban areas after 1960 heightened the demand for improved sewage systems. In particular, the rise in apartment buildings increased the need for modern sewage systems. This growth also led to a significant rise in water usage, which overwhelmed cesspools, rendering their capacity insufficient. As a result, citizens increasingly demanded improved municipal services. The failure to meet these demands led to a surge in complaints, with citizens responding in various ways to the unmet services.

In rural areas, some villages abstained from participating in elections as an act of protest.¹¹⁶ In cities, citizens approached municipalities to pay for cesspool cleaning services. However, they voiced their complaints in newspapers, stating that the municipalities often delayed drainage services, providing appointments one to two months later. For instance, it was reported that only two vacuum trucks were available for cleaning cesspools from Uskudar to Bostancı on the Asian side, with one frequently undergoing repairs. It is observed that complaints to the municipality were more common in regions with higher levels of education and income, where citizens actively demanded improvements to the sewage infrastructure.¹¹⁷

¹¹⁶ *Cumhuriyet Gazetesi*, October 14, 1969.

¹¹⁷ *Cumhuriyet Gazetesi*, August 14, 1958.

SALİHE DES

Kadıköydeki kaçak kanalizasyonlar iptal ediliyor

Ümit GÜRTUNA

Kadıköy yatacağı bir çok ev ve apartmanların, foseptiklerini kaçak olarak yağmur suyu kanallarına aktaran binaların iptaline dün Belediyeye Şube Müdürlüğü ekipleri tarafından başlanmıştır. İşçiler, Kadıköy ilçesinde foseptik suyunun yürütülmesi olmasın rağmen, evlerin içinde dolan foseptiklerini yağmur suyu kanallarına aktarmaları sebebiyle, «BUR kanalizasyon» durumunun uyarıldığına soy lenislerdir.

Masraflar ödetilecek

Çiftelavuzlar - Caddesinden a-razenolaki Cemil Topuzlu caddesine bağlı foseptik binaları, dün Belediyeye Şube Müdürlüğü ekipleri tarafından tespit edilmiştir. Ekipler, ilk iş olarak, kanalizasyonların binalarını sökerek ara kanalları ortaya çıkarmışlardır. Kanalların tesbiti tamamlandıktan sonra iptal işlemleri başlanacaktır.

Konuyla ilgili olarak kendisiyle görüşülmesinde Kadıköy Belediyeye Şube Müdürü Orhan Ziyalar, bu güne kadar yapılmakta olan işlemlerde beşbaleyle çok sıkı müdahaleye gireceğini belirtmiş ve şöyle devam etmiştir:

«Bütün Kadıköy sarması bulunan illegal kanalların iptali, esnasında meydana gelecek masraflar, kaçak olarak foseptiklerini yağmur kanallarına bağlayanlardan tahsil edilecektir. Çalışma masraflarını, işçilerin ücretlerini, yapılacak yolların yapım ve asfaltlama masraflarını, buna dahil edeceğiz. Başın, Dr. Cemil Topuzlu caddesinde başlanan işlemi ara vermeden sürdüreceğiz.»

Eleman yok

Dr. Cemil Topuzlu caddesinde başlanan tesbit işlemi için, Kadıköy Fen İşlerinde çalışan bütün elemanlar seferber edilmiştir. Bu yüzden de, Kadıköy Fen İşlerinde ilgili yapılan işler, geciktirilmiştir. Eleman sıkıntısı nedeniyle, günlerde yapılacak işlemleri de aksatabilecektir. Yetkililer bu durumu gözden önüne alarak, resmî eleman temini için çare aradıklarını söylemişlerdir.

Göztepe ve Çiftelavuzlar sınırları pis ve mikropu suları Dr. Cemil Topuzlu Caddesindeki bir yalıdan kıyısından denize akıyor... (Fotografier: Tulus DİVİTÇİOĞLU)

Artvin Valiliğinden

- 1 - İlmi Merkez 12 derüklü orta okul inşaatı 2490 sayılı kanunun 21 inci maddesi gereğince kapalı ağız üstü ile ekolümeye konulmuştur.
- 2 - İlin konif bedeli 1.500.222.22 TL. dir.
- 3 - Ekolüm Artvin Bayındırlık Müdürlüğü Şube Komisyonunda 25.10.1968 cuma günü saat 15.00 de yapılacaktır.
- 4 - Ekolüm kararname ve diğer evraklar mezkûr Müdürlükte görülebilir.
- 5 - Ekolümeye girebilmek için işteklilerin
 - a) 60.256.62 TL. geçici teminatı
 - b) 1968 yılına ait Ticaret ve Sanayi Odası vekaleti,
 - c) Müracaat dilekçesi ile birlikte vercekleri tek-siltilme sarfamesinde belirtilen ve usulüne göre hazırlanmış olan) pila ve teçhizat beyannamesini taahhüt beyannamesini vermeye ve kredi imkânlarını kâfiye vâfi durum kâfiyetini teknik personel beyannamesini, Bayındırlık Bakanlığında alması oldukları için konif bedeli kadar (C) grucundan müteahhütlik sarfmesini ilave sureti ile Bayındırlık Müdürlüğü Beşpe Komisyonundan alacakları vekalet, belgenin teklif mektupları ile birlikte asla kaymaları lâzımdır.
- 6 - İştekliler teklif mektuplarını 25/10/1968 Cuma günü saat 12.30 e kadar mahbur kâfiyetinde Şube Komisyon Başkanlığına vereceklerdir. Yetelik belgeni alınması için 25/10/1968 Pazartesi günü mesai saatine kadar müracaat etmiş olmaları lazımdır.
- 7 - Postadaki vâki gecikmeler ve tekle müracaatlar ka-bul edilmez.

Keyfiyet ilân olunur. (Boson: 25858/11977)

Kaçak künklerin tespiti için yol boyunca bütün kanallar açılıyor...

5 Ton Parça Bez Satın Alınacaktır

Figure 5.9 Illegal Sewers. SOURCE: *Cumhuriyet* (Oct 9, 1968).

In cases where the municipality was inadequate, city inhabitants sought to resolve the issues using their own methods. As reported in the *Cumhuriyet* newspaper on 9 October 1968, some homes and apartments in Kadıköy, on the Asian side of Istanbul, were found to have illicitly connected their septic tanks to the rainwater conduits. Wastewater from the Göztepe and Çiftelavuzlar districts was discharged into the sea through the stormwater drainage system. News reports indicate that efforts had begun to promptly identify the illicit sewage connections, which were estimated to involve nearly 90% of Kadıköy. It was also noted that the costs

incurred would be recovered from the residents. In sum, in response to the inadequate investments in sewage infrastructure, property owners in Kadıköy resorted to connecting cesspools to rainwater channels.¹¹⁸

In the shantytowns of cities, it is observed that the sewage issues took a back seat to other infrastructure deficiencies. Migration from rural areas to urban centers often led to the development of shanty houses within city limits. The residents of these settlements lacked access to electricity, water, and sewage infrastructure. They relied on nearby public fountains for water and constructed their own cesspools for sewage. In his 1968 field study, Kemal Karpat observed that, despite these infrastructure deficiencies, citizens continued to reside in cities, primarily motivated by the prospect of providing better educational opportunities for their children. Up to 70 percent of them believed they were in a better situation than in their villages, despite the challenges.¹¹⁹

The state's approach to the shanty towns also mitigated their demanding attitude towards sewage infrastructure investments to some extent.¹²⁰ For example, Haldun Menteseoğlu, the Minister of Reconstruction and Settlement, declared that water and electricity would be provided to squatters by the end of 1969. He also pledged the legalization of 4,493 slums, with a promise to extend legalization to an additional 16,735 slums.¹²¹ In the 1970s, political parties continued this process by promising title deeds and infrastructure investments for squatter neighborhoods.

¹¹⁸ *Cumhuriyet*. October 9, 1968.

¹¹⁹ Kemal H. Karpat, *The Gecekondu: Rural Migration and Urbanization* (Cambridge: Cambridge University Press, 1976).

¹²⁰ Ayşe Buğra, "Poverty and Citizenship: An Overview of the Social-Policy Environment in Republican Turkey," *International Journal of Middle East Studies* 39, no. 1 (2007): 33–52.

¹²¹ *Cumhuriyet*, July 9, 1969.

§ 5.4 Beyond Urban Boundaries: Rural Sewage Systems in Türkiye between 1950 and 1980

5.4.1 *From Institutional Multivocality to Silence: Sewage Systems in Rural Areas*

This section examines the reasons why sewage infrastructure systems in rural areas between 1950 and 1980 were largely overlooked. My argument is that the three basic infrastructure needs—water, electricity, and transportation—within the Turkish development strategy determined the order of precedence and the limits of sewage infrastructure investments in rural areas. Consequently, I argue that sewage systems in rural areas were not integrated as a component of the developmental strategies adopted by the governments of the time.

Before addressing infrastructure investments in rural areas, it is essential to consider the legal arrangements regarding villages. The first law concerning villages, known as the Village Law, was enacted in 1924 and designated as Law Number 442. According to this legislation, settlements in Türkiye were classified into three categories based on population size: villages, towns, and cities. Specifically, settlements with a population of fewer than two thousand were classified as villages; those with a population between two thousand and twenty thousand were considered towns; and those with more than twenty thousand were classified as cities. Moreover, under Article 13 of Village Law No. 442, the responsibilities and obligations for municipal services were assigned to the villagers.¹²² A significant issue was that, according to specifications 5 and 6 of Article 13 of the law, it was defined as the villagers' obligatory duty to construct the necessary toilets or sewer lines for the village and to ensure proper sewage flow.¹²³

These obligations remained in effect until 1985. In other words, no other law addressing sewage infrastructure for villages was enacted until

¹²² *Köy Kanunu, Resmi Gazete* 2540.

¹²³ *Köy Kanunu*, art. 13, paras. 5 and 6.

that year. An analysis of the general assembly reports of the Bank of Provinces from 1960 to 1980 reveals that, starting in 1962, half of the institution's net profits were allocated annually for village development. Unfortunately, the available materials do not provide any information on how these village development funds were translated into sewage infrastructure investments for villages.¹²⁴ To put it clearly, the multivocality of institutions seen in urban infrastructure investments from 1924, when the Village Law was enacted, until 1985, is not observed in villages with regard to modern sewage infrastructure investments. It is evident that no direct legal framework for village sewage systems existed until the Law on Village-oriented Services was enacted in 1985. This law encompassed a range of basic services in rural areas, including the construction, maintenance, repair, development, and operation of sewage systems, as well as other essential infrastructure such as roads, electricity, and clean water systems.¹²⁵

The construction of a modern sewage system within a settlement relied on the convergence of several factors. One of the most crucial prerequisites was the presence of abundant water. With sufficient water, sewage could remain fluid and be transported through a network of pipelines. Constructing a sewage system also required the allocation of government funds and the development of a sewage plan for the location by experts. Furthermore, the development of transportation infrastructure, particularly roads, is equally essential for the establishment of modern sewage systems. Moreover, the transportation of sewage from settlements to discharge points requires the use of enclosed pipelines. In this context, it is crucial to ensure the availability of proficient experts capable of designing sewage projects, as well as the presence of manufacturing facilities capable of producing pipes that meet the necessary criteria for infrastructure applications. I argue that the insufficient allocation of essential infrastructure investments in rural areas of Türkiye between 1950 and 1980 resulted in the failure to establish comprehensive sewage systems.

¹²⁴ *İller Bankası Kurul Raporları* (Provincial Bank Establishment Reports).

¹²⁵ *Köy Hizmetleri Kanunu*, art. 2.

The absence of an institution or legal framework specifically tasked with developing sewage systems in rural regions during this period further supports my claim. Consequently, I examined newspaper archives to investigate the requests made by citizens for the establishment of sewage infrastructure in rural areas, as well as the measures taken by the state to respond to these demands.

Aside from newspapers, the election manifestos prepared by political parties regarding voters' demands also provided valuable insights into infrastructure needs. In light of this information, rural sewage systems in Türkiye can be divided into two distinct periods between 1950 and 1980. The first period, from 1950 to 1960, was characterized by a lack of attention to the sanitation infrastructure needs of rural citizens. The second period, from 1960 to 1980, saw a growing visibility of demands for sewage infrastructure investments in rural areas. This visibility notably increased during election periods. A review of political party manifestos reveals a rise in promises to develop sewage infrastructure in rural areas during the 1960 to 1980 period.

An examination of political parties' election manifestos reveals that none of the political parties in Türkiye included a promise to invest in sewage infrastructure in rural areas until 1965. The first clear commitment to address rural sewage infrastructure was made by the Justice Party in its 1965 election manifesto. In this manifesto, the Justice Party pledged to provide drinking water for cities, towns, and villages, as well as water for industrial zones. In addition to these infrastructure investments, the party also promised the development of sewage facilities.¹²⁶ While the Republican People's Party's election manifesto of the same year did not specifically mention sewage, it did emphasize the need for infrastructure services in rural areas. The party argued that local administrations should be provided with sufficient revenues to ensure infrastructure investments in these regions. It also advocated for a significant portion of public revenues generated from agricultural production to be

¹²⁶ 1965 Seçim Beyannamesi, Adalet Partisi.

allocated to village administrations for infrastructure projects, including irrigation, drinking water, and schools.¹²⁷

It is evident that the Republican People's Party's election manifestos prioritized providing clean water to villages over investments in sewage infrastructure. During this period, sewage infrastructure promises were targeted at urban squatters rather than rural voters. The exclusion of sewage infrastructure investments for rural areas from the political discourse in 1965 can be attributed to the fact that the vast majority of villages in Türkiye lacked basic infrastructure such as roads, water, and electricity.¹²⁸ The research conducted by the Chamber of Electrical Engineers revealed the harsh reality regarding the conditions of rural areas in Türkiye.

The Ministry of Rural Affairs sought the opinion of the Chamber of Electrical Engineers on a draft law proposed by the General Directorate of Road, Water, and Electricity Works. The Chamber's evaluation highlighted the conditions of Türkiye's villages in 1960. According to the Turkish Statistical Institute, the rural population made up 69% of Türkiye's total population in that year, with 35,408 villages and sub-districts spread across 63 provinces.¹²⁹ The report indicates that only 234 villages and townships in rural areas, where 69% of the population resided, had access to electricity. This amounted to just 0.66% of all villages having electricity in 1960. As a result, in the draft law on the establishment and responsibilities of the Road-Water-Electricity Directorate, prepared by the Chamber of Engineers, rural electrification was prioritized. Additionally, the draft included provisions for developing transportation infra-

¹²⁷ 1965 Seçim Beyannamesi, Cumhuriyet Halk Partisi.

¹²⁸ Elektrik Mühendisleri Odası Görüşü: 1960 Köy İşleri Bakanlığı Yol, Su, Elektrik İşleri Genel Müdürlüğü Kanunu Hakkında (Opinion of the Chamber of Electrical Engineers on the 1960 Village Affairs Ministry Law).

¹²⁹ Turkish Statistical Institute, 1964–65, 55.

structure in villages and assessing the need for clean drinking water. Regarding sewage systems, the Chamber of Engineers recommended that financial aid be allocated solely for sewage disposal in rural areas.¹³⁰

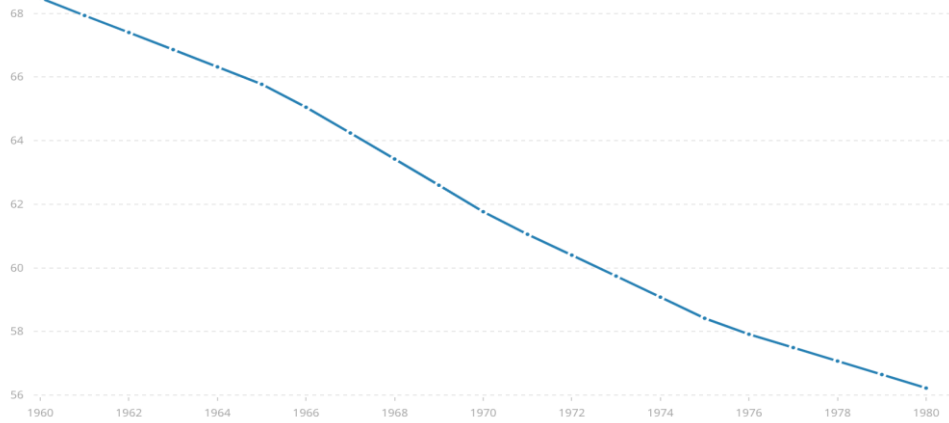


Figure 5.10 Rural population (% of total population), Türkiye. SOURCE: World Bank, (2022a).

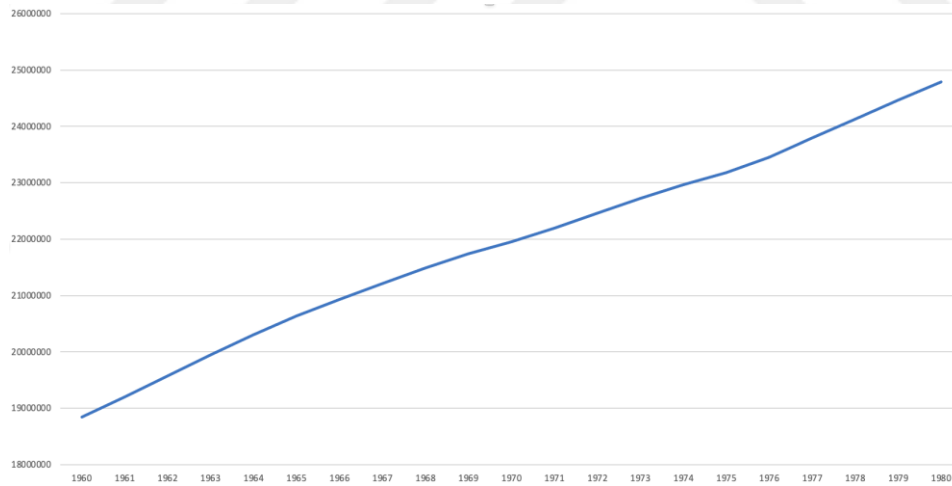


Figure 5.11 Rural population of Türkiye between 1960 and 1980. SOURCE: World Bank (2022b).

¹³⁰ *Elektrik Mühendisleri Odası Görüşü.*

Figure 5.10 illustrates the proportion of Türkiye's rural population to the total population from 1960 to 1980. In 1960, rural residents made up 68% of the population, but by 1980, this percentage had dropped to 50%. However, Figure 5.11 shows a significant increase in the absolute number of rural residents during this same period. This suggests that both urban and rural populations grew substantially up to the 1980s. The population growth resulted in increased infrastructure demands in rural areas, prompting the government to allocate more funds toward rural development.

The Ministry of Rural Affairs, *Köyşleri Bakanlığı*, was established in 1963 to execute, coordinate, and support basic infrastructural investments in rural areas. Additionally, the General Directorate of Roads, Water, and Electricity, *Yol, Su ve Elektrik*, (YSE) was established to oversee the development of these three key infrastructure sectors in rural areas. In 1965, YSE became a unit under the Ministry of Rural Affairs. However, it became evident that a long-term development program was necessary to address these infrastructural needs. This necessity explains why the development plan prioritized investment in electricity, transportation,¹³¹ and clean water infrastructure.¹³²

Sewage systems in rural areas lagged behind these three basic infrastructures, rather than being developed alongside them. Although institutions attempted to address the communities' clean water needs, the YSE has primarily supplied water to rural residents through public fountains since 1965.¹³³ The absence of modern indoor piped water supply to households has delayed the implementation of sewerage infrastructure investments in rural areas.

¹³¹ Sinan Yıldırım, "Köylüler ve Kentliler: Ellili Yılların Dönüşen Yeni Sosyo-Ekonomik ve Kültürel Coğrafyası," in *Türkiye'nin 1950'li Yılları*, ed. Mete Kaan Kaynar (Istanbul: İletişim, 2015), 541–564.

¹³² Behçet Yücel, *Köylerimizin Elektriklenmesi, 1970–1990* (Ankara: Tek Yayınları, 2016).

¹³³ The YSE's role in bringing clean water to villages involved constructing public fountains, not connecting water directly to individual households.

The maintenance of rural sewage systems, which primarily consisted of septic tanks, was largely the responsibility of the villagers. According to reports from the Ministry of Health and Social Welfare, the majority of toilets in rural areas were inadequate for maintaining proper sanitation. Rural voters expressed their dissatisfaction with the long delays in implementing infrastructure projects in their communities. Newspapers played a crucial role in identifying and bringing attention to the widespread infrastructure deficiencies in rural areas. On October 14, 1969, *Cumhuriyet* newspaper published a titled "Some Villages Did Not Vote at All." According to the report, several villages across the country abstained from voting in protest.

The news also provided detailed information about three of the protesting villages. The first of these was Yukarıçiftlik village in Safranbolu. The villagers who abstained from voting stated that their decision was a form of protest against the political parties for failing to provide essential services, such as roads and schools, to their village. Other villages that chose not to participate in the polls due to unfulfilled election promises by political parties included Çingeyil village in the Delice district of Ankara and Cinali village in the Keskin district. Additionally, in Çivili village, located in the Orhaneli district, only 1 out of 333 registered voters cast a ballot—a shepherd in the mountains who was unaware of the situation. In Çeribaşı village, no votes were cast at all, according to the newspaper.¹³⁴

Citizens in areas without basic infrastructure—including schools, roads, electricity, water, and sewage—expressed their dissatisfaction with the government and political parties by abstaining from voting. According to news reports, in these villages, animals could only drink water once a day. For their own water needs, villagers relied on old wells dug in the past. As the situation continued, the issue was raised again on October 20th, as illustrated in Figure 5.12.¹³⁵

¹³⁴ *Cumhuriyet Gazetesi*, October 14, 1969.

¹³⁵ *Cumhuriyet Gazetesi*. October 20, 1969.



Figure 5.12 Why did these villages not vote? SOURCE: *Cumhuriyet* (Oct 20, 1969).

During the 1969 elections, it became evident that political parties developed programs with a specific focus on rural areas. In addition to the AP, the Reliance Party, *Güven Partisi*, stated that its objective was to pursue and identify solutions to all the challenges confronting rural areas. In the party's 1969 election bulletin, it was noted that over 75% of the rural population did not have access to roads year-round, 50% lacked access to clean drinking water, and 95% were without electricity. Moreover, they mentioned that access to education was limited, and rural areas lacked modern agricultural technologies. Therefore, health conditions in these regions were below the average, and the child mortality rate was elevated.¹³⁶

The 1973 election bulletin of the Republican Reliance Party, *Cumhuriyetçi Güven Partisi*, highlighted important issues related to the environment, health, and infrastructure. For example, it emphasized the need to resolve sewage problems to combat both air and water pollution. Addi-

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Güven Partisi 1969 Genel Seçim Bildirgesi.

tionally, the municipalities lacked the financial capacity to adequately address infrastructure needs. The party argued that it was essential to foster collaboration between municipalities and the Ministry of Health in order to mitigate environmental and health issues.¹³⁷

The 1973 election bulletin of the National Salvation Party, *Milli Selamet Partisi*, stated that the majority of essential infrastructure investments needed for 70% of the population living in rural areas had not been adequately met or properly coordinated. The bulletin pointed out that, in developed countries like those in Europe and America, even isolated farmhouses on mountaintops were provided with paved roads, electricity, telephone services, and access to clean water. Unlike these nations, it was noted that many cities in Türkiye lacked asphalt roads. Furthermore, none of the villages in Türkiye, including those with populations as large as 5,000, had asphalt roads. Even in Türkiye's urban areas between 1950 and 1980, access to electricity was not fully guaranteed, while the number of rural areas with electricity remained very limited. presence of numerous natural water sources nearby. In many cities, there was a reported shortage of drinking and potable water, despite the availability of natural water sources nearby. Regarding sewage systems, it was reported that no village or city had a sewage system, except for limited areas in only one or two cities.¹³⁸ Nationalist and conservative parties often included promises in their electoral manifestos aimed at securing the support of the rural population.

This part focuses on the deficiency of modern sewage infrastructure in rural regions of Türkiye from 1950 to 1980. The section argues that, in contrast to the multivocalities of urban sewerage systems, rural sewerage infrastructure investments were dominated by institutional silence. Therefore, sewage systems in rural regions could be described as cesspools, which were constructed and maintained by most villagers. Moreover, the villagers took on the task of emptying the full cesspools, after

¹³⁷ *Cumhuriyetçi Güven Partisi 1973 Seçim Bildirisi.*

¹³⁸ *Milli Selamet Partisi 1973 Seçim Bildirgesi.*

which the sewage was discharged into natural sources such as streams, lakes, or surrounding land.

Before 1980, even though most of Türkiye's population resided in rural regions, the insufficient progress in fundamental infrastructure investments, such as transportation, electricity, and water, led to the neglect of sewage infrastructure development. The delay in establishing sewage systems should not be seen merely as a postponement of infrastructure investment; its consequences included water resource pollution, heightened health issues, and impediments to improving overall living standards.

§ 5.5 Critical Importance of Sewage Systems: Safeguarding Public Health

Sewage systems were not merely infrastructure investments; they also played a crucial role in safeguarding society against waterborne epidemics. Sewage poses a threat to human health, carrying harmful microorganisms, intestinal parasites, and toxic chemicals. Moreover, the absence of modern sewage systems resulted in the open flow of waste in residential areas, facilitating the contamination of natural resources with these harmful substances. Recent studies have examined the correlation between sewage infrastructure investments, child mortality rates, and life expectancy at birth.¹³⁹

In this section of the thesis, where I discuss the development of sewage infrastructure between 1950 and 1980, my main aim is to better understand and contextualize the development of sewage systems in Türkiye within its historical framework. The analysis of sewage systems,

¹³⁹ More details see: Louis Cain ve Elyce Rotella, "Death and Spending: Urban Mortality and Municipal Expenditure on Sanitation," *Annales de Démographie Historique* 101, no. 1 (2001): 149; Daniel Gallardo Albarrán, "Sanitary Infrastructures and the Decline of Mortality in Germany, 1877-1913," *GGDC Research Memoranda*, vol. 176 (Groningen: Groningen Growth and Development Centre, 2018), 2–27; Sebastian Galiani, Paul Gertler, ve Ernesto Schargrodsky, "Water for Life: The Impact of the Privatization of Water Services on Child Mortality," *Journal of Political Economy* 113, no. 1 (2005): 83–120.

much like the clean water systems I explored in Chapters 2 and 4, can be approached in a multidimensional manner. In addition to being a predominantly technical infrastructure investment, sewage systems also have a political dimension due to their construction and decision-making processes. Furthermore, similar to clean water systems, their construction has a positive impact on public health. Due to the lack of data and the scope of this thesis, I will only draw attention to the relationship between sewage systems and child mortality rates.

The lack of modern sewage systems, or the slow progress in developing them, can negatively affect public health. With increasing urbanization, populations living in areas with inadequate sanitation infrastructure face significant health risks. Therefore, governments should prioritize improvements in urban planning to reduce the prevalence of diseases resulting from insufficient sanitation investments.

Institutional reports and newspapers sought to highlight the potential for epidemics and health problems under the conditions of the time. For instance, a city's lack of modern sewage and limited access to clean water caused by the transmission of polio. Similar to typhoid fever, the open flow of sewage and contamination of food led to a rise in polio cases. Dr. Erdal Atabek, President of the Turkish Medical Association, emphasized the role of inadequate sewerage, clean drinking water, and potable water in the escalation of polio cases.

Dr. Erdal Atabek noted that while 80% of cities had access to drinking water, its quality was largely unregulated. In rural areas, only 35% of villages had access to clean drinking water. He also highlighted that, on average, only 15% of cities had sewage systems, with sewage often discharged directly into natural water sources such as streams. These contaminated waters were then used to irrigate vegetable gardens. Describing the state of basic infrastructure, he emphasized that drinking and utility water were both insufficient and unregulated. He pointed out that sewerage systems were nearly non-existent, and the discharge of untreated sewage was polluting natural water sources. Moreover, during

times of water scarcity, this sewage was used to irrigate vegetable gardens and fields.¹⁴⁰



Figure 5.13 Polio in Istanbul. SOURCE: *Cumhuriyet*, August 6, 1968.

According to data from the Ministry of Health, 40,000 children in Istanbul were carriers of the polio germ. The unequal access to sewage infrastructure and clean water among residents of the same city posed a serious problem. The lack of sewerage infrastructure threatened public

¹⁴⁰ *Cumhuriyet*, August 6, 1968.

health, particularly among children, while the untreated discharge of wastewater into natural water sources led to significant environmental pollution.¹⁴¹

§ 5.6 Conclusion

This chapter of the thesis examines the development of sewage systems in Türkiye between 1950 and 1980, as well as the regional distribution of this progress from an economic history perspective. During this period, Türkiye underwent industrialization, experienced rapid population growth in both urban and rural areas, and saw increased urbanization. These changes highlighted the inadequacy of sewage systems and underscored the urgent need for modern infrastructure, particularly in urban regions.

The most striking finding of this chapter is the uneven distribution of sewage systems across the country, similar to the distribution of clean water systems in Türkiye. This unequal distribution existed between regions, cities, and even within the same city. When comparing the development of sewage systems among regions, investments in the Marmara, Aegean, and Central Anatolia regions, where urbanization and industrialization are more prominent, were greater than those in the Black Sea, Mediterranean, Eastern Anatolia, and Southeastern Anatolia regions. Notably, relatively more sewage investments were made in the western parts of the country. However, this does not imply that the sewage systems in these areas were completed according to the specific needs of each city.

This situation also highlights the inequality between cities. Cities with potential for industrial and tourism development have been prioritized over others. However, as I mentioned, there are also inequalities in sewage infrastructure even within the same city. While sewage infrastructure investments are made in areas where the upper-income groups reside, it

¹⁴¹ Due to the lack of sewage systems, raw sewage continues to flow down the streets in Istanbul's shantytown neighborhoods. See: *Cumhuriyet*, September 29, 1976. Additionally, wastewater flows into the Kağıthane River. See: *Cumhuriyet*, August 11, 1967.

is observed that these investments often do not extend to regions where middle- and lower-income groups live. Similarly, in cities of the Eastern regions, it can be noted that sewage infrastructure is largely confined to city centers.

The second significant finding of the chapter is the multivocality of institutions in urban sewage systems in Türkiye between 1950 and 1980, similar to clean water systems. As I explained before, I prefer the term multivocality of institutions to emphasize the conflict of duties and authorities among the institutions responsible for the urban sewage infrastructure system. In this context, I argue that this is one of the reasons behind the delay in urban sewage systems, which are more costly and complicated to invest in clean water systems.

Another finding of this chapter is that, in contrast to the multivocality of institutions in urban sewerage and clean water systems, there was an institutional silence in rural sewage systems. There are significant differences between urban and rural areas regarding sewerage infrastructure compared to the clean water systems. The government prioritized making sewerage investments in urban areas between 1950 and 1980. I preferred to express this term with the silence of institutions in rural areas. I have contextualized the development of sewerage infrastructure investments in rural and urban within the development literature.

In Türkiye, the 1950s witnessed a shift from liberal policies to an import-substitution economic policy with development plans. The role of institutions in developing infrastructure investments was decisive in this period. The establishment of the State Hydraulic Works following the establishment of the Bank of Provinces was a step towards transferring sewerage system investments from the urban scale to the national scale. In addition, within the framework of national development plans, following the establishment of SPO, industrialization moves were tried to be supported by infrastructure investments. When the investments in the first four five-year development plans that I have discussed within this thesis's time limits are analyzed, sewerage infrastructure investments lag behind other infrastructure investments such as electricity, motorways, and clean water. I argue that the establishment of sewerage systems on a

national scale was delayed so much that it coincided with the end of the era of national developmentalism.

A much better policy would have been to enforce urban planning effectively to continue to support sewage investment both financially and technologically. An investment in sewerage systems should actually be considered as a step taken by the state towards public health. Especially in urban areas, the spread of water-borne diseases, infection, polio and even life expectancy at birth cause important consequences in human life. The lagging of modern sewerage systems in Türkiye adversely affected large segments of society, especially children, while the discharge of polluted water into natural water bodies caused environmental pollution. In this context, it is clear that inequalities in sewerage systems led not only to health problems but also to social and environmental problems.



Conclusion

This dissertation studied the clean water and sewage systems within the current borders of Türkiye between 1880 and 1980 and traced the history of the transition to modern sanitary systems over nearly a century. Clean water and sewage systems are critical for sustaining healthy lives and safeguarding public health. In 2010, the United Nations recognized access to clean water as a basic human right. Similarly, access to modern sewage systems should be considered a human right as well, as both systems contribute to improvements in public health, increased life expectancy at birth, and reduced mortality rates.

The development of these two infrastructure systems, which are crucial for protecting public health, has not been widespread across all countries. While sanitation infrastructure investments are accessible to all socioeconomic groups in developed countries, citizens in developing and underdeveloped nations continue to face significant challenges in accessing these systems. The inability of states to construct clean water and

sewage systems on a national scale is not solely a matter of technological capacity but also a question of resources. The lack of sufficient financial resources is one of the biggest obstacles preventing states from undertaking large-scale infrastructure projects. Indeed, infrastructure investments by states have been shaped by their economic capacities. Developed countries were able to establish clean water and sewage systems on a national scale from the late nineteenth to early twentieth centuries, corresponding with their state financial and technological capacities. In today's developed countries, increases in life expectancy began earlier than in today's developing countries. These increases have been significantly influenced by the establishment of water and sewage systems. In contrast, in developing countries, these infrastructure investments have been more limited, with efforts toward national expansion beginning in the second half of the twentieth century. In their efforts to expand clean water and sewage infrastructure systems on a national scale, developing countries have encountered difficulties in securing financial resources due to limited state capacities. Therefore, I argue that infrastructure investments in these countries are often prioritized hierarchically rather than implemented simultaneously. This hierarchy among investments reflects the cost-benefit analyses conducted by governments.

Clean water investments are typically prioritized and considered more important than sewerage systems. This is primarily because clean water plays a much more critical role in public health. Additionally, where clean water is insufficient, modern sewage system design becomes unfeasible, as the fluidity necessary for waste movement cannot be ensured. Moreover, investments in sewerage infrastructure are more costly than those in clean water. States with limited financial and technical capacity base their investment decisions on a cost-benefit analysis that considers urban and rural areas, population density, and tourism priorities. Due to population density and the associated health hazards, infrastructures in urban areas have been prioritized over those in rural areas. In line with cost-benefit analyses, the low population density in rural areas has generally led to water needs being met through fountains and sewage needs

through cesspools. Although this method may be unhygienic, it serves as a practical short-term solution for states with limited economic capacity.

The nationwide expansion of clean water and sewage infrastructure investments initially began unevenly in every country. Developed countries, due to their economic and technological capacities, were able to expand their investments and reduce the inequality in access to clean water and sewage systems among citizens. However, in developing countries, such inequalities still persist. The inequality in clean water and sewage infrastructure investments has not been addressed by researchers in Türkiye, despite its significance as an important issue. Therefore, this thesis is the first study to examine inequalities in access to clean water and sewage across regions, cities, and even within urban areas in Türkiye. I analyzed the development of clean water and sewerage investments in Türkiye over a century, from 1880 to 1980, by examining documents from the Ottoman and Republican archives, as well as from public institutions such as the Istanbul Metropolitan Municipality, İSKİ, and the Bank of Provinces. Additionally, I reviewed news articles from Cumhuriyet newspaper between 1950 and 1980 to assess public demands and complaints related to these investments.

Two main factors influenced the determination of the thesis's date frame. As discussed in Chapters 2 and 3, the roots of inequalities in clean water and sewage systems during the Republican period can be traced back to the late Ottoman Empire, which establishes the starting point of this thesis. Another factor influencing the date frame is the establishment of water and sewerage administrations within municipalities, along with a new process of institutional transformation that began with the shift in economic policies after 1980.

An examination of the history of clean water and sewage systems in Türkiye reveals that their development has been slow and limited. I argue that the period between 1880 and 1980 should be divided into two sub-periods. The first, spanning from the late nineteenth century to 1950, was characterized by a duality in clean water and sewage systems. This duality reflected a conflict between traditional Ottoman water systems and foreign water companies. The investments of foreign water companies in

clean water and sewage systems in areas populated by upper-income groups led to disparities in access to these services across regions, cities, and even among citizens within the same city. As a result, foreign water companies became symbols of inequality in access to sanitary infrastructure within society.

After the establishment of the Republic, Atatürk and other founding leaders sought to reduce inequalities in access to clean water and sewage systems. To achieve this, the nation-state aimed to regulate public utilities through a framework of laws and institutions. Notably, during the interwar period, there was a shift from a dual system of clean water and sewage management to a centralized policy, achieved through a process of nationalization. I argue that the efforts and institutional changes during this initial period served as a preparatory stage for the subsequent period between 1950 and 1980.

The second period, between 1950 and 1980, was characterized by the multivocality of institutions managing urban clean water and sewage systems. During the Republican era, municipalities were assigned significant responsibilities for the development of these systems. However, these responsibilities revealed the financial and administrative limitations of municipalities in the early years of the Republic. As a result, new institutions, such as the State Hydraulic Works and the Bank of Provinces, were established to expand infrastructure investments from the urban to the national scale. Although these institutions were created to collaborate on clean water and sewage system development, I argue that ambiguities—often referred to as gray areas—in their respective authorities and responsibilities frequently led to conflict rather than cooperation. I use the term 'multivocality' here to describe the conflicts and overlapping authorities and responsibilities that emerge among institutions regarding clean water and sewage investments. In contrast to the multivocality of institutions in the urban clean water and sewage systems, the silence of institutions regarding sewage infrastructure development in rural areas was particularly striking. In rural areas, the provision of clean water systems was typically limited to fountains constructed in village squares.

Similarly, cesspools were used to meet the need for sewage systems. Although these solutions were not entirely sanitary, they were low-cost and straightforward. This mirrored a pattern in the developmental strategies of that era, which prioritized urban growth over rural development. In other words, the government chose to focus on urban areas based on a cost-benefit analysis and limited financial and technical capacity.

The Turkish economic and political conditions directly shaped the development of infrastructure investments. Unlike in the 1930s and 1940s, infrastructure investments gained importance in Türkiye between 1950 and 1980, influenced by a balanced development approach that encompassed all sectors and various types of infrastructure. Particularly through the five-year development plans initiated in the 1960s, industrial investments were supported by infrastructure projects. With these plans, clean water and sewage infrastructure investments shifted from an urban to a national scale. Nevertheless, a hierarchy among infrastructure investments became evident. This hierarchy emerged because the Turkish government lacked the economic and technical capacity to develop all necessary infrastructure—such as roads, electricity, water, communication, and sewage—simultaneously, which were essential for industrial growth. In this hierarchy of infrastructure, I argue that clean water and sewage systems have always lagged behind transportation and electricity infrastructure. Moreover, a comparison between clean water and sewage systems reveals that clean water infrastructure took priority over sewage systems. Indeed, the development of sewage infrastructure on a national scale has been so long overdue that I would argue these investments coincided with the end of the era of national developmentalism.

Academic studies on clean water and sewage systems in Türkiye typically focus on institutional or urban narratives. There are relatively more studies on water systems than on sewage systems. However, no study has comprehensively examined the development of both infrastructures together. Clean water and sewage systems are two important infrastructures that complement each other. In regions where the clean water system is underdeveloped, the sewage system cannot be expected to flourish. Therefore, both infrastructures are of paramount importance

when examining the relationship between sanitation and public health. In this context, this thesis, for the first time, comparatively analyzed the development of these two infrastructure systems from a macro perspective in Türkiye. International academic studies have examined the unequal distribution of clean water and sewage systems and their effects on public health. Recent research, in particular, has emphasized the connection between clean water, sewage systems, and infant mortality. Due to the scope of this thesis and the lack of a dataset on infant mortality rates in Türkiye for the period up to 1980, an analysis of the relationship between sanitary infrastructure (clean water and sewage systems) and infant mortality rates could not be conducted. This issue will require more attention from researchers in the future.

This thesis focuses on examining regional, urban, and intra-urban inequalities in the development of clean water and sanitation systems in Türkiye. These infrastructure inequalities are not unique to Türkiye; they emerge in all countries from the outset of infrastructure investments. Developed countries have mitigated these inequalities by increasing their investments in clean water and sewerage systems since the second half of the nineteenth century. However, in developing countries like Türkiye, these inequalities continue to persist. When examining the development of these two infrastructures in Türkiye up until 1980, I reach three conclusions:

First, the multivocality of institutions emerges as a significant factor that has caused delays in the implementation of urban clean water and sewerage systems. In addition to the multivocality of institutions, the combination of high costs, a shortage of specialized staff, and the technical challenges associated with clean water and sewerage systems have left many urban areas lacking adequate basic services. While the government prioritized urban areas for infrastructure investments, the sanitary infrastructure needs in rural regions continued to be met through the use of fountains and cesspools.

Secondly, an examination of Türkiye's historical development of clean water and sewage systems reveals that these infrastructure investments

initially began in the western regions of the country and gradually expanded eastward. However, by 1980, although the state was aware of the need for clean water and sewerage systems through development plans, it had to postpone these infrastructure investments due to capacity problems and hierarchy among investments. While clean water and sewerage connections were ensured in new buildings with occupancy permits, the infrastructure problem remained unsolved in existing old buildings and slums. For this reason, investments in clean water and sewerage systems showed uneven development.

Clean water and sewage systems were unevenly allocated to regions like Marmara, Aegean, and Central Anatolia, which experienced higher urbanization and industrialization. Nevertheless, it should be noted that not all citizens in these regions had access to infrastructure services, and inequalities persist both between and within cities. There is another dimension to regional infrastructure inequality: in the western parts of the country, such as the Marmara, Aegean, and Central Anatolia regions, the development of clean water and sewerage systems within cities tends to expand from urban centers to peripheral areas, or from higher-income groups to middle-income groups. In other regions, however, these infrastructure investments have been limited to only certain urban centers. In other words, unlike the western regions, clean water and sewerage systems, though present in certain cities of the eastern and southeastern Anatolia regions, did not expand to the surrounding areas and remained confined to urban centers. According to statistics, these infrastructure developments in these regions initially began with public buildings.

As the number of apartment buildings in Türkiye grew, the demand for modern clean water and sewage systems steadily increased. However, investments to address the need for clean water and, especially, sewage systems in Türkiye were delayed. For an extended period, cesspools were used to meet the need for a sewerage system. Prior to the establishment of a sewerage system, wastewater from apartment buildings was collected in cesspools, which were periodically cleaned by municipalities or residents using vacuum trucks. In metropolitan cities, new buildings with permits were inspected for infrastructure compliance, while buildings

without permits continued to face infrastructure issues. Between 1960 and 1980, particularly in metropolitan areas like Istanbul, Izmir, and Ankara, the number of unauthorized structures, known as *gecekondu* (shanty dwellings), increased rapidly, and the infrastructure problems associated with these dwellings gradually worsened.

Third, clean water and sewage systems represent more than just infrastructure investments by governments. As I argued in Chapter 1, clean water and sanitation systems have a multifunctional dimension. They are not only infrastructure but also protectors of public health. Wastewater from sewage systems is discharged into seas and streams, and news reports, particularly in newspapers, often highlight instances of children playing in these contaminated waters. Furthermore, although industrial wastewater falls outside the scope of this thesis, its discharge into the sea remains a persistent problem. It is evident that this unhealthy situation negatively impacts public health, particularly children's health. Life expectancy at birth within the present-day borders of Türkiye slowly increased from the 1920s, reaching 35 years by the mid-1930s. After World War II, life expectancy rose from 44 years in 1950 to 59 years in 1980 (57 for men and 61 for women). Although I could not measure this with econometric data, investments in clean water and sewage infrastructure up until 1980 may have contributed to the increase. In order to provide an overall picture of my empirical findings, I hope to construct in the future estimates for the rising proportion of the total population in Türkiye with access to clean water and sewage systems from 1950 to 1980 (and to 2020). These estimates will help establish the long-term trends in access to clean water and sewage systems in the country and offer a quantitative basis for assessing the impact of these systems on public health.

Global warming and pandemic outbreaks have once again highlighted the critical importance of investments in clean water and sewage infrastructure. The concepts of 'clean water' and 'sewage' are not only fundamental to public health but are also central to discussions on socioeconomic development, healthy ecosystems, and sustainability. Over time, the significance of this issue will become increasingly evident, and the

multifunctional dimension of these investments for both human health and sustainable development will be better understood.





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