Reclaiming the Empire:
Environment, Marshes, and Hydraulic Engineering in the Late Ottoman Period

Özkan Akpınar

A dissertation presented to the

Atatürk Institute for Modern Turkish History
at Boğaziçi University

in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

August 2020

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

Reclaiming the Empire: Environment, Marshes, and Hydraulic Engineering in the Late Ottoman Period

Özkan Akpınar, Doctoral Candidate at the Atatürk Institute for Modern Turkish History at Boğaziçi University, 2020

Professor Nadir Özbek, Dissertation Advisor

This dissertation analyzes the transformation of the environment and the tensions and contestations to which this transformation led among various social actors in the Ottoman Empire. It focuses on attempts to reclaim marshes and other wetland regions such as lakes and rivers in different parts of the empire in the late Ottoman period. According to this dissertation, reclamation projects, which sought to turn uncultivated wetlands into agricultural lands, were part of a new concept of development that attributed the survival of the empire and the prosperity of the population to the growth of public works and a rise in agricultural production and commercial activity. They were related to an Ottoman modernity project in which the Ottoman government sought to establish authority over its territories, population, resources, economy, lands, and environment. Reclamation attempts were initially state-led projects, but in time because of the financial problems of the Ottoman state, they became profitable private enterprises over which entrepreneurs competed. These projects not only transformed the environment and ecology but also caused the disappearance of some means of subsistence for the local population such as fishery. Thus, they created winners and losers in society, leading to social tensions among various relevant actors. This dissertation problematizes the late Ottoman period by focusing on these tensions and struggles over the environment.

90,000 words

Özet

İmparatorluğun Islahı:
Geç Osmanlı Döneminde Çevre, Bataklıklar ve Hidrolik Mühendisliği

Özkan Akpınar, Doktora Adayı, 2020
Boğaziçi Üniversitesi Atatürk İlkeleri ve İnkılap Tarihi Enstitüsü

Profesör Nadir Özbek, Tez Danışmanı

Bu tez Osmanlı İmparatorluğu'nda çevrenin dönüşümünü ve bu dönüşümün çeşitli toplumsal aktörler arasında neden olduğu gerilim ve mücadeleleri analiz eder. Bu bağlamda Osmanlı son döneminde imparatorluğun farklı bölgelerinde öncelikle bataklıkları ve ayrıca göl ve nehirler gibi diğer sulak alanları ıslah etme girişimlerine odaklanır. Bu tezin iddiasına göre, daha önce tarım yapılmayan sulak alanları tarım arazisine dönüştürmeyi amaçlayan ıslah projeleri, bu dönemde imparatorluğun varlığını ve nüfusun refahını, bayındırlık faaliyetlerinin genişlemesine ve hem tarımsal üretim hem de ticari faaliyetlerdeki artışa dayandıran yeni bir kalkınma anlayışının bir parçasıydı. Bu anlamda, Osmanlı hükümetlerinin imparatorluğun toprakları, nüfusları, kaynakları, ekonomisi ve çevresi üzerinde otorite kurma çabalarını ifade eden Osmanlı modernitesiyle yakından ilişkiliydiler. Bataklıkları ıslah girişimleri başlangıçta devlet tarafından yürütülen projelerdi, fakat zamanla Osmanlı devletinin yaşadığı mali sorunlar nedeniyle devlet tarafından girişimcilerin ele geçirmek için birbirileriyle rekabet ettiği kârlı özel girişimlere dönüştüler. Ne var ki bu projeler, çevreyi ve ekolojiyi dönüştürmekle kalmadılar, aynı zamanda yerel nüfus için balıkçılık gibi bazı önemli geçim araçlarının da ortadan kaybolmasına neden oldular. Dolayısıyla, toplumda kazananlar ve kaybedenler yaratarak, ilgili çeşitli aktörler arasında toplumsal gerilimlerin yaşanmasına yol açtılar. İşte çevre üzerinde yürütülen bu mücadelelere odaklanan bu tez, bu sayede Osmanlı son dönemini sorunsallaştırmaya çalışır.

90.000 kelime

Curriculum Vitæ

ÖZKAN AKPINAR

Born 8 December 1978
in Istanbul, Turkey

EDUCATION

Ph.D.	Atatürk Institute for Modern Turkish History Boğaziçi University 2020
M.A.	Atatürk Institute for Modern Turkish History Boğaziçi University 2010
B.A.	History Boğaziçi University 2003

PUBLICATIONS

- With Semih Akgün. "II. Abdülhamid Dönemi Siyasi Tarihi Bibliyografyası." *Türkiye Araştırmaları Literatür Dergisi* 2, no. 1 (2004): 91-97.

AWARDS AND HONORS

- Best Doctoral Student Papers Award, "Reading Imperial Territories: Geographical Imagination in School Textbooks during the Late Ottoman Period, 1876-1908," 18th Annual ASN (Association for the Study of Nationalities) World Convention, 18-20 April 2013, Columbia University, New York.

GRANTS AND FELLOWSHIPS

- TÜBİTAK International Conference Participation Grant (2224-A), MESA 2019 Annual Meeting, 2019.
- TÜBİTAK International Conference Participation Grant (2224-A), 18th Annual ASN (Association for the Study of Nationalities) World Convention, 2013.

CONFERENCE PARTICIPATION

- "Immigrants, Local Tribes and the State: Land Property Disputes in Late 19th Century Sivas," MESA 2019 Annual Meeting, 14-17 November 2019, New Orleans.
- "New Actors of History: Fishes, Marshes and Engineering in Late 19th Century Yanya," Environmental Histories of the Ottoman Empire and Turkey - Historicizing Nature: Water, Forest and Land, 2nd International NEHT Workshop, Middle Eastern Technical University, 6-7 September 2019, Ankara.
- "Immigration and Politics: Relations between the State and Balkan Immigrants in Adapazarı at the end of the 19th Century," Turkologentag 2018, Third European Convention on Turkic, Ottoman and Turkish Studies, University of Bamberg, 19-21 September 2018, Bamberg.
- "Reclaiming the Empire: Environment, Hydraulic Engineering and Local Politics in Late 19th Century Salonica," Environmental History of the Ottoman Empire and Turkey, International Conference, Hamburg University, 27-28 October 2017, Hamburg.
- "Coğrafya ve İmparatorluk: II. Abdülhamid Dönemi Ders Kitaplarında Coğrafi Tahayyül," Atatürk İlkeleri ve İnkılap Tarihi 4. Lisansüstü Sempozyumu, Yıldız Technical University, 13 May 2013, Istanbul.

- "Reading Imperial Territories: Geographical Imagination in School Textbooks during the Late Ottoman Period, 1876-1908," 18th Annual ASN (Association for the Study of Nationalities) World Convention, Columbia University, New York, 18-20 April 2013.

TEACHING EXPERIENCE

- Lecturer, Principles of Atatürk and History of the Turkish Republic I-II, Özyeğin University, 2016-
- Lecturer, History of the Turkish Republic I-II, Ataturk Institute for Modern Turkish History, Boğaziçi University, 2012-2015

RESEARCH EXPERIENCE

- Research Assistant, Project titled "Environment and Empire: Hydraulic Projects during the Late Ottoman Period, 1876-1914," Boğaziçi University, Research Projects, Project Code: 10220, 2015-2016
- Research Assistant, Ataturk Institute for Modern Turkish History, Boğaziçi University, 2012-2015
- Research Assistant, Project titled "Sosyal Alanlarda Araştırmacı İnsan Gücü Geliştirilmesi," Social Policy Forum, Boğaziçi University, 2010-2012

LANGUAGES

- Turkish – Native Speaker
- English – Advanced
- Ottoman Turkish – Advanced

Table of Contents

A Note on Transliteration

In the transliteration of Ottoman Turkish phrases and terms, the simplest form of latinization is used, and ‘*ayn* and *hemze* are only used to avoid confusion of meaning. All place names are given in their contemporary forms. The names of specific institutions and terms are translated into English, but their original Turkish forms are provided in parentheses at their first appearance in the text.

Acknowledgements

First of all, I would like to thank my advisor, Nadir Özbek, for his guidance and support throughout my graduate education in the Atatürk Institute. He contributed to the formation of the dissertation both with his comments on my drafts and with his courses. Without his support, this thesis would not have been completed. I would also thank jury members, Cengiz Kırlı, Irmak Ertör, Selçuk Dursun, and Ali Sipahi for their invaluable suggestions and comments.

I would like to express my thanks to the faculty members of the Atatürk Institute because they provided an intellectual environment for me and all graduate students. I also owe thanks to the staff of the institute, the late Necla Turunç, Kadriye Tamtekin, Dilek Tecirli, and Leyla Kılıç. They were always supportive and helpful when I was a graduate student and a teaching assistant. I appreciate Jonathan Phillips who edited the text and did an excellent job. I would like to thank the staff of the library of Boğaziçi University; especially Seyfi Berk and Kamber Yılmaz facilitated my research at the library. Part of this research was supported by Boğaziçi University Scientific Research Projects (BAP) under the project number of 10220. I am also grateful to the staff of the Prime Ministry Ottoman Archives in Istanbul who were helpful during the research.

My dear friends stood with me while I was a graduate student and writing the dissertation. Seda Özdemir Şimşek supported me at every step of not only this dissertation but also my life with her friendship. Zeynep Aydoğan also stood with me for my undergraduate years in Boğaziçi University. I would like to thank them for their place in my life. A number of friends also deserve special thanks for their friendships, moral support and companionship. Alp Kanzık, Gülseren Duman, Yener Koç, Seval Gülen, Soner Şimşek and little Leyla Şimşek, Emrah Çınar, Yavuz Sezer, Hasan Şen, Nazife Kosukoğlu, Mehmet Polatel, Şeyma Afacan, Çiğdem Oğuz, Sinem Kavak, Ceren Deniz, Defne Kadıoğlu, Ramiz Üzümçeker, Faruk Yalçın, Naz Özkan, Mehmet Altun, Barış Yarkadaş, and Elif Özer.

I began to work as an instructor on the history of modern Turkey in Özyeğin University in 2016. Our team of the history of Turkey was always supportive and helpful for me while I was writing the dissertation. I owe Faik Gür, Alpkan Birelma, Ali Sipahi, Başak Akgül Kovankaya, and Özlem Dilber a debt of gratitude for their moral support and friendship. I am also indebted to Güneş Sezen, Egem Atik, and Uğur Çalışkan for their friendship. Difficult years of writing dissertation became easier thanks to them. Oya İklil Selçuk, Feray Coşkun, Merih Erol, Çimen Günay Erkol, Ali Serdar, Nurseli Yeşim Sünbüloğlu, Ezgi Hamzaçebi, and İbrahim Öztürk also provided moral support in our conversations.

Two conferences on the environmental history of the Ottoman Empire and Turkey greatly contributed to the emergence of this dissertation. The first one was organized by Onur İnal and Yavuz Köse in Hamburg in 2017 and the second one by Selçuk Dursun in Ankara in 2019. These conferences not only led to the emergence of Network for the Study of Environmental History of Turkey (NEHT) but also influenced this dissertation. I am indebted to organizers and all participants of these two conferences.

I am also grateful to Uğur Bahadır Bayraktar, Başak Akgül Kovankaya, Ali Sipahi, Seda Özdemir Şimşek, Alp Kanzık, Seval Gülen, Önder Uçar, and Mustafa Batman who read different chapters and provided me with valuable feedback.

I am always grateful to my family. My parents Nurali and Nuriye Akpınar always and unconditionally stood with me during my school years. My brothers, Erkan and Serkan, my niece, Rüya, and my uncle, Alişan always provided moral support. Lastly, I am grateful to Fatma Damak who always gives me unconditional support. She made me feel happy and lucky with her love, emotional support, encouragement, and patience for three years. This dissertation could not be completed without her love and support. I dedicate this dissertation to her.

NOTE: The in-house editor of the Atatürk Institute has made detailed recommendations with regard to the format, grammar, spelling, usage, syntax, and style of this dissertation.

1

Introduction

This dissertation discusses the transformation of the environment of Ottoman territories as well as the social tensions and contestations that this transformation created among various social actors in the context of reclaiming and draining marshes and turning them into arable lands in the late Ottoman Empire. It argues that reclamation and drainage projects were part of the attempts of Ottoman government to establish authority over its territories, population, resources, economy, lands, and its environment within its geography by means of political, administrative, legal, fiscal, and infrastructural reforms in the nineteenth century. This approach provides the late Ottoman history in an environmental context, which in turn makes it possible to see the configuration of various actors at the local level. The dissertation focuses on reclamation and drainage projects – especially with respect to marshes, and lakes and rivers connected to marshes – at the end of the nineteenth and the beginning of the twentieth centuries, as well as on the struggle of various actors to control the reclamation process and the reclaimed lands.

This dissertation discusses public works projects in general and reclamation projects in marshes, lakes, and rivers in particular in the framework of a contested developmentalist agenda expounded by nineteenth-century Ottoman statesmen. This agenda was based on the idea that the survival of the empire was dependent on an increase in agricultural and

commercial activities of the empire by strengthening the infrastructure of both cities and countryside. It required investments in infrastructure in order to provide for the prosperity and sovereignty of the nation, to increase the wealth and happiness of its population, and to increase revenue. And it included the application of public works projects in various parts of the empire. Therefore, the Ottoman government attributed importance to public works affairs so as to improve the agricultural and commercial infrastructure of the empire and to increase the welfare and tax paying capacity of the population through agricultural production, especially in the second half of the nineteenth century. Public works projects carried out under the supervision of the Ottoman government primarily concerned enlarging highways and railways, increasing irrigation facilities, constructing bridges, opening canals and waterways, and draining and reclaiming marshes, lakes, and rivers. All of these works were part of a developmentalist agenda formulated by both central and provincial statesmen and officials who were suggesting new ways to increase the wealth and welfare of the empire. One of these was reclaiming marshes, lakes, and rivers and turning them into agricultural land in regions with no agricultural land or where agricultural production was interrupted because of geographical or climatic conditions such as floods. However, such projects led not only to the transformation of the environment in Ottoman territories but also resulted in social tensions, contestations, and competitions among the various social actors who had become involved in them. Therefore, the aim of the dissertation is to place reclamation projects as macro-development projects that transformed the environment within the context of everyday encounters. It primarily focuses on the encounters among these actors and their negotiations and contestations.

§ 1.1 The Rise of Ottoman Environmental History

This dissertation was born out of an interest in "environmental history as an emerging field" in Ottoman studies.[1] As an emerging field in Ottoman historiography, environmental history makes a reevaluation of the late Ottoman period possible by highlighting the social, political and economic implications of human attempts to dominate the environment and nature in the nineteenth century. This discussion focuses on the actions of various actors and clarifies their encounters – namely their contestations, struggles, and negotiations with respect to the environment in general and marshes, lakes, and rivers in particular – in the late Ottoman period. Reclamation projects in such wetland regions included the participation of social actors such as central and provincial Ottoman officials and statesmen, local and foreign entrepreneurs and companies, landowners, peasants and fishermen, engineers, and technical experts. While some became the winners of these reclamation projects because of the wealth that they would acquire, others became their losers because they would be deprived of their means of existence. Therefore, this dissertation adopts an approach to environmental history that focuses on the environment and reclamation projects in marshy regions as site of encounters, relations, contestations, and negotiations interconnectedly rather than attributing individual and autonomous agency to these human actors and nonhuman actors such as marshes, lakes, rivers, fish, birds, and trees.

Environmental history, which appeared in the United States in the 1960s-70s as a direct consequence of the environmental movement, spread to the world, becoming attractive to both historians and naturalists in the 1970s-80s.[2] Although the intellectual influence of the Annales

1 Onur İnal, "Environmental History as an Emerging Field in Ottoman Studies: An Historiographical Overview," *Osmanlı Araştırmaları/Journal of Ottoman Studies* 38 (2011): 1-25.

2 For a review of the development of environmental history, see Alfred W. Crosby, "The Past and Present of Environmental History," *American Historical Review* 100, no. 4 (1995):

school contributed to the formation of the field of environmental history,[3] the most apparent stimulus for the field was the environmental movement of the 1960s-70s that encouraged historians in the United States, Europe, and the rest of the world to address environmental issues in their own studies. Since then, a growing number of historical studies have focused on the environment; programs in environmental history were opened at universities; publishing houses began to publish books and series on environmental history; and academic journals on environmental history were established in many parts of the world.

Generally speaking, environmental history is described as the history of interaction between human actors and their environment. For example, while Roderick Nash considers environmental history as "the past contact of man with his total habitat" in a broad sense,[4] John R. McNeill defines it as "the history of the mutual relations between humankind and the rest of nature."[5] J. Donald Hughes also defines it as "the mutual relationships of humans and nature through time."[6] McNeill discusses three approaches in the literature. First, material environmental history discusses changes in biological and physical environments and the impact of these changes on human societies. This approach focuses on not only rural issues such as agro-ecosystems, rural ecology, forests, rivers, marshes, and wilderness but also urban issues such as environmental pollution. The second approach, which appeared in the United States and discusses cultural, intellectual issues within the field of environmental

---

1177-89; J. Donald Hughes, "Global Dimensions of Environmental History," *Pacific Historical Review* 70, no. 1 (February 2001): 91-101; J.R. McNeill, "Observations on the Nature and Culture of Environmental History," *History and Theory* 42 (December 2003): 5-43; Richard White, "Environmental History: The Development of a New Historical Field," *Pacific Historical Review* 54, no. 3 (August 1985): 297-335; and Donald Worster, "History as Natural History: An Essay on Theory and Method," *Pacific Historical Review* 53, no. 1 (February 1984): 1-19.

3 J. Donald Hughes, *What Is Environmental* History*?* (Cambridge: Polity Press, 2016), 31.

4 Roderick Nash, "American Environmental History: A New Teaching Frontier," *Pacific Historical Review* 41, no. 3 (August 1972): 363.

5 McNeill, "Observations," 6.

6 Hughes, *What Is Environmental History?*, 1.

history, is concerned with the environmental impact of various religious and cultural traditions. Lastly, political environmental history, which is usually concerned with modern history and especially the nineteenth and twentieth centuries, considers the environment to be a site of contestation and emphasizes the struggles that social actors wage over the environment.[7] Therefore, this dissertation can also be seen as an example of political environmental history as it focuses on contestations, struggles, and negotiations of various actors with respect to the environment in general and marshes, lakes, and rivers in particular in the late Ottoman Empire.

Environmental history meaningfully spread into the field of Ottoman historiography only since the 2000s.[8] Until then, written material on Ottoman environmental history usually took up environmental issues in a patchwork fashion as integral parts of more important topics such as Ottoman politics, economics, and society. Alternately, historians studying the European or Mediterranean environmental history made public references to some environmental issues in Ottoman history. In other words, although Ottomanists wrote on the ecological past and "the history of interaction between human actors and their environment," their studies were classified under different subfields of Ottoman history.

7 McNeill, "Observations," 6-9.

8 For work on Ottoman environmental history in 1990s and 2000s, see William Griswold, "Climatic Change: A Possible Factor in the Social Unrest of Seventeenth Century Anatolia," in *Humanist and Scholar: Essays in Honor of Andreas Tietze*, eds. Heath W. Lowry and Donald Quataert (Istanbul: Isis Press, 1993); Wolf-Dieter Hutteroth, "Ecology of the Ottoman Lands," in *The Cambridge History of Turkey,* Vol. 3: *The Later Ottoman Empire, 1603–1839*, ed. Suraiya N. Faroqhi (Cambridge: Cambridge University Press, 2006); Ronald C. Jennings, *Studies on Ottoman Social History in the Sixteenth and Seventeenth Centuries: Women, Zimmis and Sharia Courts in Kayseri, Cyprus and Trabzon* (Istanbul: Isis Press, 1999); Bekir Koç, "Tanzimat Sonrası Hukuk Metinlerinde Çevre Bilincinin Arka-Planı Olarak 'Av Yasak ve Sınırlılıkları' Üzerine Bazı Düşünceler," *Ankara Üniversitesi Osmanlı Tarihi Araştırma ve Uygulama Merkezi Dergisi (OTAM)* 19 (March 2006): 271-81; and Elizabeth Zachariadou, ed. *Natural Disasters in the Ottoman Empire* (Rethymnon: Crete University Press, 1999).

Therefore, there was no literature that could be labelled Ottoman environmental history. However, starting in the beginning of the 2000s, the number of studies directly related to environmental issues in the Ottoman historiography began to increase, filling the gap. In recent years, a literature emerged that includes studies that can be considered the category of "Ottoman environmental history."[9] This literature focuses on disparate parts and periods of the Middle East, and its subjects vary from climate change – and especially the impact of the Little Ice Age on early modern Ottoman society – to the transformation of the landscape and agriculture, to cities, the use of resources, disease, and natural disasters as well as forests, lakes, rivers, and marshes – discussing their social, political, and economic contexts.

Selçuk Dursun points out that an interest in environmental history in Turkey was first expressed in a symposium organized in Istanbul on 7-8 April, 2000.[10] İlhan Tekeli's opening speech was the first expression of the sub-discipline of the environmental history of the Ottoman Empire and Turkey.[11] In 2007, Selçuk Dursun completed his dissertation on the history of forestry and forest administration in the Ottoman Empire, which can be considered the first dissertation on the late Ottoman period with an ecological perspective.[12] The 2010s were an especially prolific period for Ottoman environmental history. In 2011, two historians in the field published pioneering works that "incorporat[ed] ecological perspectives into their methodological frameworks."[13] Sam White writes on the im-

9 For a review of this literature, see İnal, "Environmental History."

10 Selçuk Dursun, "Çevresel Bağlantılar: Tarihi Yeniden Düşünmek," in *Çevresel Tarih Nedir*, ed. J. Donald Hughes (Istanbul: Tarih Vakfı Yurt Yayınları, 2019), xii.

11 İlhan Tekeli, "Türkiye Çevre Tarihçiliğine Açılırken," in *Türkiye'de Çevrenin ve Çevre Korumanın Tarihi Sempozyumu: 7-8 Nisan 2000 İstanbul Teknik Üniversitesi Maçka Sosyal Tesisleri*, ed. Zeynep Boratav (Istanbul: Türkiye Ekonomik ve Toplumsal Tarih Vakfı, 2000).

12 Selçuk Dursun, "Forest and the State: History of Forestry and Forest Administration in the Ottoman Empire" (PhD diss., Sabancı University, 2007).

13 Chris Gratien, "Ottoman Environmental History: A New Area of Middle East Studies," *Arab Studies Journal* 20, no. 1 (Spring 2012): 246-54.

pact of the Little Ice Age on early modern Ottoman society and its contribution to the rise of the Celali revolts.[14] Alan Mikhail suggests in his work that changes to irrigation and flood control systems and technology in Egypt at the end of the eighteenth and beginning of the nineteenth centuries transformed both the ecology of Egypt and the relationships between the modern state and bureaucracy, on the one hand, and the local population, on the other hand.[15] Acknowledging the actions of various social actors such as peasants, technical experts, and local and central state officials, Mikhail focuses on disease, the timber trade, labor power, and agricultural production to narrate this transformation. Rather than giving priority to environmental over human factors, he writes a social history of eighteenth- and nineteenth-century Egypt from an environmental perspective. To do so, he pursues local voices by examining court cases and records on water and its use in Egypt. These two books, which appeared in same year, became seminal works for encouraging historians of the Ottoman Empire to incorporate an ecological perspective into their studies.

Together with the publishing of these works on Middle Eastern and Ottoman environmental history, many reviews began to be published in journals, and edited books on the subject emerged.[16] These reviews were

14 Sam White, *The Climate of Rebellion in the Early Modern Ottoman Empire* (New York: Cambridge University Press, 2011).

15 Alan Mikhail, *Nature and Empire in Ottoman Egypt: An Environmental History* (New York: Cambridge University Press, 2011). For Mikhail's other works, see *Water on Sand: Environmental Histories of the Middle East and North Africa* (New York: Oxford University Press, 2012); *The Animal in Ottoman Egypt* (New York: Oxford University Press, 2014); and *Under Osman's Tree: The Ottoman Empire, Egypt, and Environmental History* (Chicago: The University of Chicago Press, 2017).

16 See Alan Mikhail, "Global Implications of the Middle Eastern Environment," *History Compass* 9, no. 12 (December 2011): 952-70; Sam White, "Middle East Environmental History: Ideas from an Emerging Field," *World History Connected* 8, no. 2 (June 2011); Timothy Mitchell, "Afterword: Are Environmental Imaginaries Culturally Constructed?," in *Environmental Imaginaries of the Middle East and North Africa*, eds. Diana K. Davis and Edmund Burke III (Ohio: Ohio University Press, 2011); Dursun, "Çevresel Bağlantılar"; Selçuk Dursun, "Çevresel (Ekolojik) Tarih Lensinden Osmanlı Tarihine Yeniden

an attempt to establish points of contact between global environmental history and Middle Eastern environmental history and to set the boundaries and framework of the field of Middle Eastern and Ottoman environmental history.

This dissertation was born of an interest in environmental history. There is a general tendency in the literature of world environmental history to define environmental history as the history of interaction between human and non-human actors. In other words, different aspects of environmental history are thus divided into autonomous compartments rather than seen interconnectedly. On the other hand, this dissertation argues that environmental history is a means to understand the state, society, economy, and environment interconnectedly, beyond the conceptualization of environmental history that draws a distinction between society and its surrounding environment, and between human and non-human actors.

In fact, in recent years a new generation of Ottoman environmental historians sought to strengthen environmental history in the Ottoman historiography as a new field and go beyond a conception of environmental history based on a distinction between society and its surrounding environment. Two conferences on the environmental history of the Ottoman Empire and Turkey – the first one was organized by Onur İnal and Yavuz Köse in Hamburg in 2017 and the second one by Selçuk Dursun in Ankara in 2019 – were a crucial step in both putting Ottoman environmental historians together and creating a knowledge and self-reflection on Ottoman environmental history. *Seeds of Power* was published as a

---

Bakmak," in *New Trends in Ottoman Studies: Papers Presented at the Ciepo Symposium, Rethymno, 27 June-1 July 2012*, ed. Marinos Sarıyannis (Rethymno: University of Crete, 2014); Selçuk Dursun, "The History of Environmental Movements and the Development of Environmental Thought in Turkey, 1850-1980," in *Environmentalism in Central and Southeastern Europe: Historical Perspectives*, eds. Hrvoje Petrić and Ivana Žebec Šilj (Lanham, MD: Lexington Books, 2017); İnal, "Environmental History"; Onur İnal, "Ottoman and Turkish Environmental History: An Overview of the Field," *Environment and History* 24, no. 2 (2018): 297-99; Onur İnal and Yavuz Köse, Introduction to *Seeds of Power: Explorations in Ottoman Environmental History*, eds. Onur İnal and Yavuz Köse (Cambridge: White Horse Press, 2019).

part of this effort and the conference in Hamburg.[17] It is an edited volume of various articles that not only discuss the Ottoman Empire through the lens of environmental history but also gather history, politics, economy, and environment. It focuses on "how the Ottoman state and society interacted with other living organisms and non-living components of the environment" and stresses "the interconnections between the state, residents, animals, plants, and natural resources."[18] Thus, chapters of the volume contributes to the emergence of an environmental history in the Ottoman historiography that focuses on the interconnections, not a distinction between society and its surrounding environment.

This dissertation is also part of such an effort in Ottoman environmental history. As Alan Mikhail points out, environmental history has argued for "the role of nature as a historical actor."[19] In this sense, nature and non-human actors also played a crucial role in the late Ottoman Empire. A perspective of environmental history provides an awareness on the role of environmental factors in history. While this dissertation is aware of the role that non-human actors played in the late Ottoman Empire, it argues for an interconnected view of the environment, society, politics, and economics in Ottoman environmental history and stresses everyday encounters among various actors, human or non-human, at the local level.

The dissertation offers two means to go beyond a conceptualization, based on mutual relations and a clear distinction between social and environmental factors, in Ottoman environmental history. First, it is necessary to historicize the rise of the field of Ottoman environmental history starting in the 2000s in Turkey and contextualize it within a framework of neoliberal policies that had led to the destruction of the environment. Second, Ottoman environmental history must be associated with the main issues and subjects of Ottoman historiography; the late Ottoman period must be discussed from an environmental perspective such that fields such as law, politics, economics, technology, and environment,

17 İnal and Köse, *Seeds of Power*.

18 İnal and Köse, Introduction to *Seeds of Power*, 6.

19 Mikhail, *Nature and Empire in Ottoman Egypt*, 21.

which are usually treated as separate and autonomous, can be conceived as interconnected.

This dissertation proposes to first historicize the rise of the field of Ottoman environmental history in Turkey. Reviews on Ottoman environmental history usually emphasize the reason historians of the Ottoman Empire long neglected environmental history. In other words, they addressed why the field of environmental history only recently – in the 2000s – appeared in Ottoman historiography. Onur İnal attributes this delay to the isolation of historians of the Ottoman Empire from historians in other fields – and a resultant timidity to embrace new perspectives, paradigms, and approaches – and to the tendency of Ottoman historians to pursue a European style of history writing based on powerful personalities and political developments.[20] Although analyzing the reasons for such the delay and neglect is crucial for defining boundaries of Ottoman environmental history and drawing it closer to global environmental history, there is a risk of straying from the main subjects of Ottoman historiography, such as the role that the attempts of Ottoman government to establish authority over its territories played in the transformation of the environment in Ottoman territories. For this reason, this dissertation proposes to historicize the rise of Ottoman environmental history and focuses on why it appeared in Turkey in the 2000s rather than on why it was delayed. This approach allows environmental history to be contextualized within the framework of neoliberal policies that led to destruction in the environment in Turkey – events that by the start of the 2000s opened up opportunities for environmental history to problematize processes of modernity in Ottoman history, as Selçuk Dursun points out.[21]

Dursun divides the development of environmental thought in the late Ottoman and republican periods into three periods.[22] The first period, from the 1850s to the foundation of the Republic of Turkey, which he labels the utilitarian and conservationist period, the Ottoman government tried to limit the use of existing natural resources, especially of forests, as

20 İnal, "Environmental History," 24.

21 Dursun, "Çevresel Bağlantılar," xv.

22 Dursun, "The History of Environmental Movements."

a source of wealth for the treasury and the population. This objective encouraged Ottoman government to manage and regulate its forests and argue for "rational" forest management in the second half of the nineteenth century, which resulted in the commercialization and commodification of forest resources.[23] In the second period from the 1920s to the 1970s, nationalism and authoritarianism shaped a new conception of nature and the environment that found its expression in forestry. Taking inspiration from fascist Italy and Nazi Germany, this conception of nature equated the "love of forest" with the "love of nation" and "love of country."[24] Emphasis on the environment and forests, which were conceived of as national wealth, led to a concept of state ownership of forests. Forestry thus became a stronghold of statism in Turkey.[25]

The last period, from the 1980s onwards, coincided with the rise of neoliberal policies such as the privatization of water resources, the construction of hydroelectric power plants, and the rise of a construction sector that resulted in destruction both of the environment and of the nature-society relationship in Turkey.[26] Neoliberal developmentalism,[27] which equates the development of the country with economic growth based on the rise of construction sector in Turkey, especially transformed and devastated the environment. Together with this developmentalism,

> "a combination of unregulated industrialization, unplanned urbanization, heavy use of chemicals and pesticides in the agricultural sector, ill-managed tourism activities, energy and mega-irrigation projects with no regard for environmental dynamics, as well as high population growth, uneven development and income

23 Ibid., 115.

24 Ibid., 113.

25 Hande Özkan, "Cultivating the Nation in Nature: Forestry and Nation-Building in Turkey" (PhD diss., Yale University, 2013), 184.

26 Dursun, "History of Environmental Movements," 126.

27 For the use of this term in terms of mining in Turkey, see Fikret Adaman, Murat Arsel, and Bengi Akbulut, "Neoliberal Developmentalism, Authoritarian Populism, and Extractivism in the Countryside: The Soma Mining Disaster in Turkey," *Journal of Peasant Studies* 46, no. 3 (2019): 514-36.

> distribution, and persistent poverty, have been putting immense pressure over the ecological system of Turkey."[28]

These not only devastated and degraded the environment but created new social tensions and struggles and growing dissent, as such a concept of development puts both urban and rural populations at risk of losing their means of subsistence. For Dursun, these neoliberal policies and their impact on environment and nature encouraged historians and social scientists to search for and trace the origins of struggles over environmental and natural resources in Turkey's past and to question the privatization of these resources and their transfer to private companies.[29] This made it necessary to question the processes of modernity and conception of development in the late Ottoman and republican periods. This dissertation, also born of such an interest, argues that such a historicization of the rise of environmental history in Ottoman and Turkish historical studies makes it possible to problematize the late Ottoman period and understand the state, society, economy and environment interconnectedly.

The other way to move beyond a conceptualization of Ottoman environmental history based on mutual relations between social and environmental factors is to tie Ottoman environmental history to the main issues and subjects of Ottoman historiography and contextualize it within the late Ottoman period. This dissertation argues that reclamation and drainage projects were part of the attempts of nineteenth-century Ottoman government to establish authority over its territories, population, resources, economy, land, and environment within its geography through political, administrative, legal, fiscal, and infrastructural reforms. In other words, it is an environmental history that approaches the environment, society, politics, and economics interconnectedly rather than

28 Fikret Adaman and Murat Arsel, "Introduction," in *Environmentalism in Turkey: Between Democracy and Development?*, eds. Fikret Adaman and Murat Arsel (London: Routledge, 2016).

29 Dursun, "Çevresel Bağlantılar," 14.

focusing only on non-human actors and the environment itself. It discusses the environment within the political realm and scrutinizes the attempts of Ottoman government to establish authority over the environment and turn it into a productive and taxable resource. This was a political intervention that combined the environmental, the political, the social, and the economic interconnectedly.

From the end of the nineteenth century onwards, when political science became a specialized discipline, politics and political institutions were conceived of as autonomous and relatively independent of the economy and social life, including a state-centered perspective.[30] According to Timothy Mitchell, in social sciences, from the late 1970s onwards, a literature emerged in the social sciences that formulated the state as distinguishable and autonomous of society and that reduced it to a system of decision making: "a subjective realm of plans, programs, or ideas." This conception of the state interprets it as an omnipresent, unified political actor vis-à-vis society in a given time and space. Mitchell thinks that creating such a distinction between the state and society, or between the state and the economy was the most significant method by which the social sciences could articulate the power of the state.[31]

However, in recent decades, the focus of anthropological research is shifted to the analysis of "the ways in which people work and face everyday power relationships and political action, away from pure state/politics practices."[32] Distinctions between the state and society, or between the state and the economy, have become increasingly blurred. Nadir Özbek argues for such an anthropological perspective in Ottoman histo-

30 José Luis Escalona Victoria, "Anthropology of Power: Beyond State-Centric Politics," *Anthropological Theory* 16, no. 2-3 (September 2016): 250-51.

31 Timothy Mitchell, "Society, Economy, and the State Effect," in *State/Culture: State Formation after the Cultural Turn*, ed. George Steinmetz (Ithaca: Cornell University Press, 1999), 80-82. And see Timothy Mitchell, *Rule of Experts: Egypt, Techno-Politics, Modernity* (Berkeley: University of California Press, 2002), 3-6.

32 Victoria, "Anthropology of Power," 250-51.

riography that studies "the state through its particular concrete and material effects in people's lives."[33] He cites this literature in his studies on taxation, finance, and politics in the late Ottoman period. Accordingly, while Mitchell has proposed abandoning the idea of the state as an autonomous entity apart from and opposed to other entities called society or the economy,[34] Christian Krohn-Hansen and Knut G. Nustad see the construction of the state as "the outcome of complex sets of practices and processes." In line with this perspective that transcends binary opposition, a new approach emerged that highlights the ways that "social actors negotiate power and meaning." The focal point of this approach is everyday encounters at the local level.[35]

This approach provides the opportunity to explain the state, society, economy, and even environment interconnectedly rather than drawing absolute distinctions among them. This dissertation discusses the environment as a point of everyday encounter in which social actors such as the representatives of state bodies, individuals, and groups interact, struggle, and negotiate. Reclamation projects constitute a significant practice by which an "Ottoman imaginary of the environment" that does not allow for a separation of nature from politics can be discussed and understood. And it makes it possible for "modes of encountering, working with, and attempting to control a variety of forces, both human and nonhuman,"[36] to be understood.

33 Nadir Özbek, "The Politics of Taxation and the "Armenian Question" During the Late Ottoman Empire, 1876–1908," *Comparative Studies in Society and History* 54, no. 4 (October 2012), 774.

34 Mitchell, "Society, Economy, and the State Effect," 95.

35 Christian Krohn-Hansen and Knut G. Nustad, eds., *State Formation: Anthropological Perspectives* (London: Pluto Press, 2005), 12.

36 Mitchell, "Afterword," 271.

§ 1.2 Reclamation Projects in the Ottoman Empire

Reclamation and drainage projects of marshes, lakes, and rivers were part of a large scale process in which Ottoman government sought to establish authority over the territory, population, resources, economy, and environment of the empire. This was not a process in which the Ottoman state dominated society by means of its bureaucratic apparatus and other social actors simply obeyed, but a process in which all actors including state officials, entrepreneurs, merchants, landowners, peasants, fishers, and domestic and international companies clashed, and Ottoman government usually lacked the ability to establish authority. Therefore, reclamation and drainage projects first allowed the Ottoman government of the Hamidian period to intervene in local politics in Ottoman territories and to establish both the sultan's and ruling central and provincial elites' authority. Second, they were public works and development projects in which the natural resources of the empire were turned into productive elements of a national economy that was based on the development of the empire both because the government allowed a capitalist class of entrepreneurs and investors for making a profitable investment and accumulating capital and because fiscal constraints forced Ottoman government to do so.

First of all, the Ottoman Empire underwent a widespread social, financial, administrative, political, and environmental transformation in the nineteenth century. This transformation was related to government' attempts to integrate and control the empire's wide territories and populations against the growing authority of rival central and provincial elites. The growing authority of rival power groups in the center and in the Anatolian, Balkan, and Arabian provinces of the empire triggered Ottoman government to develop the mechanisms and institutions to eliminate these groups and to concentrate state authority in its own hands. In other words, Ottoman government sought methods of establishing its own authority over central and provincial rival power groups and thus to

establish direct control over everyday life.[37] The establishment of new bureaucratic branches concerning trade, public works, finance, health, and education as well as the creation of a modern division of labor within the bureaucracy were related to this purpose. Donald Quataert emphasizes the expanding bureaucracy's role in controlling, weakening, or destroying domestic rivals.[38]

Especially during the Hamidian period, the necessity of establishing ruling elites' power over rival groups such as central and provincial elites, tribal chiefs, and Armenian nationalists forced the sultan and government gain the consent of the population of the empire through various means to reinforce the regime's authority.[39] For example, the welfare system of the Hamidian era was a means to reinforce the political regime symbolized in Abdulhamid II's personality. Philanthropic activities during this period must be considered in the context of the sultan's ruling strategies and the political struggles among ruling elites.[40]

Within this framework, public works affairs in general and reclamation projects in particular should also be discussed as a means of establishing the Hamidian regime and ruling elites' authority. They were part of development projects that associated the prosperity of the Ottoman population with an increase in agricultural production. Public works and

37 Özkan Akpınar, "Geographical Imagination in School Geography During the Late Ottoman Period, 1876-1908" (Master's Thesis, Boğaziçi University, 2010), 13.

38 Donald Quataert, *The Ottoman Empire, 1700-1922* (Cambridge: Cambridge University Press, 2000), 107.

39 Nadir Özbek, "Osmanlı'dan Günümüze Sosyal Devlet," *Toplum ve Bilim* 92 (Spring 2002): 7-33. Selim Deringil emphasizes the legitimacy dimension of the Hamidian regime and points out that in the reign of Abdulhamid II, the necessity of legitimizing his power before the people was related to a legitimacy crisis that emerged from tensions between the sultan and bureaucratic elites. Selim Deringil, "Legitimacy Structures in the Ottoman State: The Reign of Abdulhamid II (1876-1909)," *International Journal of Middle East Studies* 23, no. 3 (August 1991): 345-59; and Selim Deringil, *The Well-Protected Domains: Ideology and the Legitimation of Power in the Ottoman Empire, 1876-1909* (London: I.B. Tauris, 1999).

40 Nadir Özbek, *Osmanlı İmparatorluğu'nda Sosyal Devlet: Siyaset, Iktidar ve Meşruiyet, 1876-1914* (Istanbul: İletişim Yayınları, 2002), 31-32.

reclamation projects constituted the foundation of such development because they made it possible to turn uncultivated lands into arable ones. Ottoman statesmen saw them as projects to increase the wealth and welfare of the population and country, and this increasing welfare would be a means of establishing Ottoman ruling elites' authority vis-à-vis rival groups. Bureaucratization of the process of implementing such projects in the provinces enabled the central government to intervene in local projects and thus in local politics because the authority to approve large-scale projects was belong to the central government. However, the competitive environment such projects created and the limits of the administrative and bureaucratic infrastructure sometimes led projects to come to grief.

Meanwhile, the financial crisis and fiscal constraints experienced in the Ottoman Empire starting in the 1870s also encouraged the Ottoman central government to see uncultivated and waste land as natural resources that could allow it to solve its financial problems. Reclamation projects enabled Ottoman government to deal with the financial problems of the empire in the last quarter of the nineteenth century by turning the environment and natural resources such as uncultivated land into elements of a productive national economy that was based on the development of the empire. In the Ottoman Empire of the nineteenth century, the physical geography and the environment underwent a far-reaching transformation. There were many reasons, among them the commercialization of agriculture, the immigration of Muslim populations from the Caucasus and the lost Balkan territories of the empire, and the Ottoman government's efforts to manage the environment and develop a new concept of public works were. However, the fact that the number of reclamation projects increased starting in the 1870s-1880s was most closely related to the financial crisis and worsening economic conditions experienced by the empire during this period as well as to government's attempts to increase the wealth of population. The Ottoman government in the Hamidian period encouraged entrepreneurs and investors to provide capital accumulation by making profitable investments and viewed the natural resources of the empire as wealth with which to create crucial

new sources of income and thus overcome its financial woes. Marshes and wetlands in fertile regions of the empire were among such resources because of their potential for being turned into arable land that could provide huge revenues.[41]

In fact, the Ottoman Empire had difficulty subsidizing its own expenditures starting from the end of the eighteenth century because of costly military efforts and wars. The Crimean War of 1853-1856 was a huge financial burden on the empire made worse by the Great Depression of the 1870s. The Ottoman Empire was deeply affected by unfavorable conditions in the world economy in this period,[42] and the inability of the Ottoman government to pay its public debts resulted in bankruptcy and European control over some Ottoman tax revenues.[43] The Russo-Ottoman War of 1877-78 not only increased the financial burden of the empire but also led to the loss of significant revenue-generating lands in Ottoman Balkan territories.[44]

Because of these financial difficulties, Ottoman government in the nineteenth century endeavored to increase the treasury's financial resources, which is why "the Ottomans launched radical experiments in public finance that were designed to centralize the government's fiscal operations and increase revenue for the treasury."[45] These experiments included financial reforms concerning the establishment of a "centralized

41 Dursun, "Forest and the State," 9-13. Dursun claims that the financial crisis of the 1860s and 1870s was significant for the development of modern forestry in the Ottoman Empire.

42 Şevket Pamuk claims that as result of an unfavorable conjuncture in the world economy, the growth of foreign trade slowed, the terms of trade deteriorated, a rapid decline in wheat prices affected producers, and European control was established over Ottoman finance. See Şevket Pamuk, "The Ottoman Empire in the "Great Depression" of 1873-1896," *The Journal of Economic History* 44, no. 1 (March 1984): 107-18.

43 For Ottoman debt and the establishment of European control over Ottoman finance, see Murat Birdal, *The Political Economy of Ottoman Public Debt: Insolvency and European Financial Control in the Late Nineteenth Century* (New York: I.B. Tauris, 2010).

44 Nadir Özbek, "Tax Farming in the Nineteenth-Century Ottoman Empire: Institutional Backwardness or the Emergence of Modern Public Finance?" *Journal of Interdisciplinary History* 49, no. 2 (Autumn 2018), 239-40.

45 Ibid., 224.

control over taxable resources of the empire and the capacity of government to transfer these resources to a central treasury,"[46] leading to a transformation of the Ottoman taxation system in the nineteenth century.[47]

These financial difficulties also prompted Ottoman government to turn the empire's own natural resources into productive, taxable elements in order to increase and establish control its sources of revenue. Because of the financial crisis, after the loss of the Balkans in 1878 Ahmed Cevdet Paşa emphasized the necessity to exploit the wealth of the Ottoman territories: "Because of the devastation of Rumelia, the revenues of the government have become reduced by nearly a half. In order to make up for this loss, the most important issue for us now is to render prosperous and increase the wealth of the Anatolian and Arap provinces."[48] The direct consequence of this endeavor was the re-imagination of the environment and nature itself as an object over which control was to be established and which could be taxed. In other words, the environment and nature became resources in the development of the country. Development programs and public works projects in general – and reclamation projects in marshes, lakes, and rivers, in particular – were also an extension of this modern imagination that resulted from empire's financial difficulties.

---

46 Ibid., 245. For other studies of the financial problems faced by the Ottoman Empire in the eighteenth and nineteenth centuries and the evolution of Ottoman financial institutions, see Şevket Pamuk, "The Evolution of Financial Institutions in the Ottoman Empire, 1600-1914," *Financial History Review* 11, no. 1 (April 2004): 7-32; Yavuz Cezar, *Osmanlı Maliyesinde Bunalım ve Değişim Dönemi: 18. Yüzyıldan Tanzimat'a Mali Tarih* (Istanbul: Alan Yayıncılık, 1986).

47 For the transformation of the taxation system and its social and political implications in the Ottoman Empire in the nineteenth century, see Özbek, "Tax Farming in the Nineteenth-Century Ottoman Empire"; Nadir Özbek, *İmparatorluğun Bedeli: Osmanlı'da Vergi, Siyaset ve Toplumsal Adalet (1839-1908)* (Istanbul: Boğaziçi Üniversitesi Yayınevi, 2015); Özbek, "The Politics of Taxation and the "Armenian Question","; Nadir Özbek, "Abdülhamid Rejimi, Vergi Tahsildarlığı ve Siyaset, 1876-1908," *Doğu Batı* 52 (February-March-April 2010): 159-97.

48 Stefan Weber, *Damascus: Ottoman Modernity and Urban Transformation, 1808-1918*, vol. 1 (Aarhus: Aarhus University Press, 2009), 40.

Therefore, a new concept of development emerged in which the growth of public works was considered to be a means of increasing the wealth of the country and the population by enhancing agricultural production and commercial activities. Some Ottoman statesmen thought that the development of the empire, together with the growth of public works and infrastructure projects in cities and the countryside, would solve all of the problems of the empire. However, reclamation projects in Ottoman territories reveal a critical aspect of this concept of development that resulted in social tensions between various actors. The Ottoman central government sought not only to enhance the wealth of the population through the introduction of public works that were to increase agricultural production and commercial activities but also to enable entrepreneurs making investment and accumulating capital. Reclamation projects promised a profitable investment and great revenues for them. In addition, the central government lacked the financial resources to carry out these projects. These reasons forced it to accomplish such projects by giving concessions to private companies. Indeed, majority of reclamation projects were carried out by private companies or otherwise failed and were aborted.

However, this concept of development – and reclamation projects in particular – created winners and losers. As David Blackbourn points out for the transformation of the German landscape, battle against nature was a story of both consent and coercion. In Germany while there was both popular and elite enthusiasm for the great civil and hydraulic engineering projects that changed the shape of the nature in the eighteenth and nineteenth centuries, fishing communities around fenlands resisted these projects because they were displaced. Thus, for Blackbourn, "the human domination of nature has a lot to tell us about the nature of human domination."[49] In the Ottoman Empire, while reclamation projects enabled some international and domestic entrepreneurs and their partners

49 David Blackbourn, *The Conquest of Nature: Water, Landscape and the Making of Modern Germany* (New York: W.W. Norton and Company, 2007), 7-8.

– that is, the concession holders – to secure great wealth by turning uncultivated land into agricultural land, it deprived some local actors such as peasants and fishers of their means of living. The projects sometimes led to opposition from local leading actors such as landowners and local administrators. Therefore, development and public works were highly contested fields that created winners and losers, thus leading to social tensions, struggles, and negotiations among various relevant actors. This dissertation focuses on such encounters around reclamation projects.

§ 1.3 Sources

The dissertation is primarily based on primary sources in the Ottoman archives about reclamation projects in marshes, lakes, and rivers in various parts of the Ottoman Empire. The collections of the Prime Ministry Ottoman Archives in Istanbul constitute the primary source for both the Ottoman historiography in general and the history of the late Ottoman period in particular and provide a rich material for this dissertation. Documents of the Ministry of Trade and Public Works are crucial for the content and scope of this study. The collection in the archive under the umbrella of this ministry includes documents concerning public works and infrastructure projects carried out by the Ottoman government in the second half of the nineteenth and the beginning of the twentieth centuries. The collection is classified according to the committees, commissions, and councils that constituted the body of the ministry. Among these commissions and councils, the Council of Public Works (Nafia Meclisi), the Office of the Legal Consultancy (Hukuk Müşavirliği), the Office of Technical Consultancy (Fen Müşavirliği), the Office of Technical Committee (Fen Heyeti), the Commission of Public Works Affairs (Umur-ı Nafia Komisyonu), and the Department of Public Works (Nafia Dairesi*)* are especially relevant as issues and problems concerning public works projects were discussed witin these departments.

Although documents classified under these commissions and councils are primarily concerned with the construction of railways and highways in Ottoman territories, they also include documents related to the

reclamation and drainage of marshes, lakes, and rivers as well as on the concessions and execution of these projects. Especially the collection classified under the Council of Public Works is remarkable because it was the official authority to which enterprising individuals and companies made their applications and submitted their documents. Thus, this collection includes the contracts and technical specifications for the reclamation projects as well as technical reports written by Ottoman and foreign engineers and technical experts; petitions of complaint submitted by relevant persons such as landowners, concession holders, local peasants, and institutions like the Public Debt Administration; and the responses of central and local administrations and public works bureaucracies to these complaints and demands. Therefore, this collection reflects the multiplicity of encounters among various social actors involved in reclamation projects. Chapter 5, on the reclamation project in Lake Lapsista and marshes in the Ottoman Ioannina, makes particular reference to this collection; the dossier on this case includes about a thousand pages of documents.

In addition, because of the legal procedures that applied to public works projects carried out by private companies and individuals in the late Ottoman period, the Council of State (Şura-yı Devlet) also played a prominent role in the reclamation and drainage projects. Applications made by private entrepreneurs or companies or the concession to undertake a public works project it in the Ottoman Empire were transmitted from the Council of Public Works to the Council of State, and the Council of State ultimately discussed the candidates and applications and made the final decisions concerning which application for a concession provided the most favorable terms for the country and treasury. For this reason, the collection of the Council of State in the Ottoman archives is also significant for this study. In addition to these collections, documents in the collections of Imperial Orders (İradeler), the Ministry of Internal Affairs (Dahiliye Nezareti), the Sublime Porte (Babıâli), the Supreme Council (Meclis-i Vâlâ), and the Grand Vizirate (Sadaret) were used in the study.

Apart from archival documents in the Ottoman archives, issues of two journals on public works affairs published by the Ottoman government during the Hamidian period are used in the study. The twenty-four issues of *Mecmua-ı Umur-u Nafia* (Journal of Public Works) were published between from 1884 and 1886. The other journal, *Umur-ı Nafia ve Ziraat Mecmuası* (Journal of Public Works and Agriculture), was intermittently published from 1887 to 1906. Both of these journals were predominantly devoted to the construction of railways and highways in Ottoman territories and European countries, although they reported on and published articles on all varieties of public works. Some of their articles were devoted to news on reclamation projects in Ottoman territories.

§ 1.4 The Structure of the Study

This dissertation discusses reclamation projects in marshes, lakes, and rivers in the Ottoman Empire. Its main concern is reclamation projects in marshy regions, but it touches on projects involving lakes and rivers because some reclamation projects also concerns the draining of marshy regions connected to lakes and rivers. In other words, they were integrated projects. The Ottoman Empire had many marshy regions of various scales in its wide geography, and reclamation projects took place in many parts of the empire. However, from the middle of the nineteenth century onwards, when the Ottoman Empire and especially its Eastern Mediterranean region became increasingly integrated with international markets, agricultural land in the Balkans and Western Anatolia became a great source of wealth that made the reclamation of uncultivated lands such as wastelands and wetlands a profitable investment. For this reason, the number of reclamation projects in regions such as Thessalonica, Ioannina, and Izmir gradually increased in the second half of the century. Therefore, the dissertation focuses on reclamation projects in regions that allow the study of the encounters of various international and domestic actors.

The dissertation, together with its introduction and conclusion, consists of seven chapters. Each chapter is organized thematically. Chapter 2

discusses reclamation projects as a part of public works projects that increasingly became one of the main areas of responsibility of the modern state as a result of a new concept of development based on the rise of agricultural production and commercial activities in the second half of the nineteenth century. The Ottoman statesmen viewed development and public works as a means to solve the problems of the empire by enhancing production and commerce which would become a source of tax revenues for the treasury and increase the wealth of the empire and population. Reclamation projects were part of such an endeavor because they turned uncultivated land into agricultural land. For this reason, the chapter focuses first on the emergence of a particular concept of development and public works in the Ottoman Empire and then discusses the public works programs formulated by Ottoman statesmen and the creation of a bureaucracy by which public works projects were designed and carried out in cities and the countryside.

Chapter 3 addresses the inventory of marshes in Ottoman territories. Although it focuses on marshy regions, it touches on lakes and rivers connected to marshes. The chapter firstly describes marshes in imperial territories and refers to descriptions of marshes by international and domestic travelers from various times in the nineteenth century. These descriptions show how a perception of marshes and the damage to which they led emerged. Secondly, the chapter discusses the motivations behind reclamation projects. Although the main motivation was an endeavor to increase agricultural production and, thereby, the welfare and prosperity of the country, other reasons such as precluding floods, preventing disease, settling refugees on the newly available land, and maintaining security in Ottoman territories were also prominent. Lastly, the chapter addresses the methods of financing reclamation projects.

Chapter 4, which uses a reclamation project along the Karasu River and Lake Tahyanos in Serez, Thessalonica, as a case study, reveals the relationship between the increasing significance of the Eastern Mediterranean for the international trade, on one hand, and the rise of reclamation projects in the Ottoman Empire, on the other. International and domestic entrepreneurs were among the most important actors in reclamation

projects in the Balkan territories of the empire. The rise of the Eastern Mediterranean ports for international trade and the commercialization of agricultural production in the Ottoman Empire made land a profitable resource over which entrepreneurs struggled. This resulted in attempts to turn wetland regions into arable land. Therefore, this chapter narrates the evolution of a reclamation project from the efforts of a local administration to a full-fledged commercial enterprise. However, it is a story of failure. The project along the Karasu River and Lake Tahyanos reveals that the process of reclamation was highly contested as various actors such as state officials, the Public Debt Administration, entrepreneurs, landowners, and peasants struggled over the wetland region. Both central and local government suffered extreme hardships in coping with these difficulties.

Chapters 5 and 6 discuss the project of reclamation of Lake Lapsista and the marshes between it and Lake Ioannina in the province of Ioannina. Chapter 5 focuses on the engineering dimension of reclamation projects with respect to the case of Lake Lapsista. It points out that reclamation projects were the result of modern engineering knowledge, but traditional local knowledge influenced the creation of such knowledge. However, while practitioners of modern hydraulic engineering knowledge – engineers and technical experts – elaborated reclamation projects in detail and planned them on maps, their application in the field often led to unintended consequences, the transformation of the physical landscape, and the alteration of the ecology – such as the killing of fish species. The projects resulted in dramatic changes to the daily living activities of the local population and thus to their resistance to some reclamation projects, as was the case for Lake Lapsista. Therefore, the chapter firstly addresses the creation of modern engineering knowledge in the Ottoman Empire and then discusses the Lake Lapsista case in terms of tensions caused by the engineering of the reclamation project among various social actors such as local fishers, the concession owner, landowners, state officials, and the tax farmer of the fishing tax.

Lastly, Chapter 6 focuses on the dimension of property in reclamation projects, again in the context of the Lake Lapsista case. Reclamation projects created struggles over the definition of property and ownership of reclaimed lands as a result of the commercialization of agriculture and commodification of land. Apart from the contested nature of land in the Ottoman Empire in the nineteenth century, ambiguity regarding the legal status of wastelands in Ottoman real property law and the contested nature of the mechanisms related to the definition of property made the ownership of reclaimed land from marshes, lakes, and rivers sites of contestation among various actors such as concession holders, landowners, and peasants. In such conflicts, claimants resorted to various vehicles to support their own claims to the reclaimed land as well as to fraudulent actions to manipulate the law and legal arrangements in their own interests. This chapter focuses on these actors and their struggles over the ownership of land reclaimed from Lake Lapsista. The chapter firstly discusses the legal framework and legal and administrative procedures necessary to make property out of a marsh, lake, or river, then addresses the struggle for possession of the reclaimed marsh and lake in Lapsista, and lastly exposes the efforts of claimants to influence the mapping and surveying process and the commissions to demarcate borders in order to have the upper hand over rivals.

2

The Affairs of Public Works in the Ottoman Empire

During the nineteenth century, apart from efforts to establish direct political authority over its territories politically and to intervene in the daily lives of the population, Ottoman governments began to operate in areas that they had not previously considered their responsibility and to see the growth of public works in the empire as an important way of increasing the wealth of the empire. This was a modern concept peculiar to the nineteenth century that represented a deep transformation of the concept of improvement and development. This conception of public works was based on agricultural-based development that was aimed at modernizing and increasing agricultural production and included the draining and reclamation of wetland regions such as marshes, lakes, and rivers as well as the construction of railways, highways, bridges, buildings, and irrigation systems. This chapter argues that projects to reclaim marshes, lakes, and rivers were a part of this concept of public works and development which led to the transformation of the environment and landscape in Ottoman territories.

Public works affairs – such as the development of highway and railway transportation networks and their spread into the provinces, the construction of bridges and flood control systems in waterways, the extension of water transportation, the creation of new irrigation facilities, and the reclamation of rivers, lakes, and marshes – became one of the

issues most emphasized by Ottoman statesmen, especially in the second half of the nineteenth century. For example, for Hasan Fehmi Paşa, one of the Ministers of Public Works in the Hamidian period, the prosperity and progress of the empire was dependent on the care taken in public works. Hasan Fehmi Paşa, like many other Ottoman statesmen in the nineteenth century, viewed public works as part of a far-reaching program of improvement (imar) of the country possible that would increase the welfare and wealth of the population. It was a magic wand to solve the empire's internal and external problems. Development and improvement of imperial territories by growing public works would enhance the wealth of both the country and the population by increasing agricultural production and commercial activity in the empire, in turn enabling the central government to establish direct authority over the critical provinces of the empire.

Ottoman statesmen, because of their belief that development, improvement, public works, and infrastructure at the power to solve the problems of the empire, attributed great importance to public works and infrastructure projects in cities and in the countryside. During this century, a public works bureaucracy was created to carry out these projects in a planned, coordinated way. This bureaucracy was the responsibility of a newly-established Ministry of Public Works. All public works and infrastructure projects in the Ottoman Empire were planned and carried out or assigned to private companies under the supervision of the Ministry of Public Works. The ministry hosted officials such as engineers, technicians, and civil servants who believed in the power of development and public works and cared about the wealth and welfare of the population and the country.

Ottoman government paid special attention to the reclamation of marshy regions – turning them into fertile farmland by draining and cleaning lands that were under water – in line with the concept of agricultural-based development that was intended to increase production. This trend was encouraged by the fact that the commercialization of agriculture and a drastic rise in both domestic and foreign markets made

crops and lands under cultivation much more profitable for both landowners and entrepreneurs. In other words, public works that increased agricultural production and the wealth of the country were seen as necessary investments by Ottoman statesmen, especially those within the public works bureaucracy. Many statesmen and officials, who, like Hasan Fehmi Paşa, wrote reports on the development of the Ottoman Empire and contributed to the formulation of development based on the growth of public works and agricultural production, emphasized the necessity of carrying out reclamation projects in marshy regions in the Balkan and Anatolian territories of the empire. Both they and Ottoman public works bureaucrats, in the name of the Ministry of Public Works, played a significant role in defining the extent and content of reclamation projects as well as other public works projects. This chapter, after discussing the emergence of this concept of public works and development, addresses public works programs in the empire in the second half of the century, the reports and points of view of Ottoman statesmen on development and public works in the empire, and the creation of an Ottoman public works bureaucracy.

§ 2.1 Public Works in the Ottoman Empire before the Nineteenth Century

Before public works became a public service in the nineteenth century, there was no central organization for construction projects such as roads, bridges, and waterways. During this period, the improvement of a region was expressed using one of two terms. *İmar* (improving a place) referred to the improvement of cities and the construction of public buildings and roads, especially by waqfs. The other word, *şenlendirme* (rejuvenation), meant the improvement of rural regions, particularly to making a deserted and unpopulated region habitable and prosperous or to establishing a new settlement, usually by exiles. The most important reason for rejuvenating a region was to increase long-distance trade by enhancing

agricultural production and ensuring the security of trade routes.[1] Because the opening, maintenance, and security of main trade routes increased both tax revenues and the military power of the central government, the conception of improvement and development was largely based on keeping main routes open and secure in both cities and in the countryside.

These works were usually carried out by the local population or organizations, not the central government. Before the nineteenth century there were some organizations in the Ottoman Empire that made transportation networks possible. These organizations constructed, maintained, and secured road networks and bridges: pavers (kaldırımcılar), *derbend* settlers, navigators (gemiciler), and bridge makers (köprücüler). These groups were responsible for the construction, maintenance, and security of roads and bridges and for passage over rivers that did not have bridges.[2]

Pavers, who were usually constructing roads in cities and towns, were organized like artisans and were not exempt from taxes, unlike *derbend* settlers, navigators, and bridge makers. Before the nineteenth century, the Ottoman central government restricted its own road construction to wartime projects. Before and during wars, the central government constructed strongholds and roads. The Corps of Court Architects (Hassa Mimarları Ocağı) and the chief court architect (mimar-başı) controlled building activities in Istanbul and throughout the empire. Not only state buildings and roads but also other construction by non-state persons were overseen by the Corps of Court Architects; anyone wishing to construct any building was first obligated to obtain a license from the court

1 İlhan Tekeli and Selim İlkin, "Mustafa Celâleddin Bey'in "Bir Eyaletin Islah ve İmarı Hakkında Mükâleme" Adlı Risâlesi ve 19. Yüzyılda Osmanlı İmparatorluğu'nda İmar Kavramının Gelişimi Üzerine Düşünceler," in *Cumhuriyetin Harcı: Modernitenin Altyapısı Oluşurken*, eds. İlhan Tekeli and Selim İlkin (Istanbul: İstanbul Bilgi Üniversitesi Yayınları, 2010), 3-4. Ömer Lütfi Barkan, "Bir İskân ve Kolonizasyon Metodu Olarak Sürgünler," *İktisat Fakültesi Mecmuası* 11-15 (1949-1954).

2 T.C. Bayındırlık Bakanlığı, *Bayındırlıkta 50 Yıl* (Ankara: T.C. Bayındırlık Bakanlığı, 1973), 12-29. Cengiz Orhonlu, *Osmanlı İmparatorluğu'nda Şehircilik ve Ulaşım Üzerine Araştırmalar* (Izmir: Ege Üniversitesi Edebiyat Fakültesi Yayınları, 1984), 27-28.

architect. In the seventeenth century, the central government appointed state architects in many provinces, and thus an organization of city architects emerged. City architects that were appointed by the state gave permits for new buildings and supervised construction artisans in their own realms.[3] They also undertook road construction throughout the empire, especially during wartime. The sections of these roads passing through cities were made by pavers under the control and supervision of the chief court architect or other city architects. When construction was completed, architects appointed by the chief court architect would inspect the new roads.[4]

Unlike pavers, the other groups concerned with the improvement of regions, that is *derbend*s, navigators, and bridge makers, worked in the countryside and were exempted from some taxes in return for their duties. Before the nineteenth century, the *derbend* was the most important, effective organization for the improvement of rural regions far from the center of the empire. It was a kind of rural police created to ensure the security of the transportation network, roads, and mountain passes especially in unpopulated regions near the junctions of significant commercial and military routes since the fifteenth century.[5] This organization was based on tax exemption. In other words, a household or community appointed as *derbend* settlement was exempted from irregular wartime taxes (avarız-ı divaniyye) and customary state taxes (tekalif-i örfiyye) in exchange, but these settlers had to pay a tithe (öşür). *Derbend* settlers had three crucial responsibilities. First of all, they ensured the security of roads and mountain passes. Second, the organization was to transform from a rural police into a colony in a deserted, unpopulated region. In other words, they were to rejuvenate (*şenlendirmek,* in Ottoman Turkish) these regions. The Ottoman government tried to "create a critical mass of

3 Ibid., 20.

4 Ibid., 37-38.

5 Cengiz Orhonlu, *Osmanlı İmparatorluğunda Derbend Teşkilatı* (Istanbul: Eren Yayıncılık, 1990).

population to tip the balance between wild and settled territory."[6] Settling *derbend* was a way to deal with bandits and rebel groups that caused disorder in unpopulated regions. Such colonies of *derbend* settlers had the right to carry various arms, ensured the security of merchants and travelers on routes in the regions in which they settled, and were integrated into the process of agricultural production (because they were also engaged in cultivation or husbandry).[7]

The task of *derbend* settlers were not limited to settling unpopulated regions and securing roads or mountain passes. Their job was also closely related to the implementation of some construction projects in the countryside. One of their jobs was to construct new roads and to maintain and repair them in their localities. Before the nineteenth century, the central government itself was interested in the construction of new road networks only in wartime. In peacetime, constructing new roads and maintaining them was the responsibility of local communities and administrations. The central government ordered local governors to care for and maintain especially the roads that were military and trade routes because of their significance for military operations and commercial activity. Local governors used the labor of *derbend* settlers for the construction and maintenance of these roads. They worked to open new roads, enlarge narrow ones, and remove obstacles along the roads. Sometimes it was necessary to drain and reclaim marshes along the routes.[8] Some *derbend* settlers were responsible for waterways and were appointed to create and maintain water supply mechanisms for cities, towns, and villages.[9] Therefore, the *derbend* was also responsible for implementing construction works in rural regions in the early modern period, which would later be called "public works" and would be undertaken by the modern state later in the nineteenth century.

6 Sam White, *The Climate of Rebellion in the Early Modern Ottoman Empire* (New York: Cambridge University Press, 2011), 44.

7 Orhonlu, *Osmanlı İmparatorluğunda Derbend Teşkilatı*, 73-74.

8 Ibid., 70-71.

9 Ibid., 41.

Navigators were not those who worked in ships navigating the seas; rather, they comprised a group which provided the passage of people via boats in places where road networks intersected rivers and lakes and where it was impossible to construct a bridge. Navigators were exempt from some taxes in return for their work, as was the case for the *derbend* system.[10]

And last, bridge makers were engaged in maintenance and repair of bridges to ensure the continuity of the road networks. In Ottoman territories before the nineteenth century, bridges were constructed either by the central government itself or by waqfs, but the program was not far-reaching. After their construction, the central state and waqfs left their maintenance and repair to the bridge makers, who did not have to pay irregular wartime taxes and customary taxes.[11]

§ 2.2 The Transformation of Public Works in the Nineteenth Century

The Ottoman Empire witnessed far-reaching transformations in social, economic, cultural, political, and administrative realms in the nineteenth century. This transformation, which was closely associated with various internal and external dynamics of the empire, had not only a lasting impact on society, administration, and the economy but also resulted in a change in the concept of administration of Ottoman statesmen in the center and in the provinces of the empire. In the nineteenth century, one of the most important aims of the central government was to extend the scope of its control and authority over society to counterbalance the increasing power of both central and provincial elites. The central government tried to eliminate various rival groups that it began to see as a threat to its own authority and to constitute a central authority using modern techniques and methods.

10 Orhonlu, *Osmanlı İmparatorluğu'nda Şehircilik*, 104-06.

11 Ibid., 70-76.

The reorganization of state bureaucracy was a major instrument to establish such authority. During this century, the central government expanded the size of the state bureaucracy and employed many civil servants in its newly created branches. According to Donald Quataert, the number of civil officials at the end of the eighteenth century was about 2,000, but it reached 35,000 by 1908.[12] The bureaucracy in the center and in the provinces was not only enlarged but also qualitatively transformed into a modern apparatus; it took on new functions and a modern division of labor and specialization. In other words, the central government assumed responsibility in various new areas such as health, education, trade, and public works for which it had not previously carried out any systematic activities. It created new bureaucratic branches to develop new forms of relationship between itself and the population of the empire. Therefore,

> "the central state employed the expanding bureaucracy and military – along with a host of other new technologies such as the telegraph, railroads, and photography – to control, weaken, or destroy domestic rivals. With varying degrees of success, it battled against such diverse groups as the Jannisaries, guilds, tribes, religious authorities, and provincial notables – bodies that had mediated between the central state and the subject population – to gain political dominance and greater access to the wealth being generated within Ottoman society. There is no doubt that the late nineteenth-century central state exerted more power over its subjects and competing power clusters than ever before in Ottoman history."[13]

In the nineteenth century one area for which the Ottoman government assumed responsibility was public works. The interest in the improvement of public works in Ottoman territories was important for two reasons. First, Ottoman statesmen began to see public works projects

12 Quataert, *The Ottoman Empire*, 62.

13 Ibid., 63.

such as construction of railways, roads, bridges, dams, and canals as primary instruments to increase the country's revenue and the welfare of the population. This was a new conception. Before the nineteenth century, the central state's conception of improving a place was limited to the purpose of increasing tax revenues by enhancing agricultural production and ensuring the security of trade routes. The central government now began to care about its population's welfare. State planning and implementation of new public works projects would increase agricultural production and commercial activity and enhance the wealth and welfare of the population throughout the empire. It would enhance state revenues as well and form the basis for a new relationship between itself and the population of the empire. In the eyes of the population, it would legitimize the central government's authority vis-à-vis rival authority groups that had previously mediated between the central government and the population.

Second, public works projects and the time spent planning, contracting, and constructing such projects – especially in the provinces – enabled the central government to intervene in local politics and power relations, as described in chapter 4. In the nineteenth century, the central government intended to carry out public works projects with a budget from the treasury dedicated for that purpose. However, because of the difficulty of financing all these projects from the state treasury, the government ended up granting concessions to companies. Some profitable projects in the provinces led to great competition among entrepreneurs, and the central state bureaucracy (the Supreme Council and the Council of State) assumed a decision-making role in these bids for concessions. Meanwhile, different branches of the bureaucracy mediated disputes between concession holders and the local population concerning the projects. They allowed the central government to intervene in local politics and establish and consolidate its own authority.

§ 2.3 Public Works Programs

As it assumed the responsibility for public works in the nineteenth century, the central government began to create a public works bureaucracy and to employ competent officials and statesmen – ranging from technical staff such as engineers, technicians, and conductors to civil servants – who believed in the power of development, improvement, public works, and infrastructure to solve the problems of the empire. This bureaucracy and its civil officials in different periods prepared comprehensive programs for the development and improvement of the empire. These were usually prepared by the Ministry of Public Works upon the order of the sultan or the government and presented comprehensive proposals for the development of public works throughout imperial territories. They especially emphasized infrastructure projects such as railways, roads, bridges, irrigation systems, canals, and the reclamation of marshes, lakes, and rivers to increase the country's production and trade capacity. In the late Ottoman period, three crucial public works programs were prepared and carried out.

2.3.1 *Councils for Public Works*

In the second half of the nineteenth century the first comprehensive program for public works in the Ottoman Empire was prepared upon the order of the Supreme Council in 1845. The Supreme Council decided to establish temporary Councils for Public Works (Mecâlis-i İmariyye) under its own authority and send them to the provinces to obtain adequate information about the general situation of the provinces.[14] There were two

14 For Councils for Public Works, see Musa Çadırcı, *Tanzimat Sürecinde Türkiye: Ülke Yönetimi* (Ankara: İmge Kitabevi Yayınları, 2007), 201-07; Musa Çadırcı, *Tanzimat Döneminde Anadolu Kentlerinin Sosyal ve Ekonomik Yapısı* (Ankara: Türk Tarih Kurumu Yayınları, 1997), 199-202; Tekeli and İlkin, "Mustafa Celâleddin Bey'in "Bir Eyaletin Islah ve İmarı Hakkında Mükâleme" Adlı Risâlesi," 6; Mehmet Seyitdanlıoğlu, "Tanzimat Dönemi İmar Meclisleri," *Ankara Üniversitesi Osmanlı Tarihi Araştırma ve Uygulama Merkezi Dergisi*

purposes for this initiative. The first was to obtain information about the problems and needs of each province from local representatives, and the second one was to explain Tanzimat reforms to local populations.

In a speech to the Supreme Council on 13 January 1845, Abdülmecid asked that certain problems in the application of Tanzimat reforms be solved, after which the Supreme Council demanded reports from local notables about the problems and necessities for accomplishing these reforms in their own regions. After local representatives presented their opinions verbally and in reports, the Supreme Council discerned some common problems in all provinces. The most urgent problem on which local representatives put much stress concerned the fair collection of taxes. The second problem consisted of issues concerning improvement of provinces, in other words public works such as the construction of new roads and bridges, repair of old ones, and reclamation of rivers. After determining these problems, the Supreme Council decided to establish temporary Councils for Public Works and send them to provinces in order to specify what should be done with respect to public works in each province.

For this purpose, the Anatolian and Balkan provinces of the empire were divided into ten regions, and a Council for Public Works consisting of three members was sent to each. After undertaking a survey lasting 7 to 8 months (or one year in some regions), these councils were to determine existing problems and suggest proposals to improve public works, agriculture, and trade that would address these problems in their own areas of responsibility. They visited *sancak*s and *kaza*s in the provinces and consulted with local administrators and notables. They then prepared their own reports on public works in their respective regions. The

---

(OTAM), no. 3 (January 1992): 323-30; Ayla Efe, "İmar Meclisi Raporlarının Kaynak Niteliği Üzerine Bir Değerlendirme: Tekfurdağı Örneği," *Belleten* 75, no. 273 (August 2011): 471-505; Aya Efe, "İmar Meclisi Raporlarına Göre Niş Bölgesi," in *Uluslararası Osmanlı ve Cumhuriyet Dönemi Türk-Bulgar İlişkileri Sempozyumu, 11-13 Mayıs 2005* (Eskişehir: Odunpazarı Belediyesi Yayınları, 2005); Metin Ünver, "Tanzimat Taşrasının İstanbul Buluşması: İmar Meclislerinin Kurulması Süreci," in *Eski Çağ'dan Günümüze Yönetim Anlayışı ve Kurumlar*, ed. Feridun M. Emecen (Istanbul: Kitabevi Yayınları, 2009).

reports by these temporary councils included suggestions on the construction of roads, bridges, and waterways and concentrated on places near Istanbul.[15]

While most of the suggestions in the reports of the Councils for Public Works did not come to fruition, their contents provide clues about Ottoman statesmen's concept of public works in particular and about development in the Tanzimat period in general. The reports not only provide information about local problems and offer solutions on a region by region basis but also include a detailed data on their demographic structure and agricultural, commercial, and manufacturing potential. Therefore, these reports allow an evaluation of the social and economic conditions of the regions that were inspected. Unlike inspection committees created in the Tanzimat period to inspect the local application of Tanzimat reforms, the Councils for Public Works were established to determine the economic potential of regions, calculate the cost of their development, and draw up a road map for development concentrating on agriculture, commerce, manufacturing, and public works. Because of the importance of transportation for both domestic and foreign trade, councils emphasized the construction of roads and river navigation in order to increase the capacity of agricultural production. In this respect, the work of the Councils for Public Works were not a continuation of that of the inspection committees created earlier in the Tanzimat period but were the first examples of public works programs and of the various reports of Ottoman statesmen on public works in the second half of the nineteenth century.[16]

Reports of the Councils for Public Works presented concrete proposals: they calculated the expense necessary for the construction of the proposed roads and bridges and the amount of credit to be given to farmers. The sum total exceeded 27 million piasters (guruş), but because the treasury could not cover this sum, the government decided to implement

15 Çadırcı, *Tanzimat Sürecinde Türkiye*, 201-7; Seyitdanlıoğlu, "Tanzimat Dönemi İmar Meclisleri," 329.

16 Efe, "İmar Meclisi Raporlarının Kaynak Niteliği Üzerine Bir Değerlendirme," 497.

a detailed development program in a limited region.[17] The government determined two pilot areas for this development program, which was called a "civil reorganization" (tensikat-ı mülkiyye). These areas were Gelibolu and Izmit, and the implementation of the program was to start in 1846. The program did not remain limited to these two regions but was extended to include the central districts of Edirne and Bursa. There were four aspects to the Tanzimat development program called *tensikat-ı mülkiyye.* The first aspect was improvement of taxes. The second concerned the prosperity (ma'muriyet) of the country – that is, the improvement of transportation facilities, such as new roads, river navigation, and the creation of agricultural credit. The third aspect included the establishment of central system of education, and the last consisted of administrative reforms.[18] The first two of these aspects, concerning taxes and public works, were planned to facilitate regional development. The decision-making body of *tensikat-ı mülkiyye* was the Supreme Council, which at the same time had the power to confirm and inspect the implementation process. The Supreme Council ordered *sancak* councils to implement the four elements associated with the *tensikat-ı mülkiyye*.[19]

2.3.2 *The Program by Hasan Fehmi Paşa*

Hasan Fehmi Paşa prepared one of the most important, comprehensive programs of public works in the second half of the nineteenth century in 1880. The importance that Ottoman statesmen attributed to public works during this period is evident in his report. Hasan Fehmi Paşa was one of

17 Tevfik Güran, "Tanzimat Döneminde Tarım Politikası (1839-1876)," in *Türkiye'nin Sosyal ve Ekonomik Tarihi (1071-1920)*, eds. Osman Okyar and Halil İnalcık (Ankara: Meteksan Limited Şirketi, 1980), p. 273.

18 Ayla Efe, "Tanzimat Devleti, İmar-ı Mülk ve Tebaa Politikaları ve Bir Sancak," *SDÜ Fen Edebiyat Fakültesi Sosyal Bilimler Dergisi*, no. 38 (August 2016): 1-13; Rifat Önsoy, *Tanzimat Dönemi Osmanlı Sanayii ve Sanayileşme Politikası* (Istanbul: Türkiye İş Bankası Kültür Yayınları, 1988), 42.

19 Efe, "Tanzimat Devleti, İmar-ı Mülk ve Tebaa Politikaları," 5-6.

the Ministers of Public Works in the Hamidian period.[20] He sent a report on the state of public works in the Ottoman Empire in the nineteenth century to the Sublime Porte in June 1880[21] following the research of the Ministry of Public Works in Anatolian and Arabian provinces of the empire.[22] The development program emphasized the importance of productive use of natural resources within the country's territories. He highlighted that the Ottoman Empire possessed rich natural resources but did not effectively exploit them because of poor infrastructure. He argued that it was necessary to invest in infrastructure in order to provide for the prosperity and sovereignty of the nation, to increase the wealth and happiness of its population, and to increase revenue. It would serve the public interest (menafi-i umumiyye).

After pointing out that the prosperity and progress of the empire was dependent on the great care took in public works, the report enumerates public works projects needed in the provinces such as roads, bridges, railways, ports, land to be irrigated, and marshes, rivers and lakes to be

20 Hasan Fehmi Paşa, who was appointed as Minister of Public Works, was a statesman who served in various ranks of the state bureaucracy such as Chairman of the Commercial Court (Ticaret Mahkemesi Reisi), Minister of the Sultan's Treasury (Hazine-i Hassa Nazırı), Minister of Justice (Adliye Nazırı), and governor of Salonica. In addition, he was a member of the first Ottoman parliament in 1877. T.C. Çevre ve Şehircilik Bakanlığı, *Nâfiâ Nezareti'nden Çevre ve Şehircilik Bakanlığı'na (1848- 2015)* (Ankara: T.C. Çevre ve Şehircilik Bakanlığı, 2015), 182.

21 Cengiz Orhonlu points out that Celal Dinçer ignores the publication of the report in 1879. Orhonlu, *Osmanlı İmparatorluğu'nda Şehircilik*, 59.

22 Celal Dinçer, "Osmanlı Vezirlerinden Hasan Fehmi Paşa'nın Anadolu'da Bayındırlık Işlerine Dair Hazırladığı Layiha," *Belgeler-Türk Tarih Belgeleri Dergisi* V-VIII, no. 9-12 (1968-1971): 153-233. For another review and translation of the report into modern Turkish, see Hayri Mutluçağ, "Yakın Tarihimizde İlk Kalkınma Planı (Sosyal-İktisadi ve Teknik)," *Belgelerle Türk Tarihi Dergisi: Dün, Bugün, Yarın*, no. 49 (2001): 17-25; Hayri Mutluçağ, "Yakın Tarihimizde İlk Sosyal, İktisadi ve Teknik Kalkınma Planı II," *Belgelerle Türk Tarihi Dergisi: Dün, Bugün, Yarın*, no. 50 (2001): 71-77; Hayri Mutluçağ, "Yakın Tarihimizde İlk Sosyal, İktisadi ve Teknik Kalkınma Planı III," *Belgelerle Türk Tarihi Dergisi: Dün, Bugün, Yarın*, no. 51 (2001): 32-38; Hayri Mutluçağ, "Yakın Tarihimizde İlk Sosyal, İktisadi ve Teknik Kalkınma Planı IV," *Belgelerle Türk Tarihi Dergisi: Dün, Bugün, Yarın*, no. 52 (2001): 45-49; Hayri Mutluçağ, "Yakın Tarihimizde İlk Sosyal, İktisadi ve Teknik Kalkınma Planı V," *Belgelerle Türk Tarihi Dergisi: Dün, Bugün, Yarın*, no. 54 (2001): 38-48.

reclaimed. According to Hasan Fehmi Paşa, the prosperity of a country resulted from such investment in public works. He even compared the state of roads and bridges in the Ottoman Empire with those in the West and indicated that the latter's wealth arose from their efforts in education and public works. Tying the lack of spiritual and material progress on the absence of roads, bridges, and ports, he stated that the Ottomans previously had insight into the importance of such public works but could not maintain this insight because of the indifference of Ottoman officials. Despite occasional effort to improve public works, the empire had undertaken no significant enterprises, especially not in Anatolia. The indifference of officials on this issue both damaged the state and deprived it of various benefits. On the other hand, prosperous, wealthy European countries paid a lot of money for public works every year. Therefore, for Hasan Fehmi Paşa, one of the most important reasons the Ottoman Empire's best days were past and that it was unable to cope with the difficulties it faced – despite the fact the regions it possessed were ripe for prosperity and progress – was its carelessness with respect to the production of public works.[23]

For this reason, it was necessary to adopt the public works projects listed in his report (like the construction of roads, bridges, railways, and ports; the reclamation of marshes, rivers, and lakes; and the irrigation of farmlands) in order to make the country and the population prosperous, to increase revenue and wealth, and to regain the country's former power. Hasan Fehmi Paşa not only listed the public works that the country needed but also brought forward concrete proposals about how investments should be made. Because the treasury did not have sufficient budgetary resources to put all projects he proposed into practice, the crucial problem for such projects was to generate new sources of investment. He also made proposals on this issue and pointed out three methods.

The first way to accomplish the proposed projects was to use state funds. Hasan Fehmi Paşa argued that this would not be beneficial for the

23 Dinçer, "Osmanlı Vezirlerinden Hasan Fehmi Paşa," 158.

country and the population because it would lead to increased costs. Even if beneficial, the treasury did not have enough because funds reserved for public works were already budgeted for the maintenance of works already in place. Nothing was left for new projects.

The second way included dividing financial responsibility between the treasury and the population. Twenty percent of the amount, which was necessary for the cost of tools and the committee of technical affairs, would be covered by the treasury; the other eighty percent for labor would be provided by forced labor. However, for Hasan Fehmi Paşa, even this was not possible. The empire did not have the tools necessary for use in projects such as the construction of roads, railways, and ports. And because the empire did not produce iron, it would be compulsory to import these expensive materials.

The third way was resort to foreign capital, as was done in advanced countries. Hasan Fehmi Paşa argued that this was the most appropriate way to accomplish public works projects. This required giving a license to respected, financially strong foreign investors to undertake public works in the framework of obligatory conditions and laws. Thus, the treasury would not have to spend too much. He also brought up the question of the position of these foreign investors and discussed how much they would profit from the projects. According to him, foreign candidates should obtain a reasonable (hadd-i itidalde) amount, so care should be taken in the process of drawing up and enforcing the contract. In this way, although the foreign investors would generate profit, there would be an inevitable good for the country.[24]

After pointing out the ways of undertaking enterprises in public works, Hasan Fehmi Paşa began to list the public work projects that he proposed to accomplish. He firstly emphasized roads and bridges in the empire because roads are significant in many ways. Both are crucial for safety and security in the country and are necessary for repelling the interventions and aggressions of other countries. Meanwhile, one of the

24 Ibid., 160-63.

most important advantages of the construction of new roads was to prevent disasters such as scarcity and famine (kaht ü gala), because famines in Ottoman Anatolia had led to the death of thousands of people in the 1870s.[25] The construction of new roads would prevent such disasters by allowing the transport of agricultural products to all regions of Anatolia. In addition, by means of new roads from the hinterlands to coastal regions and ports, it would be possible to encourage the population to cultivate.[26] A two or threefold increase in agricultural crops would be inevitable because the fertile Anatolian land had such potential. For this reason, he proposed new routes in Anatolia from the ports to inland. In calculating the amount necessary for the construction of these routes and acknowledging the harsh conditions of the land, Hasan Fehmi Paşa listed the crops that would be produced in regions along the planned routes and explained the possible benefits of the new routes for the production of these crops at length.[27]

After roads and bridges, Hasan Fehmi Paşa addressed railway lines to be laid in Anatolia and clarified along which routes should be constructed, what difficulties would be faced along the routes, and why these routes were important. He thirdly mentioned the construction of great ports on the Anatolian coasts. According to him, their construction could be assigned to private companies on the condition that they would pay the price.[28]

In his report, Hasan Fehmi Paşa lastly devoted attention to the cleaning (tathir) of marshes and the irrigation of lands. According to him, the

25 For cases of famine in the late Ottoman period, see Mehmet Yavuz Erler, *Osmanlı Devleti'nde Kuraklık ve Kıtlık Olayları (1800-1880)* (Istanbul: Libra Yayıncılık, 2010) and Özge Ertem, "Eating the Last Seed: Famine, Empire, Survival and Order in Ottoman Anatolia in the Late 19th Century" (PhD diss., European University Institute, 2012).

26 For example, one of the most important aims in renovating the Trabzon-Bayezid road was to facilitate trade and agriculture. For a social history of this road, see Fulya Özkan, "A Road in Rebellion, A History on the Move: The Social History of the Trabzon-Bayezid Road and the Formation of the Modern State in the Late Ottoman World" (PhD diss., Binghamton University, 2012).

27 Dinçer, "Osmanlı Vezirlerinden Hasan Fehmi Paşa," 165-75.

28 Ibid., 176-87.

draining of marshes and harmful lakes and the cleaning of certain rivers were among public works projects that would be for the common good because the situation of such marshes, lakes, and rivers damaged both agriculture and public health. For example, because marshes, lakes, and flood-prone rivers in Samsun, Izmit and other places spread to neighboring lands, local populations had to leave their villages and move to mountainous regions. Many fertile lands remained under water for too long, devastating nearby villages and towns. If the rivers could be cleaned, river transport and navigation would be possible, and if new irrigation canals were opened, additional land could be irrigated. The government should pay attention to these possibilities and take the necessary precautions to make use of them. For example, the Fırat, Şat, Ceyhan, Seyhan and Sakarya rivers as well as others in Anatolia should be cleaned, and new irrigation canals should be opened. Thus, surrounding lands would be saved from their declining production by means of new irrigation facilities.[29] Hasan Fehmi Paşa's opinions on reclamation projects in the empire are discussed in detail in Chapter 3.

After Hasan Fehmi Paşa's report, an official report was issued on October 17, 1887, within which the Council of State drew attention to means and measures to establish and increase the affairs of public works needed in the Ottoman Empire in order to protect the state treasury and maintain the wealth and prosperity of the population. According to the Council of State, the restoration of roads, animal breeding, increasing population, an increase in agricultural production, and the reclamation of marshlands would increase the wealth and prosperity of the country. Focusing on measures to increase agricultural production, the report emphasized two among them. The first one was an investigation into the state of seeds and agricultural land by agricultural inspectors throughout the empire. It called for the replacement of bad seeds with good ones and the proper distribution of seeds according to the state of given lands based on the decisions of these inspectors. The cost of these seeds would be met by

29 Ibid., pp. 188-96.

the Public Benefits Fund (Menafi Sandığı). The second important measure to increase agricultural production and thus the wealth and prosperity of the population was to irrigate agricultural land by means of opening ditches and to mechanically pump water to higher land.[30]

2.3.3 *The Program by Gabriel Noradunkyan in 1908*

The last comprehensive public works program in the late Ottoman period was prepared by Gabriel Noradunkyan, the Minister of Trade and Public Works, in 1908.[31] The program, which was published at the beginning of 1909, proposed a sweeping eight-year project for over the whole empire (except for Tripoli and Necd, because these regions were not examined in terms of public works). For Tekeli and İlkin, while the program paralleled the one prepared by Hasan Fehmi Paşa – which aimed to increase the prosperity, abundance, and wealth of the empire – in terms of content, the difference was its emphasis on the use of natural resources.[32] The introduction to the program pointed out that it would focus on urgent public works projects that would increase prosperity and wealth of the country. It especially underscored the importance of agricultural production for which two aspects of public works were deemed crucial, like in Hasan Fehmi Paşa's report. The first one was the transportation network and the second the irrigation system.

The program consisted of project proposals in five main areas of public works: roads and bridges; railways; ports; navigation, irrigation, and

30 "memalik-i şahanenin muhtaç olduğu asar-ı nafianın tesisi ve tezayüdü ve hazine-i devleti vikaye ile ahalinin servet ve saadet-i halinin muhafazası": BOA, İ.DH, 1295-5/102317, 1305.M.29.

31 Gabriel Noradunkyan, who was appointed as Minister of Trade and Public Works after the promulgation of the Second Constitutional Period in August 1908, continued to serve in this post until January 1910. He became a member of the newly-established Chamber of Notables (Ayan Meclisi) in 1908 and then the Minister of Foreign Affairs in 1912. T.C. Çevre ve Şehircilik Bakanlığı, *Nâfiâ Nezareti'nden Çevre ve Şehircilik Bakanlığı'na*, 176.

32 Tekeli and İlkin, "Mustafa Celâleddin Bey'in "Bir Eyaletin Islah ve İmarı Hakkında Mükâleme" Adlı Risâlesi," 10; İlhan Tekeli and Selim İlkin, "1908 Tarihli "Umur-u Nâfia Programı"nın Anlamı Üzerine," in *Cumhuriyetin Harcı: Modernitenin Altyapısı Oluşurken*, eds. İlhan Tekeli and Selim İlkin (Istanbul: İstanbul Bilgi Üniversitesi Yayınları, 2010).

land reclamation; and separately, public works projects, mostly irrigation projects, in Iraq. While the proposals in the first four sections were prepared by the Ministry of Public Works, the last section on Iraq was prepared by an imminent British civil engineer, Sir William Willcocks, who had designed the Aswan Dam and was employed by the Ottoman government to irrigate the Mesopotamian lands.[33]

The first section of the program concerning the maintenance and construction of roads and bridges was suitable for automobile traffic. In the Ottoman Empire, previous attempts to enlarge the transportation network had not led to the expected result, and the road network remained limited in 1909. Thus, the new program entailed the establishment of a main road system of approximately 30 thousand kilometers over eight years. While parts of this projected network were already in use and would be improved and maintained, other parts would be newly constructed. These roads would connect important places such as province, *sancak* and *kaza* centers with major ports and railway stations in order to provide a continuous network. All these works would require an expenditure of 9.6 million lire over eight years (1.2 million per year).[34]

The second part of the program concerned the railway network. It proposed to increase the existing network to 17 thousand kilometers. It would concentrate on three networks: firstly, junction lines that would connect with railway networks of neighboring countries; secondly, lines that would interconnect provincial centers; and lastly, lines connected to Europe, Asia, and Africa.[35] After providing detailed information about railway systems around the world, the program proposed the construction of 9,665 kilometers of new railway lines in both the European and Asian territories of the empire. It also addressed how these lines would be constructed. After evaluating alternatives, the program proposed tenders to transfer their management to private companies.

33 His writings on the irrigation project in Iraq were published in 1911. William Willcocks, *The Irrigation of Mesopotamia* (London: E.&F.N. Spon, 1911).

34 Tekeli and İlkin, "1908 Tarihli "Umur-u Nâfia Programı"nın Anlamı Üzerine," 183.

35 Ibid., 180.

The third part of the program addressed the ports of the empire. The program located ports, which were the part of transportation network, in order to increase trade volume. It entailed the improvement of six existing ports (Dersaadet, Haydarpaşa, Izmir, Thessalonica, Beirut, and Sakız) by constructing new docks, warehouses, and other necessary instruments for shipping. Apart from these improvements, it proposed the construction of eight new ports at the terminuses of proposed railway lines. Because this construction would cost 4 million lire, it was impossible for the government to cover the expenditure. The best way to accomplish it was to grant concessions to private companies.[36]

Fourthly, the program proposed infrastructure projects concerning the navigation of rivers as well as hydraulic works such as irrigation and reclamation projects. While the program made a few suggestions on navigation, it put weight on the ability of irrigation and reclamation projects to positively affect agricultural production. Its aims were to irrigate land that did not have sufficient water and to reclaim land that were frequently prone to flooding. It concentrated on three regions: the Adana Plain, where fertile land was used for the production of grain and cotton; the Kara Azmak and Vardar rivers; and the Aydın Plain along the Menderes River. These large-scale hydraulic engineering works involved irrigating lands, reclaiming marshes, lakes, and rivers, and opening water channels. Because these projects were also very costly, they would also be given to private companies as concessions.[37]

The last section of the program concerned public works, mostly irrigation projects, in Mesopotamia. Sir William Willcocks, an imminent British civil engineer, prepared this section. He had been employed by the Ottoman government to irrigate Mesopotamian lands. The aim of the government was to animate this region and to turn it into the breadbasket of the world by carrying out irrigation projects. The project involving irrigating a large region of 2.8 million hectares in a 12 step process over eight years.[38]

36 Ibid., 191-93.

37 Ibid., 193-96.

38 Ibid., 196-201.

A few of the projects proposed in the program by Gabriel Noradunkyan were accomplished; financial difficulties and successive wars at the beginning of the twentieth century prevented the government from completing all of them. However, although many of the projects in the program were not completed, its language reflected a transformation of the concept of public works among Ottoman statesmen. The program formulated infrastructure projects in both cities and the countryside as public services for which the state should take responsibility. Thus, the aim of the government by undertaking a development program was to increase the prosperity, abundance, and wealth of not only the state but also the population.

§ 2.4 Reports on Public Works and Infrastructure

In the Ottoman Empire, the fact that statesmen wrote reports (layiha) and presented them to the sultans was an old tradition. Until the nineteenth century, such reports were usually political or military treatises written by high-ranking bureaucrats on their own volition. In the nineteenth century, the tradition of writing reports on state affairs continued, and the number of reports increased. But their contents diversified. As the state bureaucracy grew and the government's areas of responsibility increased, bureaucrats began to write reports on many new subjects. Also, the sultan and the government sometimes ordered bureaucrats to write reports.[39]

In the late Ottoman period, local and central bureaucrats in the Ottoman bureaucracy wrote many reports on critical regions such as the Balkan and Arabian provinces of the empire. These reports usually included proposals for reorganizing local administration to establish the direct authority of the sultan and central government. But their interests were not limited to issues concerning administration; they also addressed social

39 For a detailed analysis of the tradition of reports by statesmen in the Ottoman Empire, see Mustafa Oğuz, "II. Abdülhamid'e Sunulan Lâyihalar" (PhD diss., Ankara Üniversitesi, 2007).

and economic issues. They provided information on many issues such as demographics, economic activities, agriculture, education, infrastructure, and public works in the respective regions. Not only did they provide information, but they made proposals to the government to increase the welfare of the population and the revenue of the state. One crucial subject most emphasized in reports was the necessity of improving these regions and increasing the production and trade capacity with new public works projects.

2.4.1 *Mithat Paşa on Najd and Syria*

Mithat Paşa, one of the most important statesmen and governors of the Tanzimat period, earned a reputation in the Ottoman provincial administration as the governor of the Danube province. He made great strides to maintain the security and development of the province especially with respect to applying the Regulation for Provinces (Vilayat Nizamnamesi) of 1864, to which he was a great contributor, in the Danube province. After his achievements in that province, he was appointed governor of Baghdad. During his governorship (1869-1872) he not only tried to establish the authority of the Ottoman central government over Arabian provinces of the empire but also took measures to increase the prosperity of the local population. He also made a bid for control over Najd (Necid) region of the Arabian Peninsula. Mithat Paşa made mentions of his activities in his region in two reports sent to the Sublime Porte. These addressed both civil administration and political struggles in the region and called attention to its economic and social features. The second report, in particular, concerned expenditures, the subsistence of the population, and tax revenues.[40]

For Mithat Paşa, although the region had much land that was suitable for agricultural production and irrigation, the population took shelter in

40 For the transliteration of these two documents, see Yusuf Halaçoğlu, "Midhat Paşa'nın Necid ve Havalisi İle İlgili Birkaç Lâyihası," *İstanbul Üniversitesi Edebiyat Fakültesi Tarih Enstitüsü Dergisi*, no. 3 (October 1973): 149-76.

confined regions due to the oppression of the Faysal family and the attacks of Arabian tribes.[41] Agricultural lands thus remained abandoned. Thereupon, he proposed ten measures to establish direct authority over the region, to advance agriculture there, and to increase prosperity (ziraatin ve ma'muriyyetin tezâyüd ve terakkisi). One of the most important ways was to improve the region. After proposing new methods to exploit arable lands, marshes, and land where date palms grew, he cited the improvement of vacant land, the multiplication of springs and rivers, and a resulting increase in agricultural production as the most important issues for the prosperity of the region and tax revenues. However, this was dependent on the protection of the local population and their crops from the attacks of Bedouin tribes. Moreover, if some Bedouins were settled, places suitable for cultivation could be improved in a short span of time, increasing both the prosperity and happiness of the population and the revenue of the state by a factor of five to ten. Therefore, for Mithat Paşa, the improvement of the region by increasing agricultural production was the most important way of providing for the prosperity of not only the state but also the population.[42]

Mithat Paşa also held the governorship of Syria from 1878 to 1880 in a period when internal security in the region was under threat. After his appointment, he wrote several reports on the province and made suggestions for its administration, security, and development. One of these reports, called the "Report on Syria," was published for members of parliament in 1908 by Hüseyin Tosun.[43] The report emphasizes the necessity of reorganizing the provincial administration in Syria. It complains of a lack of qualified personnel in spite of the large amount of work being undertaken in the province. Ensuring internal security was also an issue to which Mithat Paşa called attention; a lack of courts and scarcity of military units endangered the security of the population. In addition, the

41 Ibid., 169.

42 Ibid., 176.

43 For information on the report and Mithat Paşa's governorship of Syria, see Musa Çadırcı, "Mithat Paşa'nın Suriye Layihası," *Türk Kültürü Araştırmaları: Prof. Dr. İsmail Ercüment Kuran'a Armağan* 27, no. 1-2 (1989): 29-40.

province lacked a stable financial structure due to the extent taxation system. In the report, he proposes a new system in which every taxpayer would pay tax accordance with his income.[44] In fact, in the cases of Baghdad and Syria, Mithat Paşa saw development based on public works both as a means for the prosperity of regions he administered and as an instrument of internal security.

2.4.2 *Muhammed Hilal Efendi on Tripoli and Yemen*

There are other examples of such discourse emphasizing these two functions of development and public works (prosperity and internal security), especially in critical regions of the empire. During the 1870s and 80s, a period when the Ottoman statesmen in the central and provincial state bureaucracy placed great importance on public works for the prosperity and development of the Ottoman Empire, one of the most important instruments by which the government established its authority in Arabian provinces, where it had difficulty establishing direct authority, was to increase agricultural production and enhance the welfare of the local population by improving and developing the region with public works projects. Both central and provincial Ottoman statesmen wrote various reports on improving Arabian provinces of the empire. One was Muhammed Hilal Efendi, who served as the Chairman of the Appeals Court (İstinaf Mahkemesi Reisi) in various Arabian and Anatolian provinces such as Yemen, Tripoli, Adana, Ankara, and Konya. He not only wrote many books on law but also reports on the regions in which he held office. He composed reports especially on Tripoli, Yemen, and Zor in which he not only described the economic and social structures of these regions but also put forward proposals on their development.[45]

---

44 Ibid., 34-39.

45 For Muhammed Hilal Efendi and his reports on Arabian provinces, see İdris Bostan, "Muhammed Hilâl Efendi'nin Yemen'e Dair İki Lâyihası," *Osmanlı Araştırmaları*, no. 3 (1982): 301-26; İdris Bostan, "Zor Sancağı'nın İmâr ve Islâhı ile Âlakalı Üç Lâyiha," *Osmanlı Araştırmaları*, no. 6 (1986): 163-220; Nejat Göyünç, "Trablusgarb'a Ait Bir Lâyiha," *Osmanlı Araştırmaları*, no. 1 (1980): 235-56; and Tekeli and İlkin, "Mustafa Celâleddin Bey'in "Bir Eyaletin Islah ve Imarı Hakkında Mükâleme" Adlı Risâlesi," 9.

In one of these reports, presented to the Ministry of Public Works on Tripoli, Muhammed Hilal Efendi describes some geographical and cultural features of the region and compares it with Anatolia. Then he addresses the economic, agricultural, and commercial conditions of the region, emphasizing the importance of increasing the production and commerce of profitable crops being cultivated in the region. The most important of these was espartograss (halfa otu), which was grown around Homs, picked, and taken to the harbor of Tripoli via camels by the local population. The annual income from this trade was 400 thousand lire. For Muhammed Hilal Efendi, espartograss was a gold-mine for Tripoli because it was exported to Europe. If a railway were to be constructed in the region and the sale of espartograss were to be monopolized by the state, its value would reached up to 1 million lire. Thus, a new railway was crucial. Meanwhile, he proposed to repair the natural harbor of Tripoli in order to further increase shipping traffic and thus the revenue from the province. For him, both the railway and port would greatly contribute to the economic situation of the province and develop it.[46]

Muhammed Hilal Efendi also wrote two reports on Yemen where he served two terms. He describes the political, social, economic, geographical and cultural features of Yemen in these two reports. He makes proposals for the improvement of Yemen in addition to discussing internal disturbances in the region. According to him, Yemen had extensive lands and a population of 3 million that was loyal to the Ottoman state, but some sheikhs and *fukaha* (*fakih*s, experts in the canon law of Islam) were trying to provoke the people against the central government. If the province were to be divided into three, each governor of these three provinces could eliminate rebellious local leaders; thus, all three provinces would prosper and flourish under Ottoman control.[47]

Muhammed Hilal Efendi wrote another report on improvement of the *sancak* of Zor that had been part of the province of Aleppo. This report, which was written in 1870-1 and presented to Abdulhamid II in 1881-2,[48]

46 Göyünç, "Trablusgarb'a Ait Bir Lâyiha," 238-40.

47 Bostan, "Muhammed Hilâl Efendi'nin Yemen'e Dair İki Lâyihası," 319.

48 Bostan, "Zor Sancağı'nın İmâr ve Islâhı ile Âlakalı Üç Lâyiha," 168.

was more detailed than his other two. Giving detailed information on the history, geography, and administration of the *sancak*, he emphasized its improvement and pointed out that due to the region's rivers, improving the region would increase agricultural productivity and fruitfulness of its land. According the report, which Muhammed Hilal Efendi claims to have written to advise the central government on the improvement of the *sancak*, Zor was similar to Egypt with regards to its land and water suitable for agriculture. Water was necessary for improving a region's agricultural production: just as Egypt had the Nile, Zor had the Euphrates, Habur, and Belih rivers. And Zor had fertile land. If new canals were to be opened from the Euphrates, Habur, and Belih, it would be possible to irrigate its fertile lands. Meanwhile, it was necessary to reclaim existing canals. These works would not only improve the region but also encourage nomadic tribes there to settle as agricultural production increased, which would be in the interest of the state.[49]

According to Muhammed Hilal Efendi, improving a region was dependent on three conditions: the security of the population, increasing the population, and enhancing of the wealth of the population. First, because attacks by Bedouin tribal groups along trade routes in the *sancak* of Zor were a risk to merchants' lives and property, merchants preferred to use the Aleppo-Diyarbekir-Mosul route to Baghdad. This lack of security along trade routes damaged the local economy and reduced state revenues. If the safety of life and property were to be provided, the region would become a place through which merchants and caravans could easily come and go, and much more revenue could be obtained from its trade. Second, while the Zor region had extensive lands to cultivate, it was underpopulated. For Muhammed Hilal Efendi, one of the most important reasons for it was high bride prices (*mehir*) made marriage difficult and made marriage age at 30 complex. However, increasing the population was a foundation of the improvement of the region, so the local administration should stop the local tradition of demanding such a high bride price. A final foundation for improving a region, for Muhammed Hilal

49 Ibid., 175-77.

Efendi, was to enhance the income of the local population. The way to enhance incomes was to expand agricultural land for cultivation and to increase trade volume for merchants. Shops should be constructed to sell the crops cultivated in the region, he argued. All of these conditions together would greatly contribute to the improvement of the Zor region.[50]

Like Muhammed Hilal Efendi, another Ottoman statesman and commander, İsmail Hakkı Paşa, also thought that exploiting the Şat, Euphrates, Habur, and Belih rivers for irrigating Zor's fertile lands would increase the state revenue.[51] İsmail Hakkı Paşa wrote his ideas on the improvement and settlement of Zor in a report dated 1892. For him, the attacks of Şemmer and Aneze tribes on settled agriculturalists of the region disturbed the local population and reduced production. If nomadic tribes were to be settled and directed toward agricultural production, production and state revenue would increase. A great province could be established there if roads and mountain passes were constructed and education was developed.[52]

2.4.3 *Mustafa Celaleddin Bey on Iraq*

In the late Ottoman period, one remarkable report that called attention to the improvement and prosperity of the empire was prepared and published by Mustafa Celaleddin Bey, a colonel in the Fifth Ottoman Army, between 1908 and 1914.[53] The report Mustafa Celaleddin Bey wrote on the improvement of Ottoman Iraq during his time with the Fifth Army was comprised of two sections. The first presents how various actors in Iraqi society interpret the issue of development in the form of a dialogue. In

50 Ibid., 177-80.

51 For information on İsmail Hakkı Paşa, who was appointed to various ranks in the Ottoman army and bureaucracy and was governor of Diyarbekir and Erzurum, see ibid., 210-12.

52 Ibid., 214-20.

53 For a detailed review of the report published by Tercüman-ı Ahval Matbaası, see Tekeli and İlkin, "Mustafa Celâleddin Bey'in "Bir Eyaletin Islah ve Ïmarı Hakkında Mükâleme" Adlı Risâlesi."

this dialogue, eight persons who represent different sections of the society discuss the public works needed in the province.

After having these actors discuss the issue, Mustafa Celaleddin Bey passes along his own ideas on the improvement of the region in the second section of the report. He argues that because some established local actors hinder developing public works projects to further their own interests, they should be eliminated from the decision-making process in order to bring the infrastructure projects to fruition. He then proposes five reforms for the improvement and prosperity of the region. According to him, existing agricultural lands should be transformed into private property; the taxes of property owners should be equal; funds should be created to provide agricultural credit to farmers; and companies should be encouraged to assist in the development of the region.[54]

§ 2.5 The Institutionalization of Public Works Affairs

Ottoman statesmen's reports and opinions on development and public works in Ottoman territories, whether concerning all of the empire or just part, contributed to the formulation of a conception of development based on the growth of public works and agricultural production. They played a significant role in defining the extent and content of public works in general and of reclamation projects in particular in the Ottoman Empire and in shaping a far-reaching public works and agricultural bureaucracy that would discuss reforms in public works and development, make decisions, and carry out them. This section briefly addresses the institutionalization of public works and the creation and framework of a public works bureaucracy.

In the second half of the nineteenth century, Ottoman bureaucracy underwent a wide-scale structural transformation, and the reorganization of the state bureaucracy became an important tool for establishing

54 Ibid., 14.

the authority of the central government.[55] During this period the size of the central government and bureaucracy and their branches in the provinces expanded, and the number of civil officials employed in them increased. The number of civil officials in the Ottoman bureaucracy reached 35 thousand by 1908, while it was only about 2 thousand at the end of the eighteenth century.[56] However, it was not only a quantitative change in the central and provincial bureaucracy but also a qualitative one that transformed it into a modern apparatus with new functions, specialization, and a modern division of labor.

The Ottoman public works bureaucracy held a crucial place in this mechanism of transformation because of the importance placed on development and public works. In the nineteenth century, as responsibility for public works shifted into the domain of the government, central and provincial bureaucracies began to constitute their own institutions to plan and carry out various public works and development projects. In time, a wide, bureaucratic public works network was established in both the center and the provinces of the empire under the supervision of the Ministry of Public Works. This bureaucracy employed many officials and statesmen – from technical staff, such as engineers, technicians, and conductors, to civil servants – who believed that development, improvement, public works, and infrastructure have the power to solve the problems of the empire. Their number rapidly increased. After the establishment of the Ministry of Public Works, public works projects in the Ottoman Empire were either carried out directly by this ministry or by other state institutions under its control.[57]

55 For detailed information on the transformation of the Ottoman central bureaucracy, see Ali Akyıldız, *Tanzimat Dönemi Osmanlı Merkez Teşkilatında Reform* (Istanbul: Eren Yayıncılık, 1993).

56 Quataert, *The Ottoman Empire*, 62.

57 For two new dissertations on public works affairs and public works bureaucracy in the late Ottoman period, see Şenay Atam, "Osmanlı Devleti'nde Nafia Nezareti" (PhD diss., Niğde Üniversitesi, 2015); and Sevim Erdem, "Sultan II. Abdülhamit Devri (1876-1908) Osmanlı Devleti'nde Bayındırlık Faaliyetleri" (PhD diss., Fırat Üniversitesi, 2010).

Before the Tanzimat, infrastructure projects and their maintenance in the provinces were usually carried out by agencies independent of the central government, as discussed at the beginning of this chapter. But with the Tanzimat, these works began to be planned by the central government which consider them to be one of its areas of responsibility. In fact, the establishment of the Ottoman public works bureaucracy[58] dates to the creation of the Council of Agriculture and Industry (Meclis-i Ziraat ve Sanayi) within the Ministry of Foreign Affairs in 1838, shortly before the promulgation of the Imperial Edict of Gülhane, to discuss and forward new proposals for improving agriculture, industry, and trade in the empire. That the council was responsible to the Ministry of Foreign Affairs and presented its proposals to this ministry was due to the influence of Mustafa Reşid Paşa over the council's establishment.[59] The Council of Agriculture and Industry took the name the Council of Public Works Affairs (Meclis-i Umur-u Nafia) that same year and was incorporated into the newly established Ministry of Trade the next year. It was abolished in 1841 until being reestablished in 1849.

However, efforts to institutionalize public works in the empire did not lose significance. In 1845, the Treasury of Public Works (Nafia Hazinesi) was created within the Supreme Council to fund public works expenditures. In 1848, even as regulations concerning its duties were still being prepared, the Ministry of Public Works was established to oversee construction of some public works projects such as buildings, roads, and

58 In the Republican period, ministries concerning public works published various books on the history of public works and public works bureaucracy in Turkey. They addressed its Ottoman past, although some emphasized that the state of public works in Anatolia during the empire was miserable. See Nafia Vekaleti, *Cumhuriyet Nafiası* (Ankara: Nafia Vekaleti, 1938); T.C. Bayındırlık Bakanlığı, *Bayındırlıkta 50 Yıl*; N. Yücel Mutlu, *Bayındırlık Bakanlığı Tarihi, 1920-1988 (Nafia Vekaleti, Bayındırlık Bakanlığı, Bayındırlık ve İskan Bakanlığı)* (Ankara: Bayındırlık ve İskan Bakanlığı Matbaası, 1989); T.C. Bayındırlık ve İskan Bakanlığı, *Cumhuriyetin 70. Yılında Bayındırlık ve İskan Bakanlığı* (Ankara: T.C. Bayındırlık ve İskan Bakanlığı, 1993); T.C. Çevre ve Şehircilik Bakanlığı, *Nâfiâ Nezareti'nden Çevre ve Şehircilik*; and TRT-Anadolu Üniversitesi, *Nafia: Türkiye'nin İnşa Tarihi*, ed. Gökhan Arslan (Ankara: TRT-Anadolu Üniversitesi, 2015).

59 Akyıldız, *Tanzimat Dönemi Osmanlı Merkez Teşkilatında Reform*, 259.

bridges. According to the regulations, the duty of the Ministry of the Public Works was to develop agriculture, industry, and artisanship; to establish new factories; and to look for new ways to increase the number of products and commodities in the empire.[60] In this sense, its primary aim was to increase agricultural and industrial production throughout imperial territories as well as to improve the country and the living conditions of the population. These aims paralleled opinions on public works expressed in the reports of Ottoman statesmen in the nineteenth century. The Council of Public Works Affairs that had been abolished was reestablished under the name Council of Public Works (Meclis-i Nafia) under the supervision of the Ministry of Public Works in 1849 to discuss issues concerning public works. Meanwhile another council, the Council of Bridges (Meclis-i Meabir), was established as a branch of the Council of Public Works in 1857. Its task was to carry out public works projects such as the construction of roads, bridges, canals, and buildings. This council also included competent European engineers, as discussed in Chapter 5.[61]

The Ministry of Public Works, which was intermittently integrated into the Ministry of Trade until the 1870s, as well as its institutions and branches became the chief actors in the carrying out of public works projects throughout the empire. But it was not sole actor. One actor that took an active role in accomplishing public works, improvement, and building projects in the late Ottoman period was local administrations and municipalities.[62] Especially following the Regulations for Provinces of 1864 and 1871, local administrations began to play an active role in public works, which led to a revival in public works projects.[63]

60 Ibid., 141; Aziz Tekdemir, "Tanzimat Dönemi Nafia Nezareti," *Trakya Üniversitesi Edebiyat Fakültesi Dergisi* 1, no. 1 (2011), 117.

61 Akyıldız, *Tanzimat Dönemi Osmanlı Merkez Teşkilatında Reform*, 264.

62 For local administrations and the establishment of modern municipalities in the Ottoman Empire in the Tanzimat period, see İlber Ortaylı, *Tanzimat Devrinde Osmanlı Mahallî İdareleri (1840-1880)* (Ankara: Türk Tarih Kurumu Yayınları, 2000).

63 Şevki Duymaz, "II. Abdülhamid Dönemi İmar Sistemi: Teşkilat ve Nizamnameler," in *Sultan II. Abdülhamid Sempozyumu: 20-21 Şubat 2014, Selanik*, ed. Metin Hülagü (Ankara: Türk Tarih Kurumu Yayınları, 2014), 87.

The first efforts to establish municipal organization in the Ottoman Empire began with the creation of the Ministry of the Marketplace (İhtisab Nazırlığı) in 1827, which collected taxes, provided security, applied officially-fixed prices, and provided order in the cities. However, the increasing importance of Ottoman cities in international trade in the nineteenth century required the establishment of a modern municipal organization to solve transportation, port, accommodation, and health problems in the cities in order to make rising commercial activities possible. The Crimean War of 1853-1856 and its consequences for Istanbul – thousands of European soldiers and plenty of ammunition and provisions came to the city – made creating a modern city administration even more urgent. Thus, the Municipality of Istanbul (Şehremaneti) was founded in 1854 in place of the Ministry of the Marketplace. It had many duties such as determining and applying officially-fixed prices, constructing and maintaining roads and sidewalks, carrying out sanitation, and supervising artisans. However, it failed and was unremarkable because the inhabitants of Istanbul did not actively participate in the administration.[64]

Its failure led to the creation of the Commission of Order in the City (İntizam-ı Şehir Komisyonu), an advisory council, in 1855. The commission suggested proposals for the establishment of a modern municipal organization. According to the commission, its main tasks were to construct sidewalks and a sewage system, to clean streets, to light the streets and squares, and to enlarge the roads. In addition, it proposed dividing Istanbul into fourteen municipal districts. Thus, the Sixth Municipal Department was established in Beyoğlu and Galata in 1858 to keep the city clean.[65]

The first Ottoman parliament issued the Dersaadet Municipal Code (Dersaadet Belediye Kanunu) and the Provincial Municipal Code (Vilayet Belediye Kanunu) in 1877. The existing codes gave municipalities in the

64 Ibid., 80; Ortaylı, *Tanzimat Devrinde Osmanlı Mahallî İdareleri*, 129-39.

65 Erdem, "Sultan II. Abdülhamit Devri (1876-1908) Osmanlı Devleti'nde Bayındırlık Faaliyetleri," 15.

empire authority with respect to public works, city lighting, cleaning, cadastral surveys, censuses, market supervision, public health, schools, and slaughterhouses. However, municipalities could not carry out a large part of these works and handed them over to the relevant ministries. Nevertheless, especially with the Regulations for Provinces of 1864 and 1871, local administrations began to play a more active role in public works.[66] Therefore, municipalities also took part in the process of the institutionalization of public works in the Ottoman Empire and were engaged in public works projects in cities.

§ 2.6 Conclusion

This chapter argues that projects involving the drainage and reclamation of marshes, lakes, and rivers at the end of the nineteenth century were part of a new concept of development that appeared in the Ottoman Empire during the century. This concept of development was based on developing and modernizing agricultural production via public works projects and was intended to increase the wealth and prosperity of both the country and the population as well as maintain order and security. In the nineteenth century, Ottoman statesmen and officials like Hasan Fehmi Paşa and Mithat Paşa wrote many reports on the development of Ottoman territories and the need to increase public works. They emphasized that the Ottoman state would survive only if it realized public works projects necessary for the development of the country that included the construction of highways, railways, bridges, new irrigation facilities, the reclamation of marshes, lakes, and rivers, and the creation of new navigation facilities along rivers. The commercialization of agriculture and the gradually increasing significance of the Eastern Mediterranean in international trade encouraged such a concept of development that was designed to increase agricultural productivity and commercial activities. In line with this purpose and the opinions of Ottoman statesmen, the Ottoman government developed a public works bureaucracy to discuss public

66 Duymaz, "II. Abdülhamid Dönemi İmar Sistemi," 87.

works reform and development and to make and implement decisions. Therefore, public works projects carried out in the late Ottoman period were the result of the initiative of this bureaucracy under the Ministry of Public Works which employed foreign and Ottoman engineers, technical experts, officials, and scribes who played an important role in shaping public works in the Ottoman Empire. These public works projects, including the reclamation of marshes, lakes, and rivers, transformed the environment and landscape in Ottoman territories. This chapter addresses development in the name of public works in the Ottoman Empire in the nineteenth century; the next will discuss reclamation projects in particular, especially of marshes and lakes, as part of the discourse of development that was defined in this chapter.

3

Reclamation Projects in Marshes in the Ottoman Empire

As stated in Chapter 2, Ottoman governments in the late Ottoman period began to carry out public works – that they previously did not consider to be their responsibility – and to see the growth of public works in the empire as one of the most important ways of increasing the wealth and prosperity of the empire. Such emphasis on public works was based on agricultural development that required the central government's intervention, the creation of a widespread public works bureaucracy, and the formulation of new reform initiatives to modernize agricultural production. This concept of development, which prioritized public works – such as the development of highway and railway transportation networks and their spread into provinces, the construction of bridges, the extension of water transport, and the creation of new irrigation facilities –, also included the draining, reclamation, and cleaning marshes, lakes, and rivers in the Ottoman territories. Many Ottoman statesmen and state institutions within the public works and agricultural bureaucracy emphasized the necessity of projects to reclaim wetland regions as a part of their discourse of development. This chapter discusses marshy regions in the Ottoman Empire, the main reasons for reclaiming them, and the ways by which reclamation projects were financed. Although this chapter and the dissertation as a whole primarily focuses on marshy regions in

the Ottoman Empire, lakes and rivers connected to marshes are also addressed as necessary. That is why the phrase "marshes, lakes, and rivers" is used even though the discussion usually concerns marshes.

§ 3.1 A General Overview on Marshes in the Ottoman Empire

In a famous report on the state of public works in the Ottoman Empire in the nineteenth century in which he emphasized that the prosperity and progress of the empire was dependent on care taken in public works, Hasan Fehmi Paşa claimed that cleaning (tathir) and reclaiming marshes and damaging lakes were among the most important public works in the empire that would serve the country and the population. Indeed, marshes and lakes in various parts of the empire both prevented the advancement of agricultural production and threatened public health. According to him, marshes, lakes, and flood-prone rivers not only led to disease and submerged neighboring fertile lands but also devastated villages and small towns. Because of their harmful impact, inhabitants of villages and towns near such wetlands had to leave and move to mountainous regions. As a result, many fertile lands were long uncultivated and remained under water.[1]

In fact, this was part of a longstanding process of environmental change in the Eastern Mediterranean region since the seventeenth century. From that time, the Mediterranean basin underwent a transformation resulting from economic, political, and environmental factors and changes. Faruk Tabak, who addresses this transformation from the seventeenth to the nineteenth centuries, calls the process "the waning of the Mediterranean," and claims that factors such as the climate, the environment, politics, and the economy in the region triggered a relocation of the center of gravity of the Mediterranean from the plains to hillsides and mountains.[2] Among these factors, environmental ones were prominent.

1 Celal Dinçer, "Osmanlı Vezirlerinden Hasan Fehmi Paşa," 159.

2 For a detailed analysis of this transformation and these factors, see Faruk Tabak, *The Waning of the Mediterranean, 1550–1870: A Geohistorical Approach* (Baltimore: Johns Hopkins University Press, 2008).

The Little Ice Age, from the middle of the sixteenth to the middle of the nineteenth century, created increased precipitation – torrential rain in lower lands and increased snowfall in higher regions – because of the climate change, humidity, and cooling it caused.[3] These rain and snowfall increased the quantity of water in riverbeds and plains. And because the rugged, mountainous terrain enhanced the water's velocity, floods emerged in the plains of the Mediterranean that left farmlands submerged. As a result of the overflow of streams and rivers, marshy regions gradually expanded, and agricultural production became impossible, and especially the cultivation of grain in plains. Frequent floods and the expansion of marshes also gradually changed means of subsistence and the nature of production, leading local populations to adapt and engage in new economic activities. In different parts of the region, including in Ottoman territories, people abandoned their villages and homes to move to higher land because of the newly emerged marshes and the difficulty of cultivating the plains.[4] Another aspect of this process was the prevalence of malaria, which was one of the most critical threats to the population of the region. For Fernand Braudel, malaria was "permanently installed there."[5] It was a widespread fact of life in the whole of the Mediterranean basin.[6] As a result of all of these factors, "the plains increasingly lost their attractiveness, compared with the overcrowded but safer mountains. Thus, the opposition between empty plains and densely populated mountains increased."[7]

---

3 For a detailed analysis of the effects of the Little Ice Age in the Ottoman Empire, see Sam White, *The Climate of Rebellion*.

4 Tabak, *The Waning of the Mediterranean*, 16-18. For life and ecology in the mountains of the Mediterranean basin, see J.R. McNeill, *The Mountains of the Mediterranean World: An Environmental History* (Cambridge: Cambridge University Press, 1992).

5 Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II,* Volume I (Berkeley and Los Angeles, California: University of California Press, 1995), 64.

6 J. Donald Hughes, *The Mediterranean: An Environmental History* (Santa Barbara, CA: ABC-CLIO, 2005), 89-110. Also see Tabak, *The Waning of the Mediterranean*, 189-200.

7 Wolf-Dieter Hutteroth, "Ecology of the Ottoman Lands," in *The Cambridge History of Turkey,* Volume 3*: The Later Ottoman Empire, 1603–1839*, ed. Suraiya N. Faroqhi (Cambridge: Cambridge University Press, 2006), 31.

However, from the middle of the nineteenth century onwards, for several reasons that are discussed below, the reclamation of marshes and other wetlands such as lakes and rivers became necessary. The end of the Little Ice Age and technological developments made it easier. Hasan Fehmi Paşa not only mentioned the necessity of cleaning and reclaiming wetlands – citing the names of significant marshes, lakes, and rivers in the Anatolian and Arabian provinces of the empire – but also touched on how they should be cleaned, what kinds of construction and earthwork were necessary, and how much money should be spent on these works. He divided marshes into two types according to their proximity to the sea or lakes and rivers. First, it was simple to clean and reclaim marshes near the seaside. The most important measure was to dig ditches where standing water accumulated, to funnel water to larger channels, and finally to drain them into the sea. However, this measure was not enough; ditches that channeled water into the sea could flood during rainfall and leave neighboring agricultural fields under water. To avert this situation, it was necessary to construct dikes and barriers along the ditches and channels. According to Hasan Fehmi Paşa, such seaside marshes in Anatolia included the marshes of Adana and Tarsus, İskenderun, Mersin and Silifke, the Gulf of Antalya, the coastlines of the provinces of Aydın and Bursa, and those of Samsun, and Kızılırmak, and Yeşilırmak. He calculated that the cost of cleaning these marshes would be 4.10 *kuruş* per decare, and the area of all of these marshes was 3.300.000 thousand decares. In other words, the work necessary to clean and reclaim all these marshes would cost about 130,434.78 lire.

Hasan Fehmi Paşa secondly discussed marshes around lakes and rivers. The problem with lakes and rivers was the possibility that their flood waters could devastate neighboring fields. To alleviate this risk, it was necessary to construct dikes and barriers along such lakes and rivers when flood waters subsided. The height of these barriers should be based on the highest level to which flood waters reached. This measure could prevent river water that converged in lakes from invading fields. Another measure, as for marshes near the seaside, was to dig ditches and channels and to funnel water to lakes and rivers. Thus, marshes around lakes and

rivers could be cleaned and reclaimed. He cited examples of this kind of marsh, too: the marshes around Sapanca, Iznik, Apolyoniye, and Mihaliç lakes in Bursa province and the marshes around Konya, Akşehir, Koçhisar, Ereğli, Yenişehir, and Burdur lakes. According to him, the area of these marshes was 1.320.880 decares, and their cleaning and reclamation would cost about 60.896,56 lire.[8] Hasan Fehmi Paşa cited not only marshes in Anatolia but also ones in Greater Syria and on the Arabian Peninsula.[9]

However, marshes and wetlands to be reclaimed in Ottoman territories were not limited to those cited in Hasan Fehmi Paşa's report. By the end of the nineteenth century in the Ottoman Empire, there were marshes, lakes, and rivers of all sizes in the Balkan, Anatolian, and Arabian provinces, and many were planned to the cleaned and reclaimed for various purposes. Marshes constituted a great part of such regions to be reclaimed and turned into agricultural land. Sevim Erdem, in her dissertation on public works in the Hamidian period, discusses reclamation projects in marshy areas as part of public works and makes an inventory of marshes in the Ottoman Empire that were planned to be reclaimed at the end of the nineteenth and beginning of the twentieth centuries. According to this inventory, projects to reclaim marshes and adjacent lakes remained on the agenda across the empire at the end of the nineteenth century: Amid Lake and marshes in Adana *sancak*; the marshes of İskenderun in Halep province; the marsh around Karaviran Lake in Konya; the marshes in Hüdavendigar province; the marshes around Iznik Lake; the marshes in Adapazarı; Çakalburnu and Yenikale marshes in Izmir; the Pravişte marsh in Drama (Thessalonica); the marsh of the Karaarnak River and Yenice Lake in Thessalonica; the lakes of Tobran, Harcan, and Amatuh in Thessalonica; Lake Tahyanos and the marsh around the Karasu River in Serez (Thessalonica); Vidin marsh in Thessalonica; the marsh in Rodine in Thessalonica; the Beyazkale marsh in Thessalonica;

8 Dinçer, "Osmanlı Vezirlerinden Hasan Fehmi Paşa," 188-89.

9 For figures concerning the width of marshes to be cleaned and the cost of the cleaning, see the table in ibid., 196.

the Korindos marshes in Ioannina; Lake Lapsista and adjoining marshes in Ioannina; and the marshes in Midilli.[10]

As a part of public works, projects to reclaim marshy areas increased in the Hamidian era. These kinds of projects were undertaken in both the Balkan and Anatolian territories of the empire in the second half of the century, and their number increased toward the end of the century. However, as the inventory of marshes and reclamation projects in the Ottoman Empire shows, the greater number took place in the Balkan territories of the empire.[11] This was because ports in the Eastern Mediterranean, in general, and especially Ottoman Balkan ports such as Thessalonica and Kavala, gradually became prominent for international trade in the second half of the nineteenth century. Their increased importance made it possible to transform wastelands and wetlands in the hinterlands of such ports into agricultural land on which prized crops such as tobacco and cotton were produced for international trade. Especially provinces of Thessalonica and Ioannina were home to large marshes and lakes such as in Lapsista, Tahyanos, Pravişte, and Vardar.

§ 3.2 Descriptions of Marshes in the Ottoman Empire

By the end of the nineteenth century, marshes were present in various sizes throughout the empire. Various descriptions give a rough idea about the marshes in Ottoman territories. Both foreign and Ottoman travelers wrote on marshes in various parts of the Ottoman Empire. They us-

10 Sevim Erdem, "Sultan II. Abdülhamit Devri (1876-1908) Osmanlı Devleti'nde Bayındırlık Faaliyetleri," 443-66; İbrahim Yılmazçelik and Sevim Erdem, "II. Abdülhamid Döneminde Yeni İskân Alanları Oluşturulması ve Nehir-Göl-Bataklıkların Temizlenerek Zirai Ekonomiye Kazandırılması Çalışmaları," in *Osmanlı Devleti'nde Nehirler ve Göller* 2, eds. Şakir Batmaz and Özen Tok (Kayseri: Not Yayınları, 2015).

11 İbrahim Yılmazçelik, "II. Abdülhamid Döneminde Osmanlı Devletinin Balkanlarda Yürüttüğü Bataklık Alanlarının Kurutulması ve Yeni İskan Alanlarının Oluşturulması Çalışmaları," in *Sultan II. Abdülhamid Sempozyumu: 20-21 Şubat 2014, Selanik*, ed. Metin Hülagü (Ankara: Türk Tarih Kurumu Yayınları, 2014).

ally described marshes as places in which humidity and heavy air endangered people in the vicinity. Especially malaria was thought as a result of marshy regions. Meanwhile marshy regions were depicted as isolated or unpopulated. However, the presence of marshes and wetlands did not necessarily mean that they were isolated places or that nobody engaged in activity there. In fact, local populations found the ways to use and benefit from them for a livelihood. In other words, marshy regions could offer a means of existence for local populations. Cases in Lake Tahyanos in Serez and Lake Lapsista in Ioannina in Chapters 4 and 5 highlight the ways of livelihood of local peasants and fishermen. They display that marshy regions before reclamation had a dynamic economy that equipped these local groups with a means of existence.

Henry J. van Lennep, an American missionary who in 1864 travelled across the Ottoman Anatolia – including Izmir, Samsun, Amasya, and Tokat and then published his writings on these travels – described marshes as well as the cultural, religious, and geographic aspects of the places he visited. During his travels, he went to Tokat in the province of Sivas, arriving in Kaz Ova on May 17. Describing the marshes around the Yeşilırmak in Kaz Ova, Lennep called attention to natural life and various species in the marsh. These marshes were "the abode of vast numbers of wild ducks and geese, which breed and feed there among the reeds quite unmolested, unless it be by birds of prey. Hence the name given to the whole plains."[12] Lennep again reflected on the marsh in another visit to Kaz Ova in August that same year. This time he emphasized that the marshes in the region was the origin of malaria, mostly affecting çiftliks near to the marsh. However, he pointed out that distant villages from marshes were not affected by malaria and intermittent fevers.[13]

Marshes of the Balkan territories also attracted travelers' attention, even more so than Anatolian marshes. William Martin Leake, who travelled Northern Greece as an official of the British government starting in

12 Henry J. Van Lennep, *Travels in Little-Known Parts of Asia Minor,* Volume 1 (London: John Murray, 1870), 133-34.

13 Henry J. Van Lennep, *Travels in Little-Known Parts of Asia Minor,* Volume 2 (London: John Murray, 1870), 86-87.

1804, visited Ioannina to undertake negotiations between Britain and Tepedelenli Ali Paşa in 1809. He published his observations on the region in 1835.[14] Mentioning the geographic features of the region, Leake described two important lakes, namely Lake Ioannina and Lake Lapsista and the marshes between them. He attributed their existence to mountainous topography of the region:

> It is one of those interior basins not uncommon in the limestone formation of Greece, which are so completely surrounded by mountains that the superfluous waters have no efflux but through the mountains themselves. To this obstruction we may attribute the existence of the two lakes of Lapsista and Ioannina, with the intermediate marshes which unite them.[15]

In a section on Lake Lapsista, the reclamation of which would be put on the agenda about eighty years later, Leake pointed out that the lake covered a vast part of the Ioannina plain in the times of rain, forming a great marsh. But when rain waters subsided, the marsh shrunk and the plain became suitable for the cultivation of maize.[16]

While some travelers call attention to natural life and various species in marshes, marshy regions were seen as the origin of various diseases, especially malaria, by both foreign and Ottoman travelers. Ahmet Şerif, who wrote on his travels in Anatolia for *Tanin* from 1909 onwards, considered marshes in various parts of Anatolia in the context of their harmful affect on public health and the development of the country.[17] For example, he addressed the prevalence of disease resulting from marshes when discussing Iskenderun in February 1910. According to him, marshes around Iskenderun poisoned the air. Humidity was so high that even in February the mosquitos were a danger to the people. Yet there were

14 William Martin Leake, *Travels in Northern Greece*, 4 vols., Volume 4 (Amsterdam: Adolf M. Hakkert, 1967 (Reprint of the edition London 1835)).

15 Ibid., 131.

16 Ibid., 133-34.

17 Ahmet Şerif, *Anadolu'da Tanîn* (Ankara: Türk Tarih Kurumu Yayınları, 1999).

dwellings between the marshes and even in them. He wondered how people lived in these in the marshes and endured the heavy air and disease. He believed that people dwelling there were accustomed to living with the disease, misery, dirt, and all the evils associated with marshes. Although some works were undertaken to reclaim the marsh, he thought they were not enough.[18] He made similar comments about the marshes around Lake Beyşehri, which he visited in September 1909. He pointed out that because the marshes around the lake poisoned the air, local inhabitants of a nearby village called the region the Yemen of Anatolia. While the village had had 500-600 households 10-15 years prior to his visit, their number had dwindled to 200 because of the peril of the poor air quality.[19]

Marshes abounded in Düzce because of Lake Sapanca, the Sakarya River, and the Mudurnu and other streams in the region. The Sapanca River and its tributaries created marshes in the places they passed, so there were many wetlands that endangered public health. In the mornings, the city was covered by a dark layer of fog that prevented anyone from seeing. According to Ahmet Şerif, the fog spread various diseases, most importantly malaria. Because of this hazard, local inhabitants stayed in their homes in the morning hours.[20]

For Ahmet Şerif, malaria was not the only problem that the marshes in Anatolia triggered. He also thought marshes posed an obstacle for agricultural production in the empire. The empire was an agricultural zone comprised of fertile, fruitful land and vast, benign plains. And agricultural production was the basic economic activity that would provide wealth and prosperity for the country in the future. However, farmers in Anatolia were miserable even though they worked hard year round. Ahmet Şerif

18 "Bataklığın arasında, hattâ içinde, kulübeler var. Yerli halkın oturdukları söylenen bu kulübelerde nasıl yaşıyorlar, havânın ağırlığına, bataklıktan geleceği pek tabîî olan hastalıklara karşı ne ile kendilerini koruyorlar bilinmez. Fakat, bu adamlar, hastalıkla, sefâlet ve pislikle, ahlâkın kötülükleri ile, artık kaynaşmışlar, pek tabîî buluyorlar." ibid., 143.

19 Ibid., 43.

20 Ibid., 352.

pointed out that one reason for this misery and the plight of agricultural production in Anatolia was a cattle plague that had spread to Ottoman territories together Muslim immigration from the Balkans and Caucases after the Ottoman-Russian War of 1877-78. The immigrants brought along their own cattle, spreading a kind of plague in Anatolia, endangering agriculture and prosperity in the empire.[21] Another obstacle for agricultural production was marshes that damaged arable land. Because of these marshes, farmers could not make use of fertile land, and some complained of hunger.[22]

Şerafeddin Mağmumi, who, as a young physician, visited the Anatolian territories of the empire at the end of the nineteenth century, also made observations on the places through which he passed and published them in his memoirs.[23] He visited Bursa, Balıkesir, Adana, Adıyaman, Maraş, Antep, Aleppo, Beirut, and Damascus in the 1890s as a member of a medical commission created to counteract a widespread cholera epidemic in the empire. Mağmumi not only investigated the reasons for cholera but also made observations on other diseases such as malaria, typhoid, and dysentery, encouraging him to draw up a "medical topography" of the regions he had visited as a physician. Thus, he dwelled on how the geographic features of a place affected and shaped its medical topography and the prevalence of disease. Like Ahmet Şerif, he also associated marshes especially with malaria. For example, he tied the susceptibility of contracting malaria in Edremit to the topography of the region. When rainwater flowed from the mountains and arrived in the plains via streams, it created marshy areas in places where it accumulated. There were no canals or ditches into which it could flow. According to Mağmumi, miasma in these marshes endangered public health in Edremit because sea breezes spread miasma from the marshes into the town, causing malaria.[24]

21 Ibid., 111-12.

22 Ibid., 165.

23 Şerafeddin Mağmumi, *Bir Osmanlı Doktoru'nun Anıları: Yüzyıl Önce Anadolu ve Suriye* (Istanbul: Büke Yayınları, 2001).

24 Ibid., 132.

However, the presence of marshes and wetlands did not necessarily mean that these places were isolated or unpopulated and that nobody engaged in activity there. In contrast, marshy areas offered viable alternatives for a livelihood, although a large part of the population preferred to move to higher regions in order to avoid the negative aspects of marshes such as malaria. Local populations learned how to use and benefit from them. Starting from the seventeenth century, as the use of watermills rose, the importance of wetland crops – especially rice – gradually increased in Anatolia to the detriment of grain that was impossible to grow in marshy areas. People around marshes and lakes also developed means and methods of subsistence without cultivation.[25]

For Zeynep Küçükceran, changing environmental conditions, and especially the floods that created marshes in Mihaliç in Hüdavendigar province, prompted the local rural population to adapt to new conditions and produce a new kind of agricultural knowledge. They began to cultivate flaxseed, melon, grapes, and mulberry on higher land to compensate for the loss of wheat cultivation. Another activity that floods and marshes prompted in Mihaliç was sheep husbandry. These activities around marshy areas provided both a means of living for the local population and a source of income for the central treasury. Like the local population, the government adapted to the new conditions and did not put forward a reclamation project in the region for a long time.[26]

Şerafeddin Mağmumi made a similar observation about Mihaliç, pointing out that the Mihaliç River divided the plain into two. On the northern side, which was rife with pastureland, local inhabitants engaged in sheep breeding, producing cream and cheese. On the other hand, people on the southern side cultivated grain in their own fields. In winter, the river flooded and submerged especially the northern side of the plain.[27] As another that Mağmumi mentioned in his memoirs, Lake Ulubat in

25 Tabak, *The Waning of the Mediterranean*, 193-95.

26 Zeynep Küçükceran, "Seller, Bataklıklar ve Dönüşen Tarım Bilgisi: Bursa ve Mihaliç," *Kebikeç*, no. 45 (2018), 242-47.

27 Şerafeddin Mağmumi, *Bir Osmanlı Doktoru'nun Anıları: Yüzyıl Önce Anadolu ve Suriye*, 98.

Bursa was famous both for the lake and surrounding marshes – a wetland region that hosted fish species such as carp. Local fishermen fished carp that were subsequently exported as fresh or dry salted. Meanwhile, they also produced caviar from the roe of the fish.[28]

In fact, one of the most widespread economic activities in wetlands such as marshes, lakes, and rivers was fishing. Such regions hosted various fish species, and the people around them made their living from fishing. A case of conflict over land along Lake Lapsista in the province of Ioannina suggests that fishing in lakes and marshes was an important means of subsistence for local inhabitants.[29] The local administration in Ioannina gave a concession to Yorgi Vasiliyadi, an Ottoman citizen, to clean and reclaim Lake Lapsista and marshes between it and Lake Ioannina in 1886. In accordance with his contract, Vasiliyadi guaranteed to complete the project within four years. Within this time period, he would drain the whole of the lake and marshes or at least half of them. The reclaimed land would be granted to Yorgi Vasiliyadi as the concession holder.[30] However, after he completed the project, the issue of rights to some of the reclaimed land led to a longstanding dispute between him and landholders who possessed land around the lake and marshes. Landholders claimed that Yorgi Vasiliyadi had trespassed onto their land in defiance of the contract. On the other hand, Yorgi Vasiliyadi claimed that those who possessing land around the lake tried to take hold of reclaimed land that belonged to him in accordance with his contract with the Ministry of Public Works.[31] This was one of the conflicts that the concession holder experienced. The other concerned fishermen around Lapsista and Ioannina lakes. Some villagers had no land but earned their living by fishing using weirs in the lake. They became mixed up in the dispute between

28 Ibid., 96.

29 For a short analysis of the case, see Murat Alandağlı, "Osmanlı İmparatorluğu'nda Göl ve Bataklık Sahaların Islahına Dair Bir Örnek: Lapşiste Göl ve Bataklığının Islahı," in *Osmanlı Devleti'nde Nehirler ve Göller* 2, eds. Şakir Batmaz and Özen Tok (Kayseri: Not Yayınları, 2015).

30 BOA, DH.MKT 2873/98, 1327.C.24.

31 BOA, BEO, 2559/191855, 1323.S.19.

the concession holder and the landowners. According to fishers, Vasiliyadi was preventing them from entering the area and fishing.[32] This case, which is discussed in detail in Chapter 5, shows that the marshy areas provided various alternatives to the local population to earn their living. And fishing was among the most widespread of those.

§ 3.3 Motivations for the Reclamation of Marshes

In the nineteenth century both the physical geography and environment of the Ottoman territories underwent a far-reaching transformation resulting from many factors such as the commercialization of agriculture; the immigration of Muslims from the Caucasus and Balkans, the Ottoman state's efforts to manage environment and resulting tensions with local and other actors, and the development of a new conception of public works. In fact, these factors defined the reasons for draining and reclaiming marshes, lakes, and rivers in Ottoman territories. To increase agricultural production and the welfare of the rural population by opening new farm lands, to increase the revenue of the state treasury by growing the taxpaying potential of the rural population, to prevent flood and diseases such as malaria, to settle refugees on newly available land, and to maintain order and security, the Ottoman government tried to reclaim wetland regions at the end of the nineteenth and beginning of the twentieth centuries. This section discusses these factors and reasons.

3.3.1 *Reclamation and Agricultural Production*

The most important motivation for cleaning and reclaiming wetlands in the Ottoman Empire was an attempt to open new farmland and thus make wasteland productive and prosperous (kâbil-i zer' bir hale ifrağ) in a discourse of agricultural development (mamuriyet). There is a widespread consensus in the literature that the expansion of regions under cultivation by reclamation was a primary reason for such projects. Although Cihan Özgün sees reclamation projects in marshes in the Ottoman

32 BOA, ŞD 2101/1, 1315.M.22.

Empire as an issue of environmental cleaning, he emphasizes that such projects arose primarily from socioeconomic necessity and an attempt to turn wetlands into farmlands.[33] Said Öztürk also accepts that reclamation projects were part of a discourse of development based on agricultural production that was formulated in the Tanzimat era. Accordingly, the development of the country primarily depended on an increase in agricultural production, especially the cultivation of grain, rather than on industry. The cleaning and reclaiming wetlands in Ottoman territories to create more agricultural land and increase cultivation was a crucial tool of this discourse and was among many methods carried out to improve agricultural production.[34]

In this sense, the draining and reclamation of marshes, lakes, and rivers can be accepted as part of a discourse of agricultural-based development in the late Ottoman period. Especially in the Tanzimat period, Ottoman statesmen began to place importance on the agricultural economy and the increase of agricultural production for the welfare of the Ottoman Empire. Their aim was to increase agricultural products for export to world markets. To this end, some statesmen prepared reform proposals even before the promulgation of the Imperial Edict of Gülhane. Such reforms required constituting a bureaucracy staffed by those acquainted with the issues of agriculture. One of the earliest measures was the establishment of the Council of Agriculture and Industry within the Ministry of Foreign Affairs, which took the name Council of Public Works and was incorporated into the newly established Ministry of Trade that same year. Its task was to bring forward proposals in order to improve the agriculture, industry and trade of the empire. However, the most important agricultural bureaucracy in the early years of the Tanzimat, according to Tevfik Güran, was the establishment of the Council of Agriculture (Ziraat

33 Cihan Özgün, "Osmanlılarda Çevre Temizliği Kapsamında Bataklıkları Kurutma Çalışmaları," in *Temizlik Kitabı*, eds. Emine Gürsoy-Naskali and Salih Mehmet Arçın (Istanbul: Kitabevi Yayınları, 2009), 134.

34 Said Öztürk, "19. Yüzyıldan 20. Yüzyıla İmar-ı Mülk Hedefinde Yeni Adımlar: Göl, Nehir ve Bataklıkların Islahı" (paper presented at the Birinci İktisat Tarihi Kongresi Tebliğleri-2, Istanbul, 2010), 298-300.

Meclisi) within the Ministry of Trade, the mission of which was to increase agricultural production, balance foreign trade, and conduct research and suggest proposals to increase the income and welfare of the population. This council, in fact, prepared comprehensive reports on agricultural production policy in the early years of the Tanzimat.[35]

Another crucial development for the constitution of an agricultural bureaucracy was the establishment of the Department of Public Works (Nafia Dairesi) under the Council of State for the organization of provincial economic programs in 1868.[36] The primary task of this department was to make decisions about agricultural development and discuss and review applications for the concession of agricultural production and public works projects. The Department of Public Works evaluated reports including the proposals and measures for the economic development of relevant provinces prepared by provincial councils. These proposals included constructing schools, roads and ports; reclaiming marshes and turning them into arable farmland; constructing irrigation facilities; eliminating or decreasing some taxes; increasing the agricultural labor supply; meeting the need for credit resulting from animal disease and famine; preventing animal disease; constructiting factories; using modern agricultural instruments; and using proper seeds for crops that were tradeable in international markets.[37]

In this sense, according to Güran, Tanzimat statesmen regarded agricultural development as an important part of a multifaceted social and economic program of development, the aim of which was to reveal and remove factors that restricted agricultural development. According to a program dated 1843, economic development of the country was closely

35 Tevfik Güran, "Zirai Politika ve Ziraatte Gelişmeler, 1839-1876," in *150. Yılında Tanzimat*, ed. Hakkı Dursun Yıldız (Ankara: Türk Tarih Kurumu Yayınları, 1992), 219-20. For Tevfik Güran's discussions of the Ottoman agriculture in the nineteenth century, see Tevfik Güran, *19. Yüzyıl Osmanlı Tarımı Üzerine Araştırmalar* (Istanbul: Eren Yayıncılık, 1998).

36 For the development of an agricultural bureaucracy in the Ottoman Empire at the second half of the nineteenth century, see Donald Quataert, *Anadolu'da Osmanlı Reformu ve Tarım, 1876-1908* (Istanbul: Türkiye İş Bankası Kültür Yayınları, 2008).

37 Güran, "Zirai Politika ve Ziraatte Gelişmeler," 220-21.

related to the increase in agricultural and industrial production, by which commercial activity would be encouraged and lead to accumulation of wealth and prosperity for the country. The program emphasized the importance of the construction of roads and the navigation of rivers for the economic development of the country.[38]

In another report issued on October 17, 1887, the Council of State drew attention to means and measures to establish and increase public works needed by the Ottoman Empire, to protect the state treasury, and to maintain the wealth and prosperity of the population.[39] According to the Council of State, the restoration of roads, animal husbandry, increase in population, an increase in agriculture, and reclaiming marshlands would increase the wealth and prosperity of the country. The report especially focused on two among several measures to increase agricultural production. The first was an investigation of the state of seeds and agricultural land – and the distribution of proper seeds to land – by agricultural inspectors throughout the empire. The second measure to increase agricultural production was to irrigate land by taking ditches and by mechanically pumping water to higher land. However, the measures with which the council associated the prosperity of the country were not limited to these two ones. The Council of State also considered the reclamation of marshlands as a type of public work that would increase wealth.[40] Therefore, reclamation projects were part of a discourse of agricultural-based development in the late Ottoman period.

The rise in both domestic and foreign demand for crops cultivated in Ottoman territories, especially in the Eastern Mediterranean, also triggered reclamation projects and attempts to turn wetland into agricultural land. In this sense, these projects were closely associated with the commercialization of agriculture in the Ottoman Empire in the second

38 Ibid., 220-22.

39 BOA, İ.DH, 1295-5/102317, 1305.M.29: "memalik-i şahanenin muhtaç olduğu asar-ı nafianın tesisi ve tezayüdü ve hazine-i devleti vikaye ile ahalinin servet ve saadet-i halinin muhafazası."

40 BOA, İ.DH, 1295-5/102317, 1305.M.29.

half of the nineteenth century.[41] As Donald Quataert points out, the number of people in Ottoman agriculture whose cultivation was intended for market – and thus, agricultural production for commerce – rose in the nineteenth century. The rise in both domestic and foreign demand consolidated this trend.[42]

The settlement of Muslim immigrants in the second half of the century contributed to an increase in the Ottoman population, leading to a rise in domestic demand.[43] All these factors promoted the commercialization of agriculture in the Ottoman Empire and the expansion of agricultural land. As discussed in detail in Chapter 4, especially in the Eastern Mediterranean and Balkan territories of the empire, agricultural land on which crops that were valuable in both international and domestic markets work cultivated became increasingly significant, rendering reclamation projects a highly profitable enterprise for investors.[44]

3.3.2 *Floods*

A second motivation for reclamation was to prevent floods that left farmland near marshes, lakes, and rivers under water and endangered public health. Floods were one of the most urgent disasters for the Ottoman rural population during the history of the empire.[45] They usually stemmed

41 For the commercialization of agriculture in the Ottoman Empire, see Çağlar Keyder and Faruk Tabak, eds., *Landholding and Commercial Agriculture in the Middle East* (Albany: State University of New York Press, 1991).

42 Quataert, *The Ottoman Empire*, 129.

43 Quataert, *Anadolu'da Osmanlı Reformu ve Tarım*, 36; and Şevket Pamuk, *Türkiye'nin 200 Yıllık İktisadi Tarihi* (Istanbul: Türkiye İş Bankası Kültür Yayınları, 2014), 132.

44 The relationship between reclamation and draining projects and the commercialization of agriculture in the Ottoman Empire are discussed with respect to the case of the Karasu River and Lake Tahyanos in Salonica in detail in chapter 4.

45 For the floods and social tensions to which they led in the Ottoman Empire before the nineteenth century, see Suraiya Faroqhi, "A Natural Disaster as an Indicator of Agricultural Change: Flooding in the Edirne Area, 1100/1688-89," in *Natural Disasters in the Ottoman Empire*, ed. Elizabeth Zachariadou (Rethymnon: Crete University Press, 1999);

from heavy rainfall and melting snow. In the nineteenth century, both Anatolian and Balkan territories of the Ottoman Empire faced disastrous, large-scale floods – especially in spring and summer – that resulted in deaths, economic damage, and loss of population from the flight of a rural population that had to leave submerged villages and land.[46] Their frequency made them highly destructive for the local population, especially landowners and cultivators. Not only were people killed or injured, animals and crops were devastated and houses and shops were destroyed. Meanwhile, floods resulted in the emergence of marshes. Floods had long been one of the most important obstacles to the development of agricultural production; thus, the attempt to hinder them was closely related to the first motivation. That is, it was necessary to take measures to deal with floods to ensure the continuity of agricultural production. Especially in the second half of the century, one of the most widespread measures to which Ottoman central and provincial governments resorted to prevent floods and protect the rural population was to transfer the inhabitants of flood-prone villages to places that were geographically more favorable.[47]

Another measure for flood prevention was the reclamation of rivers. Rivers overflowed during heavy rainfall, submerging land and resulting in the creation of marshes. So Ottoman government tried to reclaim such rivers and change their flow, especially in the nineteenth century.[48] Hay-

and Michael Ursinus, "Natural Disasters and Tevzi: Local Tax Systems of the Post-Classical Era in Response to Flooding, Hail and Thunder," in *Natural Disasters in the Ottoman Empire*, ed. Elizabeth Zachariadou (Rethymnon: Crete University Press, 1999).

46 For floods and flood control measures in the nineteenth century, see Haydar Çoruh, "Osmanlı Devleti'nde Nehir Islahı ve Taşkın Organizasyonu (Meriç/Enez Limanı, Savreyn, Seyhan/Ceyhan, Sakarya/Mudurnu)," *Osmanlı Mirası Araştırmaları Dergisi* 5, no. 12 (July 2018): 167-85; and Ali Rıza Gönüllü, "Osmanlı Devletinin Son Döneminde Meydana Gelen Sel Baskınları (1857-1913)," *Türkiyat Araştırmaları Dergisi*, no. 28 (2010): 351-73.

47 Gönüllü, "Osmanlı Devletinin Son Döneminde Meydana Gelen Sel Baskınları," 366-68.

48 For some examples, see Levent Küçük, "Tanzimat Döneminde Osmanlı Devletinin Nehirler ve Göller ile İlgili Yaptığı Bazı Düzenlemeler," *Karadeniz*, no. 26 (2015): 38-53.

dar Çoruh points out that reclamation works for flood control were carried along eleven rivers in the Ottoman Empire between 1840 and 1920.[49] These were the Meriç, Kızılırmak, Vardar, Karasu, Menderes,[50] Sakarya, Yeşilırmak, Boyana, Fırat, Dicle, and Bartın rivers.[51] He also emphasizes that the reclaimed rivers were not limited to these during that period. There were reclamation works along other rivers such as the Savreyn, Seyhan-Ceyhan,[52] and Mudurnu rivers. While some were successful, others were not. Some of these reclamation projects also tried to make these rivers suitable for navigation, irrigation, and water utilization.[53]

One example of a river that led to floods and natural disasters was the Vardar River in the Balkan territories of the Ottoman Empire. Although the river, the source of which is in Macedonia and which flows into the Aegean Sea in Thessalonica, made the cultivation of a vast region of the Balkans possible, it became the cause of disasters, including the destruction of farmland, buildings, bridges, and homes as well as the death of people, because of floods resulting from excessive precipitation. The Ottoman government tried to clean the river and maintain its dikes to prevent such destruction starting 1851. For example, Skopje, which was long

49 Çoruh, "Osmanlı Devleti'nde Nehir Islahı," 168-69.

50 Adnan Gürbüz, "19. Yüzyılın Sonlarında Menderes Nehri'nin Islahı ve Ulaşıma Açılması Tasarısı," in *Osmanlı Devleti'nde Nehirler ve Göller* 2, eds. Şakir Batmaz and Özen Tok (Kayseri: Not Yayınları, 2015); and Selahattin Satılmış, "1891 Kışında Büyük Menderes, Gediz, Küçük Menderes, Bakırçay Nehirleri'nde Yaşanan Taşkınlar ve Afet Yönetimi," in *Osmanlı Devleti'nde Nehirler ve Göller* 2, eds. Şakir Batmaz and Özen Tok (Kayseri: Not Yayınları, 2015).

51 Emrah Çetin and Özgür Tilbe, "20. Yüzyılın Başlarında Bartın Nehri'nin Islahı ve Ulaşıma Açılması İçin Yürütülen Çalışmalar," in *Osmanlı Devleti'nde Nehirler ve Göller* 2, eds. Şakir Batmaz and Özen Tok (Kayseri: Not Yayınları, 2015).

52 Suat Zeyrek and Halil Akman, "Adana Ovası'nın Islahı, Seyhan ve Ceyhan Nehirleri Mecralarının Tanzim Edilmesi İle İlgili Çalışmalar ve Engeller," in *Osmanlı Devleti'nde Nehirler ve Göller* 2, eds. Şakir Batmaz and Özen Tok (Kayseri: Not Yayınları, 2015).

53 For an example of reclamation works on rivers in the Lebanon Mountains were carried out for the purposes of water utilization and irrigation, see Güler Yarcı, "19. Yüzyıl Sonlarında Cebel-i Lübnan'da İbrahim Nehri'nin Islahı ve "Nehr-i İbrahim Anonim Su Şirketi,"" in *Osmanlı Devleti'nde Nehirler ve Göller 2*, eds. Şakir Batmaz and Özen Tok (Kayseri: Not Yayınları, 2015).

the river, suffered a terrible flood during the winter of 1895. Because of the flood, more than 700 houses, the majority of which were inhabited by immigrants, were inundated with overflowing water. 380 houses were damaged and 154 were ruined. Farmland was also submerged, leading to damage of crops. In a petition sent to Istanbul in February 1895, the victims put the blame on mills near the Vardar River. They thought that removing the mills would prevent floods. Meanwhile, floods interrupted crossings between the two sides of the river. Thus, reclaiming the river by removing the mills, cleaning the riverbed, and opening new canals was put on the agenda of the government.[54]

Another example was the Meriç River, which also connected the Balkan territories of the empire with the Aegean. The river was a critical route for both domestic and international trade in the eighteenth and nineteenth centuries.[55] Enez was an especially important port where commercial transactions among Ottoman cities and between the Ottoman Empire and European ports were made; that is to say, crops cultivated in the hinterland were sold to world markets after coming to port via the Meriç River. In this sense, the Meriç significantly influenced the development of cities and regions in the Balkans such as Edirne, Filibe, Dimetoka, and Tatarpazarı.[56] However, floods along the river were a great

54 Güler Yarcı, "Ondokuzuncu Yüzyılın İkinci Yarısında Vardar Nehri'nin Temizlik ve Islahı," in *Temizlik Kitabı*, eds. Emine Gürsoy-Naskali and Salih Mehmet Arçın (Istanbul: Kitabevi Yayınları, 2009), 91-96.

55 For detailed information on transportation and trade activities along the Meriç River, see Hatice Aslan Çağlıkeçecigil, "18.-19. Yüzyıllarda Meriç Nehri Üzerindeki Köprüler," in *Osmanlı Devleti'nde Nehirler ve Göller* 1, eds. Şakir Batmaz and Özen Tok (Kayseri: Not Yayınları, 2015); Emine Gümüşsoy, "19. Yüzyıl Osmanlı Belgelerinde Meriç," in *Osmanlı Devleti'nde Nehirler ve Göller* 1, eds. Şakir Batmaz and Özen Tok (Kayseri: Not Yayınları, 2015); Neriman Ersoy Hacısalihoğlu, "19. Yüzyıl Ticaretinde Meriç Nehri'nin Rolü," in *Osmanlı Devleti'nde Nehirler ve Göller* 1, eds. Şakir Batmaz and Özen Tok (Kayseri: Not Yayınları, 2015); İbrahim Sezgin, "Meriç Nehri'nde Taşımacılık, 17.-18. Asırlar," in *Osmanlı Devleti'nde Nehirler ve Göller* 1, eds. Şakir Batmaz and Özen Tok (Kayseri: Not Yayınları, 2015); and Aziz Tekdemir, "19. Yüzyılın İkinci Yarısında Meriç Nehri'nde Vapur İşletme İmtiyazı," in *Osmanlı Devleti'nde Nehirler ve Göller* 1, eds. Şakir Batmaz and Özen Tok (Kayseri: Not Yayınları, 2015).

56 Gümüşsoy, "19. Yüzyıl Osmanlı Belgelerinde Meriç," 632.

threat to these regions because it led to deaths, hindered transport, devastated houses and bridges, and damaged farmlands. They prevented the development of agricultural production and the continuity of commercial activities as well as led to diseases such as malaria due to the resulting marshes.[57] Particularly Edirne, where the Meriç, Tunca, and Arda rivers intersected, suffered great disasters because of floods along these three rivers in the nineteenth century. For example, during the great flood of Edirne in 1844, when all three rivers overflowed at the same time, the houses more than 1200 families were devastated. The flood left Edirne under water.[58] Another flood in 1895, again stemming from overflow of these three rivers, led to the devastation of many houses and shops in Edirne and to the damage of six surrounding villages.[59] As a result of such disasters, nineteenth-century Ottoman provincial officials tried to reclaim the Meriç River and its tributaries, especially after the great flood in 1844. The commission that was established just after the flood in 1844 proposed the purchase of a dredger from France to clean the riverbed and to take measures to strengthen the riverbanks. These early works after this flood were not so successful, but up to the beginning of the twentieth century, Ottoman provincial officials continued to search for measures to clean and reclaim the river in order to prevent floods from damaging farmland, devastating houses, shops and bridges, and killing people and animals.[60]

Therefore, floods resulting from overflowing in rivers were a significant reasons for reclamation projects; flood disasters led to the creation of marshes around rivers, left buildings and farmlands under water, and endangered human life and public health. However, in some cases, local

57 Çoruh, "Osmanlı Devleti'nde Nehir Islahı," 169-75; Gümüşsoy, "19. Yüzyıl Osmanlı Belgelerinde Meriç," 640-44; and Muhittin Kapanşahin, "Osmanlı Belgelerine Göre Meriç Nehri Taşkınları," in *Osmanlı Devleti'nde Nehirler ve Göller 2*, eds. Şakir Batmaz and Özen Tok (Kayseri: Not Yayınları, 2015).

58 Gümüşsoy, "19. Yüzyıl Osmanlı Belgelerinde Meriç," 640.

59 Ibid., 643.

60 Çoruh, "Osmanlı Devleti'nde Nehir Islahı," 169-73.

socioeconomic circumstances resulted in the adaptation to the new conditions that arose from floods and resulting marshes and did not necessitate reclamation projects. One example was Mihaliç in Hüdavendigar province where rivers frequently flooded. In Mihaliç, an important region for the cultivation of wheat and grazing, the local population began to leave their villages and homes because of the growing marshes resulting from the floods. The inundations consistently upset wheat cultivation in Mihaliç in the nineteenth century; however, the changing environmental conditions – especially floods and resulting marshes – prompted the local rural population to adapt and produce a new kind of agricultural knowledge by changing crops they cultivated. They began to cultivate flaxseed and melon to compensate for the loss of wheat.[61]

3.3.3 *Malaria and Diseases*

One of the most crucial reasons for reclaiming and draining marshes, lakes and rivers was that particularly marshes threatened public health by means of various diseases such as malaria. Because malaria was one of the most widespread diseases in the empire that had affected thousands of people especially in countryside by the end of nineteenth and beginning of the twentieth centuries, the Ottoman government tried to find ways to eliminate malaria and its causes. By the end of the nineteenth century, in Europe, malaria was associated with miasma and hot, humid places such as marshes; it was assumed that the heavy air and foul smell in such places had deleterious effects on human health.[62]

Malaria and malarial fever were usually associated with miasma in Germany, as well. According to David Blackbourn, people in Germany "may have had the wrong explanation when they associated malarial fevers with 'miasmas,' but they were not wrong to link the disease with

61 Küçükceran, "Seller, Bataklıklar ve Dönüşen Tarım Bilgisi," 242-47.

62 Chris Gratien, "The Ottoman Quagmire: Malaria, Swamps, and Settlement in the Late Ottoman Mediterranean," *International Journal of Middle Eastern Studies* 49, no. 4 (November 2017), 585.

marsh and fen."[63] By the end of the century, as a matter of fact it was discovered that the disease was related to standing water, which provided a favorable home for Anopheles mosquitoes, rather than heavy air or a foul smell.[64] In fact, it was Anopheles carrying blood-borne parasites, called Plasmodium, that spread malaria by biting humans. The mosquitoes transmitted malarial parasites to humans, and thus the disease spread. About 9-17 days after a mosquito that carried a malarial parasite bit a person, the parasite would settle in the marrow, spleen, cerebral venule, and liver. The disease weakened the human immune system and made people vulnerable to chronic diseases such as anemia, pneumonia, and gastrointestinal infections in children.[65] A patient who suffered malaria would lose weight, experience a thinning of the arms and legs, and have a distended abdomen, eventually leading to the loss of the ability to walk and work skills or even to death.[66]

Malaria mostly occurred in tropical and subtropical zones and in regions with standing water, rivers, and marshy areas that allowed the Anopheles mosquito to reproduce and thrive. When mean monthly temperatures rose above 18 degrees centigrade, malarial parasites could live and spread. Precipitation and humidity were also significant factors for the disease. The months of September and October were especially suitable for its spread because they were both wet and humid.[67] Because marshes and other wetlands were favorable for the mosquitoes that hosted malarial parasites, they posed a danger to inhabitants in nearby regions, and disease could easily spread in such regions.

63 Blackbourn, *The Conquest of Nature*, 64.

64 Chris Gratien, "Pilavdan Dönen İmparatorluk: Meclis-i Mebusan'da Sıtma ve Çeltik Tartışmaları," in *Osmanlı'dan Cumhuriyet'e Salgın Hastalıklar ve Kamu Sağlığı*, eds. Burcu Kurt and İsmail Yaşayanlar (Istanbul: Tarih Vakfı Yurt Yayınları, 2017), 100.

65 Blackbourn, *The Conquest of Nature*, 64.

66 Fatih Tuğluoğlu, "Türkiye'de Sıtma Mücadelesi (1924-1950)," *Türkiye Parazitoloji Dergisi* 32, no. 4 (December 2008), 352-54.

67 Ibid.

For centuries, the inhabitants of the Ottoman and Mediterranean geographies escaped malaria mainly by moving to mountainous regions.[68] However, according to Chris Gratien, efforts to increase economic productivity and the political integration of the provinces in the nineteenth century changed both the settlement patterns of human actors and the prevalence of malaria in the empire. Indeed, there was a direct relationship between changes to the settlement policy of the Ottoman government, which was aimed at increasing productivity and integration, and the prevalence of malaria. "Changes in settlement patterns, especially a population increase in the empire's lowlands from the mid-19th century onward, fueled the spread of malaria in the Ottoman Empire."[69] In other words, settlement turned malaria into "a regular part of [the] environment," to use the term employed by Alan Mikhail to describe the nature of the plague in late eighteenth-century Egypt.[70] However, by the end of the nineteenth century, it was seen as a problem to be dealt with.

The issue of malaria vexed Ottoman central and provincial administrations starting at the end of the nineteenth century. It was never completely settled in the late imperial period and persisted in the early republican period. Early republican governments also tried many methods to eliminate malaria.[71] Apart from public health measures, one method was the reclamation of regions that were favorable for mosquitos and thus malaria. Republican governments attached great importance to reclaiming marshy areas to eliminate the potential for the disease, and they

68 For a stimulating view of malaria in the Mediterranean geography, see Tabak, *The Waning of the Mediterranean*.

69 Gratien, "The Ottoman Quagmire," 584.

70 Alan Mikhail, "The Nature of Plague in Late Eighteenth-Century Egypt," *Bulletin of the History of Medicine* 82, no. 2 (Summer 2008), 250.

71 For a discussion of such methods in the early republican period, see Tuğluoğlu, "Türkiye'de Sıtma Mücadelesi." For another discussion of the modernist agenda vis-à-vis malaria that emphasized public health education in the early republican period, see Kyle T. Evered and Emine Ö. Evered, "State, Peasant, Mosquito: The Biopolitics of Public Health Education and Malaria in Early Republican Turkey," *Political Geography*, no. 31 (June 2012): 311-23.

executed reclamation projects in many places.[72] Efforts to reclaim marshy areas for the purpose of removing the threat to public health and preventing malaria were already being made at the end of the nineteenth and beginning of the twentieth centuries.

Lake Kaz in the *sancak* of Tokat in the province of Sivas was an example of a wetland with the potential to threaten public health. It had turned into a marsh that gave off a foul smell in summer. Like many other places in Tokat, Anopheles that carried malarial parasites nested there until mid-spring. There were many factors in the region that encouraged mosquitos: the temperature; the emergence of marshes and standing water because of the floods of the region's rivers; the abundance of vineyards and orchards; and the cultivation of tobacco and rice in paddies. As scientific and medical knowledge would discover at the end of the century, there was a connection between malaria and the rice paddy fields that required wetlands.[73] All were places that nurtured the disease. Because of these factors, the region witnessed many malaria cases at the end of the nineteenth century, and inhabitants of villages in the region suffered complaints such as hepatosplenomegaly, anemia, cachexia, and preterm birth.[74]

These complaints and the increasing prevalence of malaria in the 1860s and 1870s prompted the local administration to take action. In correspondence sent to the Ministry of the Interior in October 1870, the local council in the province of Sivas complained of the marshy region of Lake Kaz which gave off a foul smell and thus led to diseases. According to the council, although the lands in the region were fertile, the lake and the marsh left farmlands under water, making them unproductive. The local population suffered from malaria. Because of these problems, the council

72 Asım İsmail, "Türkiye'deki Sıtma Mücadelesi Noktai Nazardan Arazi Islahatı," in *Beşinci Milli Türk Tıp Kongresi, 20-22 Birinciteşrin 1933* (Istanbul: Kader Matbaası, 1934).

73 Gratien, "Pilavdan Dönen İmparatorluk," 100.

74 Murat Hanilçe, "Osmanlı Devleti'nin Bataklık Kurutma Uygulamalarına Bir Bakış: Tokat Kaz Gölü Örneği (1870-1892)," *Türk Dünyası Araştırmaları* 119, no. 235 (July-August 2018), 65-66.

demanded the reclamation of the marshy region. Therefore, the reclamation of the region was twice put on the agenda of the local government, in the 1870s and 1890s, but both of these efforts failed.[75]

There were many other examples of reclamation projects to counteract malaria. For example, one region in the province of Adana witnessed many diseases including malaria, cholera, the plague, and typhus both before and during the nineteenth century.[76] Malaria was especially widespread because of cultivation of paddies and the existence of marshes in the region that made the spread of the disease possible. Reclamation projects in the region continued in the republican period.[77] In 1889, the reclamation of marshes and lakes in Sandıklı remained on the agenda because these regions suffered diseases such as fever.[78] In 1905, the Ministry of Internal Affairs tried to find a way to reclaim marshes near Lake Beyşehir because it was understood that diseases spreading among Tartar, Chechen, and Circassian migrants had come from them. The ministry asked that these migrants be moved to another place if it was not possible to reclaim these regions.[79]

3.3.4 *Immigration*

Another reason for reclamation projects in marshes and other wetlands in Ottoman territories was to create new land for the settlement of Muslim immigrants from the Balkans, Crimea, and the Caucasus. The second half of the nineteenth century witnessed the immigration of a Muslim population from these territories that had been lost by the Ottoman state during the Crimean War and especially the Ottoman-Russian War of 1877-78. According to some estimates, between 1783 and 1913 about 5-7 million

75 Ibid., 67.

76 Selma Turhan Sarıköse, "XIX. Yüzyılda Çukurova'da Doğal Afetler ve Salgın Hastalıklar" (PhD diss., Selçuk Üniversitesi, 2013).

77 Ibid., 238-40.

78 BOA, DH.MKT, 1562/99, 1306.Ra.4.

79 BOA, DH.MKT, 1016/26, 1323.Ş.13.

people immigrated into Ottoman territories.[80] After the Ottoman-Russian War of 1877-78, approximately 1 million people immigrated into Ottoman territories from Balkan territories lost by the empire.[81] Hundreds of thousands Muslim immigrants were settled in various parts of Anatolia by the Ottoman government. These migrations not only transformed the social, economic, demographic, and ethnic structure of Anatolian territories but also caused difficulties concerning the integration of newcomers into established local populations.[82] The process of settlement led to tensions between newly-settled immigrants and local populations because of the appropriation of land by the government on behalf of immigrants and the resistance of local landowners and tribal communities against this process. In other words, the appearance of immigrants as a new actor in disputes over land ownership paved the way for struggles among immigrants, local populations (landowners, tribal groups, peasants, and merchants) and state officials and required redefinition of land ownership in all provinces of the empire. Such struggles concerning land disputes were a source of inter-communal clashes and violence in subsequent years.[83] It is also possible to see tensions, struggles, and sometimes armed clashes between immigrants and local populations in various parts of Anatolia.

---

80 Donald Quataert, "The Age of Reforms, 1812-1914," in *An Economic and Social History of the Ottoman Empire II*, eds. Halil İnalcık and Donald Quataert (Cambridge: Cambridge University Press, 1994), 793.

81 Nedim İpek, *Rumeli'den Anadolu'ya Türk Göçleri* (Ankara: Türk Tarih Kurumu Yayınları, 1999), 237.

82 For an example of such a case in Western Anatolia, see Yücel Terzibaşoğlu, "Landlords, Refugees, and Nomads: Struggles for Land around Late-Nineteenth-Century Ayvalık," *New Perspectives on Turkey*, no. 24 (Spring 2001): 51-82.

83 For an example, see the case of the settlement of Muslim immigrants in the central Black Sea region: Oktay Özel, "Muhacirler, Yerliler ve Gayrimüslimler: Osmanlı'nın Son Devrinde Orta Karadeniz'de Toplumsal Uyumun Sınırları Üzerine Bazı Gözlemler," *Tarih ve Toplum Yeni Yaklaşımlar*, no. 5 (Spring 2007): 93-112; and Oktay Özel, "Migration and Power Politics: The Settlement of Georgian Immigrants in Turkey, 1878-1908," *Middle Eastern Studies* 46, no. 4 (August 2010): 477-96.

In the Ottoman Empire, population decreases resulting from disease and wars at the end of the eighteenth and beginning of the nineteenth centuries hindered the cultivation of arable land and deprived the central government of a crucial source of revenue. The empire needed to employ significant manpower to cultivate not only available arable land but also reclaim wastelands and wetlands as agricultural land. Thus, the Ottoman government did not see immigrants as a burden, but as an opportunity to satisfy its need for manpower and to increase its revenue. It was expected that immigrants would make uncultivated lands productive. The government even made arrangements to encourage the immigration of Crimean and Caucasian Muslims. According to a decree issued in 1857, the government would allocate land to newcomers that they could cultivate for twelve years without paying any tax. Only after twelve years elapsed would they begin to pay the relevant taxes. This was a kind of incentive.[84]

As the mass influx of immigrants into the empire accelerated, the government needed to mobilize its own bureaucracy, establish new institutions and commissions, and employ new officials. The Commission for Immigrants (Muhacirîn Komisyonu), established in 1860, played an important role not only in settling immigrants in Anatolian territories but also in transforming the demographic, social, economic, and ethnic structure of Anatolia.[85] This commission turned into the General Administration for Immigrants (İdare-i Umumiye-i Muhacirîn) in 1878. The primary job of these commissions and state agencies was to identify arable lands suitable for the settlement of immigrants, to designate the amount of land to be allocated to each household, and to handle issues concerning immigrants' taxation and conscription.[86] These commissions gave the central

84 Quataert, "The Age of Reforms, 1812-1914," 794-95.

85 For detailed information on the Commission for Immigrants, see David Cameron Cuthell, "The Muhacirin Komisyonu: An Agent in the Transformation of Ottoman Anatolia, 1860-1866" (PhD diss., Columbia University, 2005). Also see: Isa Blumi, *Ottoman Refugees, 1878-1939: Migration in a Post-Imperial World* (London: Bloomsbury Academic, 2013); and Reşat Kasaba, *A Moveable Empire: Ottoman Nomads, Migrants, and Refugees* (Seattle: University of Washington Press, 2009).

86 Abdullah Saydam, *Kırım ve Kafkas Göçleri (1856-1876)* (Ankara: Türk Tarih Kurumu Yayınları, 1997), 102-19.

government an opportunity to get involved in the local politics of provinces in which immigrants were settled and made it possible for central officials to form partnerships with local actors and thus become part of local power relations.

The settlement of Muslim immigrants in imperial territories affected the use of forests as well as marshes, rivers, and lakes. For example, the process of settlement influenced forests because state-owned forests were allocated to some immigrants. The central government allowed immigrants to use forestlands to meet their own needs for firewood and building materials, yet this was later restricted to urgent needs. However, many immigrant villages continued to exploit forestlands even after meeting their urgent needs.[87] Local officials complained about immigrants' use of these lands. Meanwhile, tensions emerged on the use of forest products other than wood between local populations and the newly arrived immigrants. Given these complaints and concerns, the government decided to settle some immigrants on other lands. In 1893, it ordered that local villagers could retrieve their losses immigrants had caused in forestlands. For Selçuk Dursun, the order preventing immigrants from entering forestlands was risky because it could lead to clashes between local populations and immigrants. In 1902, the settlement of immigrants in forestlands was forbidden.[88]

The immigration policy and settlement of immigrants in imperial territories in the second half of the century became a reason to reclaim wetlands to create new land for these newcomers but also created some tensions between immigrants and local actors. There are several examples of reclamation projects designed by the central government to make new land available for Muslim immigrants as far back as the 1860s. Correspondence between the central government and the *mutasarrıflık* of Izmid in 1863 suggested that drained and reclaimed land were to be allotted to the Muslim immigrants. The government wanted to learn how many

87 Selçuk Dursun, "Forest and the State," 340.

88 Ibid., 343.

households could be settled in the reclaimed marshes in the Sarıçayır district by the end of the year.[89] Upon the request of the government, the local administration in Izmid investigated the issue. According to the investigation, there was a region that had become marshy and was subsequently abandoned. This region had been cleaned, and after its cleaning, only four or five villages among its previous inhabitants had returned. According to the local administration, there was a vast land of approximately 94 thousand decares in Sarıçayır where 150 immigrant households could be settled.[90]

When Ahmed Vefik Paşa, who was aware of the urgent issue of immigrants, held the office of inspectorship (Anadolu Sağ Kol Müfettişliği) in Anatolia in 1864, he proposed the reclamation of marshes in the Bursa plain. Because the Nilüfer River on the province of Hüdavendigar was prone to silting up, much of the land of the plain was left under water, leading to the emergence of marshes in the region. Repeated floods made the issue worse. Ahmed Vefik Paşa thought that if these marshes could be cleaned and reclaimed, not only would the region prosper commercially and agriculturally but the immigrants in the province could be settled on the reclaimed land. Even though this project was not put into practice, the central government took it seriously.[91] However, immigrants were sometimes settled around or near uncleaned marshes or lakes. And because such places endangered their health, they complained and asked to be moved to a healthier place. For example, in 1891, the Pomak immigrants that had been settled in Osmaniye village near Eskişehir complained that many among them had become ill because of the marshes

89 For the correspondence in question, see BOA, MVL, 664/27, 1280.B.25; MVL, 666/6, 1280.Ş.4; MVL, 669/74, 1280.Za.3; and MVL, 672/4, 1280.Za.25.

90 BOA, MVL, 664/27, 1280.B.25 and MVL, 666/6, 1280.Ş.4.

91 Burcu Kurt, "II. Abdülhamid Dönemi Nafia Çalışmalarına Bir Örnek: Nilüfer Nehri'nin Islahı ve Bursa Ovası Bataklıklarının Kurutulması Projesi," in *Odryses'ten Nilüfer'e Uluslararası Nilüfer Sempozyumu, 13-15 Kasım 2015, Nilüfer*, eds. Mustafa Şahin, Sezai Sevim, and Doğan Yavaş (Bursa: Nilüfer Belediyesi, 2015).

and reeds. Following these complaints, the local administration decided to settle them in Kavacık village one hour away.[92]

In some regions, when newcomers were settled around marshes and lakes, these marshy areas also became a source of contention among immigrants, the local population, and concession holders – just as in forestlands. One of these regions was the marsh around Lake Gökçeviran in Adapazarı which witnessed a mass immigration of Bosnian Muslims after the Ottoman-Russian War of 1877-78.

Adapazarı was a region that had witnessed population growth because many immigrants from the Balkans were settled there by the government after the war. While Adapazarı's population had been approximately 10 thousand in the 1830s,[93] it increased to 53.924 by 1893.[94] This increase resulted from immigration to a great extent. According to Mustafa Sarı and Bahadır Ünal, the number of immigrants who arrived in Adapazarı after the Ottoman-Russian War of 1877-78 was about 40 thousand. Some of these immigrants were Bosnian Muslims who came to Anatolia after the occupation of Bosnia by the Austro-Hungarian Empire after the Berlin Congress. According to the census in 1893, 1.104 Bosnian immigrants who had come to Adapazarı were settled on land around Lake Gökçeviran.[95]

The wetland around Lake Gökçeviran comprised a region of about 30 thousand decares. The lake and marsh decreased agricultural production in the region and threatened public health because of diseases such as malaria. These dangers and the intention to turn wetlands into farmland pushed the government to put the reclamation of this region on its agenda in the 1890s, but because of the financial crisis, the government could not finance the project from its own treasury. As with most public

92 BOA, DH.MKT, 1809/21, 1308.B.5 and DH.MKT, 1825/103, 1308.Ş.26.

93 Kemal Karpat, *Ottoman Population, 1830-1914: Demographic and Social Characteristics* (Madison, Wisconsin: The University of Wisconsin Press, 1985), 114.

94 Ibid., 128-29.

95 Mustafa Sarı and Bahadır Ünal, "Adapazarı'nda Gökçeören Bataklığını Kurutma Çalışmaları ve Muhacirlerle Yaşanan Sorunlar (1890-1908)," *Akademik Incelemeler Dergisi (Journal of Academic Inquiries)* 9, no. 2 (2014), 141-42.

works projects, it tried to grant the project to a private entrepreneur as concession.

Eventually, in 1893, the French entrepreneur Emile Baudovy won the concession to reclaim Lake Gökçeviran and its marsh and forestlands that were waterlogged because of floods.[96] After obtaining the concession, he began work and reclaimed a great region, creating an agricultural land of about 24 thousand decares. According to the provisions of his concession, once the ministry certified the completion of the project, he would recieve the title to the land he had reclaimed in accordance with the Land Code of 1858. Because marshes were considered wasteland according to the Land Code, such regions could be transformed into farmland only with the permission of officials and under the condition that the property belonged to the treasury. The decree sent to provinces in 1881 pointed out that the draining and reclaiming of swamps and rivers was based on the relevant article of the Land Code. Thus, Emile Baudovy had the right to cultivate the aforementioned land due to his possession of the title; furthermore, he was exempted from tithe (aşar vergisi) for the duration of the concession contract. After completing the project in 1895, he began to cultivate the land and obtained a great revenue by the means of harvests of crops such as wheat and corn.[97]

However, soon after Emile Baudovy began cultivating the land, a conflict emerged over the property rights to the reclaimed land among him, the Bosnian immigrants settled on land around Lake Gökçeviran, and the local population of the region. In September 1895, Emile Baudovy claimed that Bosnian immigrants and locals had illegally seized tracks of land that he had reclaimed and cultivated. Moreover, local officials collaborated with them, turned a blind eye to the illegal seizure, and even issued some kind of title deed to them. By trespassing beyond the borders of the land that the government had given to them, immigrants had infringed upon and enclosed about 8 thousand decares of Emile Baudovy's land. Some

96 Erdem, "Sultan II. Abdülhamit Devri (1876-1908) Osmanlı Devleti'nde Bayındırlık Faaliyetleri," 463-64.

97 Sarı and Ünal, "Adapazarı'nda Gökçeören Bataklığını Kurutma Çalışmaları," 146.

had even begun to sell plots they had seized from him.[98] Upon his complaint, the government ordered the district governor (*kaymakam*) of Adapazarı to investigate the issue. The district governor, in his report, pointed out that immigrants had not encroached upon Emile Baudovy's land and that the title deeds in their possession were for land outside his property.

Despite this report and government interest in the issue, the tensions did not end, and in 1896 Bosnian immigrants destroyed crops cultivated by Emile Baudovy as a result of his reclamation works. Over the increasing tension, the government sent an investigation commission to the region in 1899. According to the report prepared by this commission, Emile Baudovy had reclaimed a wetland area of 15 thousand decares comprised of the lake and marshes around it. However, Bosnian immigrants residing in this region had encroached upon 4.620 decares of this reclaimed land and cultivated it. They (347 persons) claimed that this tract of land had belonged to them for ten years and presented their own title deeds. The issue thus came to a deadlock. The land had been granted to the concession holder, Emile Baudovy, by means of a contract; however, it was impossible to eject the immigrants from the region. The commission proposed that the government pay compensation to Emile Baudovy in return for the land he had reclaimed and that the immigrants had seized, and the government decided to carry this proposal through. The Bosnian immigrants continued to reside on this land.[99]

3.3.5 *Security*

Reclamations of marshes, lakes, and rivers could also be connected to security and military issues in Ottoman territories. Especially when marshes endangered the health of soldiers, their reclamation became a priority of both central and provincial governments. Such example occurred in Izmir. In 1888, Abdulhamid II confirmed a project to reclaim a

98 Ibid., 147-48.

99 Ibid., 150-51.

marshy region in Yenikale, Izmir. This region, near the fortification of Yenikale, endangered the health of both soldiers and the local population. The provincial government in Aydın thought that the dirty smell that resulted from the marsh might led to diseases such as fever and malaria and to the death of soldiers, so it should be reclaimed in order to maintain their health.[100] Apart from the health of soldiers and the population, the government planned for the land obtained from reclaiming the marshland to be used as training fields for drilling soldiers. Thus, this marshland was not contracted to a private company or individual, as was the usual practice. Instead, the project was conducted with the help of the governorate and the Ministry of Public Works. In the late Ottoman period, rather than reclaiming a marsh, lake, and river itself using the budget of the Ministry of Public Works, the government usually licensed the work to an individual or company. It did not have enough resources to finance them itself. However, in some cases, governmental agencies did undertake such projects themselves because of the importance of the regions in question. Because the marsh around Yenikale was in a militarily significant region, the provincial government reclaimed the region using state resources and completed the project in a year.[101]

The issue of security was a crucial factor in the Balkan territories at the end of the nineteenth and beginning of the twentieth centuries when various armed bands fought actively with Ottoman civil and military authorities. In many cases, members of the Bulgarian bands used marshes, reeds, lakes, and rivers as shelter to hide from units of the Third Ottoman Army; many hid in the marshes which Ottoman soldiers could not easily control. Local Ottoman civil and military authorities were aware of this and proposed the draining of such marshy areas in order to prevent banditry. For example, in August 1906, the Third Ottoman Army complained that marshes and reeds around Lake Yenice provided a hiding-place for members of Greek and Bulgarian bands active in Yenice, Varna, and Karaferye. According to the Third Army Command, Ottoman soldiers had

100 BOA, DH.MKT, 1502/108, 1305.Ş.10 and DH.MKT, 1511/10, 1305.N.24.

101 Necmi Ülker, "İzmir Yenikale Bataklığının Kurutulması Çalışmalarına Dair Belgeler," *Tarih İncelemeleri Dergisi* 7, no. 1 (1992), 23.

previously occupied the marshy area around Lake Yenice to prevent the activities of the Bulgarian bands there; however, this region of approximately 140 square kilometers endangered the soldiers' health because its foul smell led to malaria and fever. Medical reports confirmed that the region was bad for the soldiers' health, so the soldiers were withdrawn from shores of the lake. Thereafter, mobile military units would only patrol the area. However, this was not enough to quard the region and prevent banditry. When soldiers patrolled, members of the Bulgarian bands used the reeded islet on the lake as a hiding-place. Furthermore, they had killed nine people, including three Muslims and six Greeks. Because of these circumstances, the Third Army Command asked the central government to drain the marshes and clear the reeds around Lake Yenice, which would both provide security in the region and prevent disease.[102]

A similar situation had happened before. On August 1, 1903, the province of Thessalonica informed the central government about bandits hiding in the marshes and reeds around Lake Hırçan in Thessalonica. The lake was surrounded by marshes and reeded areas of approximately 60 square kilometers. In fact, because of the banditry, the lake was besieged by Ottoman soldiers who held the main passages. Nevertheless, the lake still sheltered bandits. Ottoman soldiers had caught and interrogated six of them who confessed in interrogations that there were more than seventy bandits still hiding in the marshes and reeds around the lake. Although provincial authorities in Thessalonica did not find that number of bandits, they acknowledged that twenty or thirty bandits were hiding in the region. Colonel Hamdi Bey, an Ottoman General Staff officer, was charged with monitoring the bandits in the region, and he pointed out that these bandits left the marshes at nights and threatened the local inhabitants.[103]

102 BOA, BEO, 2976/223136, 1324.Za.29.

103 BOA, A.MTZ.(04), 102/30, 1321.Ca.15. And see BOA, A.MTZ.(04), 101/22, 1321.Ca.04; BOA, Y.MTV, 248/15, 1321.R.22; and BOA, Y.MTV, 247/124, 1321.R.15.

§ 3.4 Financing Reclamation Projects

Financing reclamation projects was one of the most important issues faced by central and provincial Ottoman statesmen and officials. Because the cost of reclamations was heavy and the processes of investigation and construction required a great allocation in the budget, it was impossible for the Ottoman central treasury and the budget of the Ministry of Public Works to cover the costs in the second half of the nineteenth century when the Ottoman Empire was facing a financial crisis. The issue of financing led many projects to be postponed or abandoned. For example, a project concerning the cleaning of the marshes around the Menderes plain and the reclamation of the Menderes River was a significant issue in the 1880s-1890s because agricultural land in Aydın province had become a great source of wealth due to the pickup in the Eastern Mediterranean trade. However, because the Ministry of Public Works could not allocate enough of its budget for the project, it had to be postponed.[104]

Because of these financial problems, the Ottoman statesmen and officials deliberated on how public works in general and reclamation projects in particular could be financed and carried out. Among them, Hasan Fehmi Paşa put forward concrete proposals concerning the creation of new sources of investment and ways of financing public works, including reclamation projects, as stated in Chapter 2. He thought that there were three ways to finance and implement public works projects in the empire and believed that among them the use of foreign capital by means of granting concessions to foreign investors was the most feasible way for financing these projects.[105]

Mehmed Sabri Paşa, the governor of Thessalonica, also tried to find a feasible way to reclaim Lake Tahyanos and the marshes along the Karasu River in Serez in Thessalonica province. When the project was put on the agenda of the local government in 1870s, as discussed in the next chapter, Mehmed Sabri Paşa emphasized the necessity of reclaiming the region in

104 Özgün, "Osmanlılarda Çevre Temizliği Kapsamında Bataklıkları Kurutma Çalışmaları," 135-36.

105 Dinçer, "Osmanlı Vezirlerinden Hasan Fehmi Paşa," 160-63.

question for both agricultural production and public health, and he proposed a way to realize the project. The costs of the project would be covered by the revenue obtained from the eventual sale of the reclaimed land. Accordingly, the work would begin in areas that were easy to survey and reclaim; then, using the capital obtained from their sale, other land would be reclaimed.[106]

Given these proposals and the difficulty of financing them, the government decided to initiate tenders for reclamation projects and to give concessions to private companies or individuals after special commissions and councils within the Ministry of Public Works evaluated the applications. Although the government tried to prioritize state financing, giving concessions to privately-established companies became the norm in time.

For example, in 1887, Adana province asked to carry out a reclamation project along the Seyhan, Ceyhan, and Karasu rivers to drain adjacent marshes to prevent floods that damaged both the local population and the state treasury. Both the governor of Adana and Akif Paşa, the inspector in the region, emphasized the necessity of the project. After the issue was negotiated between the Ministry of the Interior and the Ministry of Public Works, it was discussed in the Council of State. The council decided that although the reclamation project was necessary for the province and the state treasury, the central government and Ministry of Public Works could not meet the cost of the project. It was estimated that the process of investigation for the project would take at least one year. Accordingly, the local population and the state treasury would not be able to make use of the land for at least one year. Both the investigation and construction costs were so high that the central treasury could not cover them. Thus, the Council of State decided that it was more appropriate to carry out the reclamation project by means of granting a concession to a private company.[107] The Council of Ministers ordered Adana province to search out a trustworthy, respected company to undertake the reclamation project.[108]

106 BOA, ŞD, 2003/16, 1286.Z.04.

107 BOA, A.MKT.MHM, 495/57, 1305.R.16.

108 BOA, DH.MKT, 1478/56, 1305.Ca.4.

Thus, granting concessions was the most common method of financing not only reclamation projects but also public works projects in general. In subsequent years, this method became increasingly common.[109]

§ 3.5 Conclusion

This chapter, which claims that reclamation projects in wetland regions were part of a discourse of development, focused on the main reasons given for the necessity of reclaiming marshy regions in the Ottoman Empire in the late Ottoman period. It also described marshy regions in the Ottoman Empire, and the ways such projects were financed. In line with a discourse of development, the primary reason for reclamation projects was to increase agricultural production and the welfare and prosperity of the country. However, other motivations such as hindering floods, preventing diseases (especially malaria), settling refugees on newly available farmland, and maintaining order and security in Ottoman territories also triggered such projects. All these factors made draining and reclaiming marshes, lakes, and rivers in imperial territories crucial for the Ottoman government at the end of the nineteenth and beginning of the twentieth centuries. The Ottoman public works bureaucracy sought suitable methods to carry out such projects because the state treasury did not have the resources to fund them. It usually resorted to granting concessions to private companies. The next chapter will focus on how these procedures worked and discuss how the increasing significance of the Eastern Mediterranean in international trade and the commercialization of agriculture in the Ottoman Empire triggered reclamation projects in the nineteenth century by concentrating on the case of the Karasu River and Lake Tahyanos in Serez.

109 BOA, DH.HMŞ, 29/121, 1329.N.21; BOA, DH.HMŞ, 14/75, 1329.L.7; and BOA, BEO, 4048/303549, 1330.C.19.

4

Reclamation as an Enterprise: Local and Foreign Entrepreneurs versus the Ottoman Government

The most important reason the government in the Hamidian period placed importance on the infrastructure projects such as reclaiming marshes and lakes was the idea that such works would increase the wealth and welfare of the population in line with a discourse of agricultural-based development, as discussed in previous chapters. Ottoman statesmen began to emphasize the importance of public works in the empire from the second half of the nineteenth century. Hasan Fehmi Paşa pointed out that the prosperity and progress of the empire depended on great care being taken in public works.[1] Reclamations of marshes and lakes were among such works. As he pointed out, the emergence of great marshes and lakes not only endangered public health but also was also detrimental to agricultural production. Therefore, it was necessary to reclaim and drain these regions to provide prosperity, increase wealth, and build the empire's future by increasing its revenue.[2]

As pointed out in Chapter 3, reclamation projects were given to private companies in contracts of concession because the Ottoman government did not have the resources to complete them itself. The increasing

1 Dinçer, "Osmanlı Vezirlerinden Hasan Fehmi."

2 Ibid., 159-60.

significance of the Eastern Mediterranean for international trade and the commercialization of agriculture in the Ottoman Empire not only triggered reclamation projects but also made them highly profitable for both local and foreign entrepreneurs. Thus, such projects concerning marshes, lakes, and rivers were seen as part of the development of the country and became the focal point of competition and contestation among various actors such as local landowners, local and foreign merchants and entrepreneurs, state institutions and officials, the Public Debts Administration (Düyun-ı Umumiye İdaresi), and local fishermen. That is, the environment itself became a contested area. Focusing on the economic conflicts that reclamation projects brought about, this chapter deals with struggles between the local agents, including local notables and European entrepreneurs, and the Ottoman government. In so doing, this chapter argues that reclamation projects were not merely due to environmental concerns but constituted significant revenue not only for the Ottoman government but also for the entrepreneurs, both local and foreign, associated with the projects.

Thessalonica and its hinterland were one of the most important regions in terms of reclaiming marshes and lakes because of its fertile agricultural lands and its significance for international trade in the second half of the nineteenth century. From the mid-nineteenth century onwards, Thessalonica became one of the most important commercial centers in the Eastern Mediterranean. The construction of a modern port in Thessalonica and new railway lines linking the city with both European cities and its interior increased the importance of its hinterland as a source of production. The diversity of crops cultivated in the fertile lands of the region and the demand for these crops (especially for grain, tobacco, and cotton) required opening up additional land for the cultivation and trade of these profitable products for international markets. The profitability of cultivating these crops in some regions such as Kavala, Serez, Drama, and Pravişte in Thessalonica's hinterland made agricultural land there more valuable and created competition between local and foreign entrepreneurs. Therefore, especially in the 1850s when a pressing international demand for crops cultivated in the region emerged, local

Ottoman administrators began to place great importance on infrastructure projects such as reclaiming marshes and lakes on the grounds that such works would increase the wealth and welfare of the population.

This chapter discusses the struggles and contestations around reclamation projects that were triggered by the increasing significance of the Eastern Mediterranean for international trade and the commercialization of agriculture in the Ottoman Empire by concentrating on the case of the Karasu River and Lake Tahyanos in Serez, Thessalonica. It narrates the transformation of a reclamation project from initial attempts by the local governments to a full-fledged enterprise that enabled local and foreign entrepreneurs to generate great income, turning natural resources and disasters such as floods into sources of commercial enterprise, even though it eventually failed. This study is based on a survey of primary archival documents concerning the reclamation projects in Serez. These archival materials reveal many conflicts over the use of marshes, the transfer of regions in common use to private companies and individuals, and social outcomes of these reclamation projects.

§ 4.1 The Rise of Thessalonica and Its Hinterland in International Trade

The Eastern Mediterranean under the rule of the Ottoman Empire in the nineteenth century not only broadened the horizons of adventurous foreigners but also underwent a transformation due to commercial transactions in this period. Even in the mid-nineteenth century, merchants traversed the Eastern Mediterranean from one end to the other in camel caravan, not only exchanging goods but also performing some cultural functions. They handed tradition down from generation to generation, circulated ideas, and brought the small, static locations along their routes closer together.[3] However, as trade volume gradually increased in the Eastern Mediterranean during the second half of the nineteenth century, it was no longer just cultures or horizons that were changed because of

3 Eyüp Özveren, *Akdeniz'de Bir Doğu* (Ankara: Dost Kitabevi Yayınları, 2000), 19-25.

commercial activity and transactions; geography and nature were also changed and transformed.

As a junction of major commercial routes in the Mediterranean and the Black Sea, Thessalonica was integrated as a port of transit in international trade during the eighteenth century. But the city did not transform into a promising commercial center until the second half of the nineteenth century. To be more precise, the economy of Thessalonica was in a recession from the beginning of the nineteenth century to 1845. However, from 1845 onward, the policing of piracy in the Mediterranean and the Anglo-Ottoman Commercial Treaty of 1838 (that is, the Treaty of Balta Limanı) between Britain and the Ottoman Empire positively affected the economy of Thessalonica. After 1845, Thessalonica witnessed a rapid recovery in terms of trade. Because many international shipping companies, such as Messageries Maritimes and Fraissnet, began to regularly stop in the port of Thessalonica, maritime traffic and the volume of trade increased. These companies obtained enormous incomes. While the number of ships departing Thessalonica was 243 in 1839, it reached 713 by 1846.[4]

This rise in the volume of trade in Thessalonica was closely related to the increasing importance of the Eastern Mediterranean and Ottoman territories in international trade in the mid-nineteenth century. For Reşat Kasaba, there were three crucial reasons for the demand for Ottoman exports. The first was "an overall increase in the demand for agricultural and raw materials from the periphery to supply the newly developing industries of Europe, an increase accentuated by the Crimean War and the American Civil War."[5] Secondly, the Near East and especially the Ottoman Empire became more important for the establishment and continuation of British hegemony in the world economy. And lastly, the importance of

4 Meropi Anastassiadou, *Selanik, 1830-1912* (Istanbul: Tarih Vakfı Yurt Yayınları, 2001), 92-93.

5 Reşat Kasaba, *The Ottoman Empire and the World Economy: The Nineteenth Century* (Albany: State University of New York Press, 1988), 88.

particular Ottoman exports such as valonia oak, rose madder, opium, cotton, grapes, and raisins increased in international markets.[6] All of these contributed to the favorable turn of Ottoman trade in the second half of the nineteenth century.

However, the rise in the volume of trade in the nineteenth century was not limited to the increase in foreign demand for crops cultivated in Ottoman territories. Domestic demand also rose. The resettlement of Muslim immigrants in the second half of the century contributed to the increasing Ottoman population, leading to additional domestic demand.[7] Donald Quataert points out that the number of people whose agricultural production was intended for the market and commerce rose in the nineteenth century, a tendency that resulted from rises in both domestic and foreign demand.

> Abroad, especially after 1840, the levels of living and buying power of many Europeans improved substantially, permitting them to buy a wider choice and quantity of goods. Rising domestic markets within the empire also were important thanks to increased urbanization as well as mounting personal consumption. The newly opened railroad districts brought a flow of domestic wheat and other cereals to Istanbul, Thessaloniki, İzmir, and Beirut; railroads also attracted truck gardeners who now could grow and ship fruits and vegetables to the expanding and newly accessible markets of these cities.[8]

Yet foreign demand was still a significant factor in the increasing volume of trade in Ottoman ports. This recovery was not limited to exports from Western Anatolia; Thessalonica also benefited from the overall rise in Ottoman exports. Two important international developments especially contributed to the increase in commercial transactions in the port of

6 Ibid., 88-92.

7 Pamuk, *Türkiye'nin 200 Yıllık İktisadi Tarihi*, 132; and Donald Quataert, *Anadolu'da Osmanlı Reformu*, 36.

8 Quataert, *The Ottoman Empire*, 129.

Thessalonica. The first was the Crimean War of 1853-56, which contributed to the recovery of trade in Thessalonica.[9] Because of the war, European markets needed alternative sources for grain when they could no longer turn Russian suppliers. This development increased the importance of Thessalonica in the grain trade as Russian merchants were replaced by Thessalonian merchants. Thus, both international and Thessalonian merchants obtained enormous profits because of demand resulting from the Crimean War.[10]

But the most important stimulus for trade in Thessalonica was the American Civil War and the demand it created for cotton in the 1860s. Although cotton was produced and exported in Western Anatolia before the nineteenth century, it was replaced by cheaper, higher quality American cotton at the beginning of the nineteenth century. Ottoman cotton lost its value in the British textile market, but British textile manufacturers began to look for new sources of cotton to reduce their dependence on American cotton in the nineteenth century. Because of the fertility of Western Anatolia, measures were taken to encourage cotton production there. The American Civil War redoubled this search for alternative sources of cotton and made Western Anatolian cotton more important and profitable. The rising demand for cotton led to an increase in regions devoted to cotton production.[11] However, international demand for cotton was not limited to Western Anatolia; Thessalonica and its hinterland were also pressed by the demand for cotton to be traded in international markets. Because the American Civil War led to a lack of cotton in European markets, Thessalonian and Serez cotton came to supply a good part of European need for cotton.[12]

9 For the Crimean War, see Candan Badem, *The Ottoman Crimean War (1853-1856)* (Leiden: Brill, 2010).

10 Basil C. Gounaris, "Selanik," in *Doğu Akdeniz'de Liman Kentleri (1800-1914)*, eds. Çağlar Keyder, Y. Eyüp Özveren, and Donald Quataert (Istanbul: Tarih Vakfı Yurt Yayınları, 1993), 106.

11 Kasaba, *The Ottoman Empire and the World Economy*, 91.

12 Anastassiadou, *Selanik*, 93.

Growing industrial production in Europe in the 1870s increased the importance of Thessalonica and created more demand for crops produced in the Balkans. The modernization of its port and railway facilities led to a re-organization of regions near the port and the construction of new buildings. As well as the increasing commercial activity of foreign shipping companies in the port of Thessalonica, railway lines were opened to link the city directly to European cities and to its own hinterland in the 1870s. Lines from Thessalonica to Mitroviçe, Manastır, and Dedeağaç were constructed from the 1870s to the 1890s. For Basil C. Gounaris, these three lines channeled all commercial activity in the Southern Balkans to the port of Thessalonica, trivializing other secondary ports in the Balkans except for Kavala. Meanwhile, these developments enlarged the commercial exploitation of Thessalonica's hinterland. Regions such as Florina, Kastoria, Kozani, Serez, and Drama, which were along the railway lines, began to transport their crops to the port of Thessalonica, and the economies of these regions became more integrated that of Thessalonica. Therefore, a more dynamic business climate and competitive environment emerged in both Thessalonica and its hinterland. Traditional fairs were replaced by shops and merchant travelers. International companies engaged in import and export installed agents in Thessalonica, and some banks, credit agencies, and mediators established businesses there.[13]

It was its hinterland that made Thessalonica one of the most important commercial centers of the Balkans. This hinterland of highly fertile farmland rendered Thessalonica and its port dynamic because of the crops it produced. Some crops cultivated in Thessalonica's hinterland became source of wealth especially in the second half of the nineteenth century. Lucrative crops such as tobacco, cotton, and grains were cultivated

13 Gounaris, "Selanik," 107-08. Also see Basil C. Gounaris, *Steam over Macedonia, 1870-1912: Socio-Economic Change and the Railway Factor* (New York: Columbia University Press, 1993).

there. Cereals, silk cocoons, opium, and sesame were also export commodities cultivated in the region.[14]

The American Civil War made cotton trade one of Thessalonica's most important sources of income. Cotton, which was particularly cultivated in the fertile Serez plain, was exported, though it was of lesser quality than that produced in Cyprus or Western Anatolia (especially Izmir). It was also consumed in domestic markets.[15]

Another significant crop cultivated in Thessalonica's hinterland was tobacco. Especially the tobacco produced in Yenice west of Thessalonica was favored, though Kavala was also noted for its cultivation of tobacco.[16] However, Drama's tobacco was higher quality and more valuable than that produced in Sarışaban, Kavala, and Pravişte. From the second half of the nineteenth century onwards, tobacco was Drama's principal export. Fertile farmland in the Drama plain was suitable for the cultivation of tobacco. A great part of the tobacco cultivated in the region was exported through the port of Kavala.[17] Wheat and other grains produced in Thessalonica's hinterland also had great value in Thessalonica's trade.

§ 4.2 From Initial Attempts to a Full-Fledged Enterprise: Serez and the Marshes around the Karasu River and Lake Tahyanos

The *sancak* of Serez (or Siroz) was a region in the hinterland of Thessalonica with fertile agricultural land for the production of tobacco and cotton because of the Serez plain. The commercialization of agriculture in the Ottoman Empire made it crucial to reclaim and clean the marshes and wetlands around the Serez plain, and the Ottoman government tried to

14 Özlem Yıldız, "20. Yüzyıl Başlarında Selanik Limanında Deniz Ticareti," *Çağdaş Türkiye Tarihi Araştırmaları Dergisi* 12, no. 24 (Spring 2012), 35.

15 Anastassiadou, *Selanik*, 95.

16 Ibid.

17 İsmail Arslan, "İngiliz Konsolosluk Raporları Işığında 19. Yüzyıl Ortalarında Drama Sancağı'nda Tütün Yetiştiriciliği ve Ticareti," *Turkish Studies* 4, no. 3 (Spring 2009), 160-61.

extend its agricultural land in the region by giving concessions to private entrepreneurs for their reclamation. Therefore, the region witnessed competition and struggle over the possession of land and water such as rivers and lakes, among local and foreign actors.

Since the 1850s, the marshes around the Karasu River and Lake Tahyanos in Serez in the province of Thessalonica became one of the most significant targets of the local administration and the population because of the damage they cause to agricultural production in fertile Serez plain. Separating Macedonia from Thrace and flowing into the Aegean Sea, the Karasu (Struma) River starts in the Rhodope Mountains, passes through Greece, and flows into the Aegean Sea fifty kilometers southwest of Kavala. Its length is 415 kilometers. After being joined by a few other surrounding rivers, the river flowed into Lake Tahyanos in the Serez plain and then out to the Aegean.[18] In *Kamus-ül Alâm*, Şemseddin Sami states that Tahyanos is a marsh rather than a lake.[19] According to the report of the engineers of a Technical Commission (Heyet-i Fenniye) in 1895, the area of Lake Tahyanos was 12 thousand hectares; the area of Lake Tahyanos and the Karasu River to be reclaimed (which was submerged for one or two months a year) was 32,500 hectares; and the length of the canal to open up to the sea was 29,500 metres.[20] The Karasu River flooded and left vast lands in Serez plain under water, especially in winter. According to Köse, there were three important reasons for these floods.

1 The first concerned the rainfall regime in the region. When rain and snow were significant, floods emerged. The fact that the rivers flowed from the mountains in the region intensified these floods.
2 The second reason was the internal structure of the river. It entered and exited Lake Tahyanos, but when it exited, it left behind mud. Thus, the lake silted up.

18 Metin Ziya Köse, "Bir Zirai Girişim Olarak Karasu (Struma) Nehri'nin Islahı (1857-1867)," in *Osmanlı Devleti'nde Nehirler ve Göller* 2, eds. Şakir Batmaz and Özen Tok (Kayseri: Not Yayınları, 2015).

19 Şemseddin Sami, "Karasu," in *Kamus-ül Alâm* (Ankara: Kaşgar Neşriyat, 1996), 3633.

20 BOA, ŞD, 1209/02, 1315.S.18.

3 The last reason was the fishing weirs (dalyan) in Lake Tahyanos and the Karasu River. These weirs prevented the free flow of the river and led to floods that damaged surrounding land.[21]

The Serez plain, with its length of 90 km and width of 20 km, was very fruitful, and many different crops such as cotton and tobacco were cultivated there. Cotton had an especially important place in trade and was exported to many European countries. The Karasu River was one of the most crucial elements that made Serez plain fruitful. However, because of the flooding of the river, vast tracts of land were submerged, damaging the harvests in the region. Because of the fertility of the plain and the potential of the river to damage this fertile land, reclaiming the Karasu River and Lake Tahyanos became a significant project for local administration and the population starting in the 1850s.

4.2.1 *Initial Attempts by the Local Administration*

The first attempt to reclaim the Karasu River was a project in 1857 to open a canal where the river exited Lake Tahyanos because the old canal in the same location had not prevented floods. This attempt was initiated by the local government. Rather than giving a concession to a private company, the local administrative council and the province of Thessalonica took the lead in reclaiming the lake and marshes because of damage they inflicted on the local population and local agricultural land. The local council in Serez charged Abdülkadir Efendi, one of its members, to investigate the project. According to the investigation, the mouth of the river in the lake would clog because of two fishing weirs and huge stones, leading to an accumulation of mud. In order to prevent its accumulation, it was necessary to construct a dike of 300 *ziras*. Excavation began, but the project took a long time because of sudden, heavy rainfall made tributaries of the Karasu River overflow, destroying the dike under construction. Moreover, the canal opened at the mouth of the lake clogged again, so the project had to start over.[22]

21 Köse, "Bir Zirai Girişim Olarak Karasu (Struma) Nehri'nin Islahı," 537.

22 Ibid., 540.

In 1862, the recently retained Major Ali Efendi, together with some other engineers, again investigated and wrote a report about the river. According to the report, fishing weirs constructed by peasants living around Yeniköy at the end of Lake Tahyanos hindered the flow of water into the river. When the flow slowed, sand brought by the river was deposited in the lake. Thus, marshes and reeds emerged around the mouth of the river. The report also suggested measures to prevent the emergence of marshes, the most important of which was to clean the conduit between Lake Tahyanos and Çayağzı, the place one and one a half hours downstream where the river flowed into the sea, with a dredger. In addition, it was necessary to construct dikes made of stone or of soil in areas that were not rocky – to save the plain from floods.[23]

Köse points out that the project to reclaim in the Karasu River was completed in the 1860s. However, floods of the Karasu River continued. In 1869, the local administration again tried to deal with them.[24] On December 14, 1869, Mehmed Sabri Paşa, the governor of Thessalonica, asked the Ministry of the Interior to send an engineer familiar with hydraulic engineering because of importance of reclaiming the province's rivers, lakes, and marshes and thus of opening up land for agriculture. Pointing out that reclaiming these regions would benefit agricultural production, Mehmed Sabri called attention to the Karasu River in Serez.[25] As lands were sometimes damaged following the flooding (tuğyan) of the river, both the local population and administration had spent a large amount of money to ameliorating the watercourse and prevent this damage. But these long-standing efforts had not been successful. Because of the failure to reclaim these areas, a considerable amount of agricultural land had been submerged and much land under cultivation was damaged. For Mehmed Sabri Paşa, it was necessary to establish a company to undertake the enterprise of making a topographical survey and inspection of the area and thus to draw up a map with the help of road engineers from the province. However, the road engineers did not have a good command

23 Ibid., 540-41.

24 Ibid., 541.

25 BOA, ŞD, 2003/16, 1286.Z.04.

of hydraulic engineering works, and there was no suitable engineer in the province to make such a survey and arrange a proper map. These works could be only accomplished by an engineer who was an expert in the science of lake and river engineering.

For Mehmed Sabri, the flooding of the Karasu River was not the only reason for the need of a hydraulic engineer in Thessalonica; there were many other rivers, lakes, and marshes to be reclaimed in the province. The governor thought that these works would not require a large amount of money and that the costs could be offset by the revenue obtained from the sale of reclaimed land. He offered that the work would begin in lands to survey and reclaim easily. After these initial efforts, other lands could be reclaimed by using the capital obtained from their sales.

On January 30, 1870, Mehmed Sabri sent another document to the Ministry of the Interior repeating the request for a hydraulic engineer to reclaim the land in question because he had not received any reply.[26] After the successive requests of the governor insisting on the importance of reclaiming rivers, lakes, and marshes in Thessalonica, the Council of State put the issue on its agenda and confirmed that it was necessary to deploy a hydraulic engineer to Thessalonica because of the potential benefits of land reclamation there. Moreover, the Council of State accepted Mehmed Sabri's proposal to successively reclaim other rivers, lakes, and marshes in the province. Therefore, on February 14, 1870, a hydraulic engineer named Mösyö Zivek was employed for a salary of 3 thousand *kuruş* in Thessalonica to ameliorate the watercourse of the Karasu River and to reclaim other rivers, lakes, and marshes. Together with the engineer, a technician was also employed for a salary of 1 thousand *kuruş*.[27]

4.2.2 *Need for a Greater Scale: The Reclamation Project in Serez as a Full-Fledged Commercial Enterprise*

The necessity of reclaiming the Karasu River and Lake Tahyanos did not come to an end in 1870s. As the local administration's initiative to resort

26 Ibid.

27 Ibid.

to a tender for a concession shows, the initial attempts by the administrative council and local population to reclaim them since the 1850s failed. After this failure, the process of reclamation turned into a commercial enterprise that promised a great income to the candidates for the concession. As stated above, the Serez plain was a fruitful plain, and many different crops such as cotton and tobacco were produced there; therefore, the concession contract provided the concession holder the opportunity to sell the crops cultivated on this fertile land in both domestic and international markets. Both local and foreign entrepreneurs understood the value of this opportunity.

In 1883, the province of Thessalonica had a tender to recover the weirs in Lake Tahyanos in the *sancak* of Serez and reclaim the marshes along the Karasu River to make the region suitable for agriculture ("kâbil-i zer' hale ifrağı") and to allow river transport on the Karasu. Hacı Tahir Bey of Serez applied to the province to receive the concession and delivered his own tender documents. The fact that he applied to recieve the concession suggests that local landowners, merchants, and entrepreneurs noticed the opportunity that the reclamation projects entailed. Thus, it can be argued that the discourse of development based on increasing agricultural production via public works such as reclamation and drainage projects, produced an effect at the local level. More specifically, local investors and entrepreneurs like Hacı Tahir Bey supported such projects because they provided an opportunity to make a great profit.

Hacı Tahir Bey's documents were assigned to the Ministry of Public Works and from there were forwarded to the Council of Ministers for evaluation by the province. His request for the concession was accepted by the council because it was favorable both for the benefit of the treasury and for the prosperity of the country. Thus, on April 15, 1883, bills of contract were announced, and technical specifications were prepared and submitted.[28] However, on February 27, 1884, despite the concession being granted to him ten months earlier, Hacı Tahir Bey complained about delays in official dealings. Using a rhetoric of prosperity, public

28 BOA, Y.A.RES, 20/2, 1300.C.07.

works, and development – as Ottoman statesmen and during the second half of the nineteenth century – Hacı Tahir Bey stated that the Council of Ministers decided to grant the concession for Lake Tahyanos and the Karasu River to him ten months earlier and that reclaiming this river and lake without delay was necessary for the prosperity of the state and country. Recent flooding caused by the river also strengthened his request because Lake Tahyanos had surged again leading to many properties in the region being submerged because the current of the Karasu River was hindered. Therefore, he requested to do what was necessary in this matter to protect the land.[29] Thus, the Ministry of Public Works sent confirmed copies of the contract and specifications to the Grand Vizierate on November 17, 1884.[30]

However, Hacı Tahir Bey died before the time given to him had expired and thus could not fulfill the conditions of the contract. His heirs were still children and the joint-stock company obliged by the contract had not yet been established at the time of his death, so the deadline for the beginning of the project expired. Thereupon, in March 23, 1889, the Council of Ministers decided that the deposit paid by Hacı Tahir Bey would be refunded to his heirs because they were orphans and because he had died before he beginning the concession. The council ordered new applicants for the concession be sought.[31] The Ministry of Public Works, in November 18, 1889, reported that newspaper advertisement searching for a new candidate for the concession been published and that new candidates had applied. Thus, an imperial order issued on December 3, 1889, determined that new candidates for the concession would be sought.[32]

After Hacı Tahir Bey's death, the process of applying for the concession restarted. According to the procedure, all applications made to the province of Thessalonica would be evaluated by the Council on Public Works, and official reports on them would be presented to the Ministry of Public Works. The Ministry of Public Works would assign these official

29 BOA, İ.MMS, 78/3419, 1301.Ş.22.

30 BOA, A.DVN.MKL, 26/5, 1302.M.29.

31 BOA, MV, 41/52, 1306.B.21.

32 BOA, İ.MMS, 108/4643, 1307.R.09.

reports and their related documents to the Tanzimat Office in the Council of State.[33] Dr. d'Ober Mayer, the quarantine doctor living in Thessalonica, and Mösyö Coste, a representative of the French company Messageries Maritime in Thessalonica, stated in their petition to the province of Thessalonica on May 10, 1892, that they had learned from the newspaper of the province that the concession concerning marshes in the Karasu River and Lake Tahyanos was no longer valid following Hacı Tahir Bey's death, and they requested to receive it.

4.2.3 *Messageries Maritimes in Thessalonica and International Trade in the Ottoman Empire*

Mösyö Coste was a representative of Messageries Maritimes in Thessalonica, which was a French merchant shipping company that undertook commercial activities in the Eastern Mediterranean in the nineteenth century and thus had many investments in Ottoman territories. The company had turned into a joint-stock company in 1852 and became one of the most important instruments of France's attempts to establish its influence in the Mediterranean. However, the company did not limit its commercial activities to this region, and in subsequent years it invested in the Black Sea region, South America, India, China, Japan, Australia, New Caledonia, and the East Indies. The turning point for the company's investments in the Ottoman Empire was the Crimean War of 1853-1856; it became one of the most active shipping companies in the Ottoman Empire by transporting soldiers and ammunition from France to Istanbul.[34]

After the Crimean War, the company held an established place in the Ottoman territories and extended its field of activity in the Black Sea region and the Danube province. This meant that French merchants had access to resources, especially agricultural products, in the Ottoman Empire. In a meeting organized by company officials in 1853, the aim of the company in the Ottoman seas was described as opening the doors to its

33 BOA, BEO, 311/23311, 1311.Ca.04.

34 Murat Koraltürk, "Bir Fransız Vapur Kumpanyası: Messageries Maritimes ve Kartpostalları," *Toplumsal Tarih*, no. 285 (Eylül 2017), 41-42.

untouched wealth for the French commerce and as creating a new market for France's industrial products by undertaking commercial activity in Ottoman territories.[35] The Eastern Mediterranean remained the main field of the company. The fact that Eastern Mediterranean ports had immense hinterlands made the region significant for international trade, so the French were trying to take a share of commercial activities in the region by taking advantage of the company's field.

Messageries Maritimes conducted commercial activities in many ports in the Eastern Mediterranean, such as Alexandria, Beirut, Mersin, Izmir, Thessalonica, and Istanbul. Thessalonica was not only a junction along international trade routes but also a point of exit for various commercial crops cultivated on agricultural estates in its hinterland. Because of its commercial capacity and the significant agricultural potential of its hinterland, Thessalonica held an important place in the company's commercial activities in the Eastern Mediterranean in the second half of the nineteenth century. The crops of important agricultural regions such as Serez and İşkodra along the Karasu River were transported to ports in Thessalonica and Kavala for international trade.[36]

Having begun its trips to Thessalonica in 1852, Messageries Maritimes intensified commercial activities in the region at the beginning of the Crimean War and concentrated on grain trade. Because of grain trade, the trade volume and incomes of all commercial companies in the port of Thessalonica increased. Due to the demand for grain, the fertile farmlands in Serez, Pravişte, and Drama began to increase their grain production. Another important turning point for both trade volume in the port of Thessalonica and agricultural production in Thessalonica's hinterland was the American Civil War in the 1860s. Because of the American Civil

35 Süleyman Uygun, *Osmanlı Sularında Rekabet: Mesajeri Maritim Vapur Kumpanyası (1851-1914)* (Istanbul: Kitap Yayınevi, 2015), 48; Süleyman Uygun, "Mesajeri Maritim Kumpanyası ve Osmanlı Devleti'nde Fransız Sömürgeciliği (1851-1914)" (PhD diss., Sakarya Üniversitesi, 2013); and Süleyman Uygun, "Bir Fransız Buharlı Deniz Nakliyat Kumpanyası Etrafında Osmanlı-Fransız-Ermeni İlişkileri," *Akademik Bakış* 8, no. 16 (Summer 2015): 121-46.

36 Uygun, *Osmanlı Sularında Rekabet*, 161.

War, an enormous demand for cotton was created that stimulated its production on the fertile farmland of Serez, Pravişte, and Drama in Thessalonica's hinterland. Demands for specific crops determined the direction of agricultural production in Thessalonica's hinterland. All of these developments increased exports in the port of Thessalonica. Messageries Maritimes had an enormous share of this commercial activity. The company was ranked first in commercial competition in Thessalonica until the early 1870s, but famine in the Balkans and Northern Black Sea region in 1873-4 led to a wheat crisis that dramatically reduced the company's wheat exports from Thessalonica. The company's income from trade in Thessalonica bottomed out in the 1880s.[37]

Messageries Maritimes had a centralized administration in its early years; therefore, local agents had little autonomy from the head office. However, in time, this centralized structure made it difficult for the company to manage its wide field of commercial activity. Moreover, local agents in various regions were demanding more initiative. Thus, the company made decisions increasing the autonomy of local agents starting in 1882, though the head offices of the company remained in Paris and Marseille. With these decisions, local agents began to conduct business on their own.[38]

Mösyö Coste was the representative of Messageries Maritime in Thessalonica. He and Dr. d'Ober Mayer expressed their request to open the river for navigation and to clean the marshes. They had met with investors to provide the capital for this enterprise and with engineers who were knowledgeable of the science. In addition, they had examined the technical specifications and the terms of the contract that the Ministry of Public Works made with Hacı Tahir Bey and accepted those terms. Because they were aware of the urgency of the project, they, like Hacı Tahir Bey before them, emphasized the importance of draining the marshes for the health of the population and the expansion of trade in the province.

37 Ibid., 162-65.

38 Ibid., 79-80.

They thus tried to strengthen their claim for the concession.[39] The governor of Thessalonica, who was pleased with Dr. d'Ober Mayer and Mösyö Coste's petition, wrote to the Ministry of Public Works on May 16, 1892, that the cleaning of these marshes and the opening of the river to navigation were crucial to preserve public health and expand agriculture and trade. He further stated that the *mutasarrıf* of Serez held the same opinion and asked that Dr. d'Ober Mayer and Mösyö Coste's petition to be taken under consideration.

Dr. d'Ober Mayer and Mösyö Coste did not confine themselves to writing a petition for the concession to the province of Thessalonica and wrote another to the Ministry of Public Works in June 26, 1892. They called attention to the damage that these marshes inflicted. Due to the Karasu River and Lake Tahyanos, vast lands were under water, causing substantial losses for both cultivators and the state treasury. In addition, the marshes polluted the air and led to disease. If the concession was granted to them, it would benefit the public works of the country, the treasury's revenue, and public health. Dr. d'Ober Mayer and Mösyö Coste cited previous floods in the region as examples to strengthen their claims about the damages marshes caused. In winter 1891, following heavy rain and snowfall, marshes expanded and cases of disease increased in the region, so it was evident that the river and lake needed to be cleaned. The reason for their candidacy for the concession was to improve public works in the country and protect public health.[40] Certainly, these statements were part of a rhetoric employed to strengthen their application for the concession. After all, they were familiar with the discourse of development and public works used by Ottoman statesmen in this period described in Chapter 2. In fact, Dr. d'Ober Mayer and Mösyö Coste recognized the opportunity that the concession to reclaim the Karasu River and Lake Tahyanos would provide them as entrepreneurs. They aimed to invest in and profit from agricultural production in Serez and in the navigation of the Karasu River by taking advantage of this opportunity.

39 BOA, ŞD, 1197/21, 1312.Z.22.

40 Ibid.

In order to show their determination and willingness for the concession and to prove their financial ability to accomplish it, Dr. d'Ober Mayer and Mösyö Coste stated that the Orosdi-Back Company, one of the most important investors active in Europe and the Middle East, would sponsor them. They presented recognizance written by the company to the ministry. Indeed, the sponsorship of the Orosdi-Back Company would become an advantage for them in the future, because the company was growing during this period. The nineteenth century was a period when a more consumer-conscious public was emerging in the Ottoman Empire because foreign soldiers flooded Istanbul's streets during the Crimean War. During this period, department stores, which had become an important feature of consumption in Europe, came to the Ottoman Empire.[41] Many department stores chains that sold products from Europe and the Ottoman Empire opened up in Ottoman territories. The Orosdi-Back Company was one of them. It was founded as a family-owned firm in Istanbul in 1855 and opened its first store in Galata. The company was first registered in Paris in 1888. The geographical sphere of its activity was wide, including Paris, Istanbul, Izmir, Thessalonica, Philippopoli, Cairo, Alexandria, Tunis, Bucharest, and Vienna. The company became a stock company in 1895. Its importance for imports to the Ottoman Empire gradually increased in subsequent years. "Among the various French companies with investments in Turkey, in 1914, Orosdi-Back, according to one calculation at least, takes third place."[42] The company's geographical expansion followed port cities and railway nodes that offered new business options and where population was increasing. One of the cities in which the company undertook commercial activities was Thessalonica. Thessalonica occupied a third (7%) and fourth (6%) place in Orosdi-Back's network in terms of stocks and benefits, respectively. Orosdi-Back commenced operations in the city in the 1880s and became one of its largest commercial enterprises – along with other well-known stores such as

41 Uri M. Kupferschmidt, *European Department Stores and Middle Eastern Consumers: The Orosdi-Back Saga* (Istanbul: Ottoman Bank Archive and Research Center, 2007).

42 Ibid., 21-22.

Errera, Stein, Tiring, Kapandji, and the Anglo-Hellenic Co. – by the first decade of the twentieth century.[43]

Sponsorship of the Orosdi-Back Company became an advantage for Dr. d'Ober Mayer and Mösyö Coste in the future. Pointing out that the enterprise to clean the marshes in Lake Tahyanos and open the Karasu up to navigation would cost at most 300.000 lire, the Ministry of Public Works asked the Istanbul Chamber of Commerce to investigate the wealth and commercial standing of the Orosdi-Back Company on August 27, 1892. The ministry wanted to learn whether the company had the financial ability to execute the project. On September 19, 1892, the Istanbul Chamber of Commerce informed the ministry about financial capacity of the Orosdi-Back Company and stated that it was registered as first-class company in their own chamber and that given the magnitude of business it conducted and its prestige in the market, it had the financial ability to fulfill its commitments to the ministry and to pay the deposit for the concession.[44]

After receiving the affirmation of the Orosdi-Back Company's financial ability from the Istanbul Chamber of Commerce, a technical commission was engaged on October 12, 1892 to negotiate the terms of the contract and technical specifications with Mustafa Bey, Dr. d'Ober Mayer and Mösyö Coste's representative. According to their negotiations, the time of the concession was set at fifty years, the holders of the concession would pay 100 lire annually for the cost of inspections and examinations, and they would pay 250 lire as a deposit. After agreeing on these terms, the technical commission wrote the bills of contract and specifications. Therefore, the Ministry of Public Works announced on November 19, 1892, that it had accepted and confirmed terms of the contract and specifications discussed in the Council in Public Works.

43 Ibid., 26.

44 BOA, ŞD, 1197/21, 1312.Z.22.

4.2.4 *Conditions of the Contract*

The bill of contract, which was confirmed and sent to the secretary in Yıldız Palace (Mabeyn Başkâtibi) by the Council of the State for the confirmation by the sultan, was arranged between Mustafa Celaleddin Paşa, the Minister of Public Works, on behalf of the Ottoman government and Dr. d'Ober Mayer and Mösyö Coste. The duration of the concession was set as fifty years once it was confirmed by the sultan. The contract included removing fishing weirs from piers on Lake Tahyanos, reclaiming the lake and the marshes around the Karasu River, and making the river suitable for navigation. It obliged the concession holders to start the project within 27 months and to complete it within six years in accordance with the rules of science, as pointed out in the specifications. A technical commission consisting of engineers, arranged by the Ministry of Public Works, would inspect this process, and final approval of the project would be provided in the report of this commission after the completion of the construction.

According to Clause 19 of the contract, only after the ministry approved the completion of the project would the concession holders receive the title deed of the land they had reclaimed, in accordance with the Land Code of 1858. Because the marshes were wastelands according to the code, such regions could be transformed into farmland with the permission of officials under the condition that its property belonged to the treasury.[45] The decree sent to provinces in 1881 also required marshes and rivers to be reclaimed based on the relevant article of the Land Code. If a person or a group transformed a marsh into a few decares of farmland with a reclamation project that did not require huge industrial or construction works, the title to this land would be granted to them for free by the local administration without the permission of the center. On the other hand, for huge marshes that required the construction of ditches and barriers that took over three years, the private company or individual candidate hoping to conduct the great project had to obtain the permission of the Ministry of Public Works and could demand an exemption

45 Orhan Çeker, *Arazi Kanunnamesi*, 58.

from the tithe (aşar) for much more time than the Land Code allowed. Such individuals and companies applied to the Ministry of Public Works, and the decisions were examined by the Council of Ministers.[46] Because the project along Lake Tahyanos and the Karasu River would need six years, it was approved by the central government. And Clause 19 of the contract gave the concession holders a one-year exemption from the tithe. After one year, they would have to pay all relevant taxes.

The contract also included other clauses regarding the ownership of reclaimed lands. The main problem was land belonging to individuals. According to Clause 6 of the contract, if concession holders reclaimed land belonging to individuals under the scope of the project and could not come to an agreement with the owners of these properties, the dispute would be decided in accordance with the Land Acquisition Act. In this case, concession holders would pay a sufficient amount as compensation to use the land temporarily. Meanwhile, those who laid claim to any part of the reclaimed land had to prove their right of possession within one year of advertisement of the contract in newspapers. On the other hand, land belonging to the state would be freely left to the concession owners by the state for their use during construction.

The contract also specified the obligations of the holders of long-term concessions because the government was trying to create competition among candidates for the sake of its own revenue as well as the conditions of the project. According to Clause 34, Dr. d'Ober Mayer and Mösyö Coste as concession holders would pay 20 percent of the annual total revenue from the land to the treasury of the Ministry of Public Works. Fifteen percent of this amount was for the government, and the other 5 percent was for Darülaceze. In addition, they had to pay another 100 lire to Darülaceze at the beginning of March each year.

46 *Umur-u Nafia ve Ziraat Mecmuası* (1 Cemaziyelevvel 1315 (28 Eylül 1897)).

§ 4.3 Making Profit beyond the Reclamation

Although a contract and technical specification was signed between the Ottoman government and Dr. d'Ober Mayer and Mösyö Coste as the concession holders for the reclamation of Lake Tahyanos and navigation of the Karasu River, conflicts and tensions emerged between the concession holders and fishermen; between the concession holders and the Public Debt Administration; between the Ottoman government and the Public Debt Administration; between the concession holders and the Ottoman government; and between the concession holders and another candidate for the concession, Alaaddin Paşazade Hüseyin Tayyar Bey. These conflicts not only indicate that the reclamation project was a source of competition among various actors who tried to make use of the opportunity to make a great profit by cultivating the reclaimed lands, but also that a great amount of time was lost and eventually that the project would fail. Two disputes were key. While one concerned fishing in the Karasu River and Lake Tahyanos, the other concerned competition between the confirmed concession holders and a new candidate for the reclamation project. This section narrates these two issues in detail.

4.3.1 *European Entrepreneurs and the Ottoman Government on the Fishing Question*

One of the most remarkable, debated clauses of the contract between the Ottoman government and the concession holders Dr. d'Ober Mayer and Mösyö Coste was the Clause 7 about the compensation of fishing revenues in the region. This clause had two aspects. The first concerned the fishing tax (sayd-ı mahi resmi) that the Public Debt Administration obtained from fishing activities in the Karasu River and Lake Tahyanos. The first draft of the contract between the Ministry of Public Works and the candidates for the concession in 1893 included recovering weirs in Lake Tahyanos. The second aspect concerned fishing weirs in Lake Tahyanos. Some people living in nearby villages made their living from fishing, so they objected to the removal of their own fishing weirs. Therefore, the

government forced the candidates for the concession to pay compensation for these financial damages caused by the reclamation project. According to the Clause 7 of the contract, the concession holders would annually pay 1,500 lire to the Public Debt Administration as long as the fishing tax was under the control of the administration. Once this tax was handed over by the state, they would pay it directly to the state treasury. In return for this payment, charging for fishing in the region after the reclamation would be a right held by the holders of the concession. Again, the same clause of the contract forced the concession holders to reimburse the losses caused to owners of fishing weirs and to allow other fishing weirs to operate.[47] However, the concession holders accepted these conditions only after a long dispute and process of negotiation.

In the Ottoman Empire, fishing was an important industry that both was a means of living for some of the population in some regions of the empire and provided a source of revenue for the Ottoman state. In imperial territories, fishermen used various technologies to fish which were acknowledged by the state for centuries. Some included fishing weirs (dalyan), seines (ığrıp), stake nets, common nets, cast nets (saçma), lines, harpoons, pots (çömlek), and baskets (sepet).[48] One of the most important and widespread fishing techniques before the twentieth century was fishing weirs (dalyan). A fishing weir is

> usually constructed by driving pieces of wood into seabed to form a trap into which fish, in particular migratory fish, swim. Sometimes the entire trap is constructed of wood; more often nets are stretched between poles. One or more men keep watch from a tower located beside the dalyan and as soon as a shoal has entered the weir they signal to other crew to close the opening of the dalyan.[49]

47 BOA, Y.A.RES, 93/91, 1316.S.28

48 Stale Knudsen, *Fishers and Scientists in Modern Turkey: The Management of Natural Resources, Knowledge and Identity on the Eastern Black Sea Coast* (New York: Berghahn Books, 2009), 241.

49 Ibid., 44.

Although fishing weirs were especially widespread in Istanbul where there was a large urban market for fish, they had also been used in the Black, Marmara, and Aegean Seas since before the Byzantine era. However, usage in the empire was not limited to seas; they were also used in rivers and lakes.[50]

The Ottoman state taxed fishing in its own territories. Because of its potential as a source of tax, fishing activities were regulated by the state. There were two ways of taxing fishing in Ottoman territories until the nineteenth century. The first way was a tax (rüsum) on sales in the fish markets. The other way of taxing fishing activities was tax-farming. The Ottoman government collected taxes on fishing in seas, lakes, and rivers on land and in forests belonging to the state. The fishing tax was called *sayd-ı mahi* or *balık saydiyesi*. Although after the Tanzimat period the fishing tax was sometimes collected by state officials, the usual way of collecting it was tax-farming, which included fishing weirs and other fishing gear and all fishing activities in coastal regions. In return for this right, the renter paid an annual rent.[51]

When the Public Debt Administration was established to control some of the empire's income sources in 1881, the collection of fishing tax was allocated to it. According to the agreement (Muharrem Kararnamesi) between the Ottoman state and its creditors, one revenue item allocated for the payment of the empire's foreign debts among others was the revenue from the fishing tax in Istanbul and its immediate vicinity. After fishing in the empire came under the Public Debt Administration's control,

50 For further information on commercial fishing in the Ottoman Empire, see Aylin Doğan, "Rumelifeneri'nde Balıkçılık," in *Balık Kitabı*, ed. Emine Gürsoy Naskali (Istanbul: Kitabevi Yayınları, 2015); Aylin Doğan, "İki Büyük İmparatorluk Başkenti İstanbul'da Balık, Balıkçılık ve Balık Tüketimi," in *Balık Kitabı*, ed. Emine Gürsoy Naskali (Istanbul: Kitabevi Yayınları, 2015); Faruk Doğan, "Osmanlı'da Boğaziçi'nde Balıkçılık (18. Yüzyıl-20. Yüzyıl)," *Tarih Okulu*, no. 10 (May-August 2011): 39-57; Nejdet Ertuğ, *Osmanlı Döneminde İstanbul Balıkçıları* (Istanbul: Kitabevi Yayınları, 2015); and Güler Yarcı, "Evliya Çelebi Seyahatnâmesi'nde Balıkçılık," in *Balık Kitabı*, ed. Emine Gürsoy Naskali (Istanbul: Kitabevi Yayınları, 2015).

51 Knudsen, *Fishers and Scientists in Modern Turkey*, 48; and Abdüllatif Şener, *Tanzimat Dönemi Osmanlı Vergi Sistemi* (Istanbul: İşaret Yayınları, 1990), 165-66.

annual taxes from fishing increased from 22,635 to 87 thousand Ottoman lire in the period 1882-1917 because of the administration's efforts to develop fishing in the empire and raise revenue from it.[52] Indeed, because of these efforts, the fishing tax accounted for 1-2.5% of the total income of the administration. During this period, the Public Debt Administration was more effective than the Ottoman bureaucracy in policing the fishing tax and it sought to maintain its revenues from this tax.[53]

Because of the importance that the Public Debt Administration placed on revenues from fishing activities, it followed the negotiations on the reclamation project between the state bureaucracy and the concession candidates. As negotiations on the terms of contract continued, the Public Debt Administration prepared and sent a report to the Council of State on April 17, 1893 regarding taxes collected from fishing in the Karasu River and Lake Tahyanos. After issuing this report, tension emerged along with a long-standing dispute among the concession candidates, various government institutions, and the Public Debt Administration. According to the first clause of the contract planned between the Ministry of Public Works and the new candidates, Dr. d'Ober Mayer and Mösyö Coste, the concession included the removal of weirs in Lake Tahyanos in the *sancak* of Serez and the reclamation of marshes in the Karasu River in order to make the region suitable for agriculture and to make transport possible on the river. However, taxes collected on fishing in Lake Tahyanos had previously been transferred to the Public Debt Administration, which would incur a substantial loss because of the project. So it demanded that its losses be compensated.

The Council of State asked the Public Debt Administration how many weirs were in the lake, how much revenue it obtained from these weirs, and what conditions would lead to a loss in terms of its tax revenue. The Public Debt Administration clarified these issues from its own point of view in the report addressed to the council. The administration claimed

52 Haydar Kazgan, "Düyun-ı Umumiye," in *Tanzimat'tan Cumhuriyet'e Türkiye Ansiklopedisi*, ed. Murat Belge (Istanbul: İletişim Yayınları, 1985), 710.

53 Knudsen, *Fishers and Scientists in Modern Turkey*, 241.

that if the project were put into effect, the revenue and benefits it obtained from that lake would be ruined, because Lake Podkova thereabouts would be filled. Meanwhile, because of dikes to be constructed in Lake Tahyanos to provide continous flow of the Karasu River into the sea, the lake would be drained and the weirs would be nonfunctional. The Public Debt Administration also calculated the amount it would lose on account of the project. The administration generated an approximate annual revenue of between 129and 159 thousand *kuruş* from Lake Tahyanos and the marshes in the Karasu River. Even listed the exact annual amounts of revenue it had obtained from there in the last four years: 156,000 *kuruş* in 1305, 159,135 *kuruş* in 1306, 126,250 *kuruş* in 1307 and 126,250 *kuruş* in 1308. In order to compensate this amount, it demanded 1.500 lire be paid annually by the holder of the concession and imposed the condition that a clause concerning this payment be added to the contract.[54]

Because the Public Debt Administration was interfering in the terms of contract and demanding compensation for its losses that would result from the project, Dr. d'Ober Mayer and Mösyö Coste sent another petition to the Ministry of Public Works on the issue on July 6, 1893. Because of the death of Mustafa Bey, whom they appointed as their representative, they wrote this petition themselves. Complaining that the Public Debt Administration was interfering at a time when the terms of contract and specifications were already confirmed by the Ministry of Public Works and had been assigned to the Council of State, they stated that they had examined the terms of the previous contract with Hacı Tahir Bey, which did not include any clauses about the weirs in question. Therefore, because the concession for which they had applied was the same one given to Hacı Tahir Bey, the Public Debt Administration could not demand payment of 1,500 lire annually to the administration and of compensation to the holders of the weirs. Further negotiation was meaningless. Moreover, according to their own investigation, there was no weir belonged to any individ-

54 BOA, ŞD, 1197/21, 1312.Z.22.

ual owner, and the Public Debt Administration annually obtained a revenue of between 800 and 1,200 lire from the weirs it controlled but was demanding 1,500 lire annually from them. This came to 75 thousand lire over 50 years (the total time of the concession) or 200 thousand lire in total considering annual interest. Yet, they estimated, the total cost of the reclamation project was approximately the same. Therefore, they stated that they could not accept the Public Debt Administration's demand regarding compensation of the fishing tax, but if the *aşar* and annual tax increases on lands to be reclaimed were be granted to their company, they could pay this annual amount to the administration. In addition, they claimed that the fishing tax on Lake Tahyanos would not be able to be collected only during the reclamation work; entirely draining the lake was impossible, so the tax could again be collected after the work was completed.

To strengthen their argument, Dr. d'Ober Mayer and Mösyö Coste also underscored the damage caused by the delay. The Karasu River flowed so severely and swiftly because the Balkan mountains were extremely vast and high. When the river flooded, it swept away villages and crops and devastated bridges in its way. In places where the river flowed through the Serez plain, lakes and marshes emerged, endangering public health. Damages to which the river and its marshes led in the region were so high that just the money spent by the state treasury and the local population to repair bridges every year exceeded the fishing tax that the Public Debt Administration was demanding. Hence, by underscoring the damage caused by rivers and lakes and mentioning the importance and benefits of reclaiming them, Dr. d'Ober Mayer and Mösyö Coste tried to downplay the fishing tax and avoid paying compensation. They complained about the delay caused by the Public Debt Administration's demand for compensation given that the reclamation project and its benefits were evident. In conclusion, they demanded that the concession be given to them as soon as possible.

In fact, before his death, Mustafa Bey, the representative of Dr. d'Ober Mayer and Mösyö Coste, had also explained the reasons for their refusal to pay 1,500 lire annually to the administration and to pay compensation

to the weir owners. He had opposed adding a clause on this issue to the contract for two reasons. First, contrary to the claim that fish in the region would perish because of the implementation of the project, they did not anticipate the number of fish decreasing. For Mustafa Bey, because all the water that previously overflowed would be confined to a single ditch during the operation, the number of fish and thus the revenue from the fishing tax would rise. Second, no weir belonged to any individual owner in the region, and even if it did, it was unnecessary to add a clause to this effect in the contract because they would be subject to the land acquisition law according to the contract. However, according to an investigation by the province of Thessalonica on the issue, while no weir belonged to any individual in the region, there were reed weirs on the land of some *çiftlik* holders.[55]

After discussing the report of the Public Debt Administration on the fishing tax as well as Dr. d'Ober Mayer and Mösyö Coste's petition and finding the administration's demand acceptable, the Council of State decided that the concession holders Mayer and Coste would pay 1,500 lire annually to the administration to compensate for its losses resulting from the removal of weirs. At the same time, the cost and compensation of weirs abandoned (metruk) or vacated (mu'attal) because of the project would be negotiated with the concession holders. However, the Ministry of Public Works stated that the concession holders did not accept to compensate the losses of the administration. Thereupon, the Council of State, on February 11, 1894, insisted that the concession holders do so and pay compensation to the owners of weirs removed from Lake Tahyanos, as well. It remarked that if they were not willing to pay this compensation, their project could not put into effect, and another applicant would be sought who accepted the clause on the fishing tax.[56] Because of the Council of State's insistence, Dr. d'Ober Mayer and Mösyö Coste agreed, and the Council of Ministers asked that an official from the Ministry of Finance the appointed to carry out the official proceedings.[57] Therefore, the

55 BOA, ŞD, 1197/21, 1312.Z.22.

56 BOA, BEO, 357/26771, 1311.Ş.05.

57 BOA, MV, 82/119, 1312.C.27.

concession holders would compensate losses to the Public Debt Administration during the period that the fishing tax was under its control, but they would directly pay the treasury once this tax was handed over to the state. In return for this payment, charges on fishing in the region after the reclamation was complete would be held by the concession holders.[58] In addition, Mehmed Tevfik Bey, the new representative of Dr. d'Ober Mayer and Mösyö Coste, asked for an invitation to the Council of State's session on this issue on January 10, 1895.[59]

After Dr. d'Ober Mayer and Mösyö Coste accepted the clause on the fishing tax, the Technical Commission prepared a report on the issue on December 16, 1895. According to the report of these engineers, the surface of Lake Tahyanos was 12 thousand hectares; the amount of the region to be reclaimed and that was submerged one or two months a year was 32,500 hectares; and the length of the canal to be opened up to the sea was 29,500 meters. Because the scope of the project was indefinite, the cost of construction was estimated as approximately 30 to 40 thousand lire. In addition, the concession holders would pay one thousand lire as a deposit. The cartographic plan of the projected work was also sent to the Ministry of Public Works.[60] Dr. d'Ober Mayer and Mösyö Coste were then left waiting for the bills of contract and specifications.

4.3.2 *New Competition for Land*

As the reclamation of Lake Tahyanos and the marshes along the Karasu River turned into a full-fledged enterprise, it was not only the fishing tax and weirs that were contested among the concession holders, state institutions and officials, the Public Debt Administration, and fishermen in the region. The revenue that the project promised the entrepreneurs that held the concession also triggered competition when a new candidate for the concession appeared in December 1895. On December 8, 1895,

58 BOA, ŞD, 1209/02, 1315.S.18.

59 BOA, ŞD, 2968/27, 1312.B.18.

60 BOA, ŞD, 1209/02, 1315.S.18.

Alaaddin Paşazade Hüseyin Tayyar Bey of Drama, the brother of Hacı Tahir Bey – who had held the concession but died before fulfilling his obligations –, stated to the Ministry of Public Works that he was interested in the concession. He claimed that it should be given to him because of preferential right (hakk-ı rüchan). Hüseyin Tayyar Bey emphasized that he was a citizen of the Ottoman Empire, unlike other candidates who were foreign citizens, and that he had spent much money (more than 3,700 lire) together with his brother, Hacı Tahir Bey. However, part of the land to be opened up for cultivation after the reclamation was in his possession. He submitted a certificate confirming his financial ability to accomplish the project to the Legal Consultancy (Hukuk Müşavirliği) of the Ministry of Public Works, and the Legal Consultancy accepted the certificate. Hüseyin Tayyar Bey asked the ministry that the concession be given to him on this basis.

On the other hand, Mehmed Tevfik Bey, the representative of Dr. d'Ober Mayer and Mösyö Coste, complained that his clients had lost both money and time on this concession over the previous four years. Despite dedicating so much money, time, and work, the fact that the Council of Public Works accepted Hüseyin Tayyar Bey's application just as the issue was coming to a conclusion was leading to further delays. Moreover, his clients had to prove their financial ability with a credible guarantor and had submitted a certificate of 300 thousand lire from Orosdi-Back Company confirming it. Yet the Council of Public Works had found sufficient that Hüseyin Tayyar Bey submitted a certificate from an official in the Ottoman Bank who received a salary of 3 thousand *kuruş* as a guarantee. Thus, Mehmed Tevfik Bey tried to prove that Hüseyin Tayyar Bey did not have a financial ability to deal with such an extensive project. However, the Artin Karamanyan and Aslıoğlu Company stated on June 15, 1896, that Hüseyin Tayyar Bey had the financial resources for the project because they would be participating in the enterprise as a partner.[61]

61 Ibid.

The Council of Public Works discussed the issue once again. According to the council, because Hacı Tahir Bey's heirs did not make any commitments with respect to the concession and because the deposit paid by Hacı Tahir Bey was refunded, Hüseyin Tayyar Bey did not have a preferential right. Thereupon, the Council of State decided that although Hüseyin Tayyar Bey did not have the preferential right, his offer should be evaluated on equal terms with the offer of Dr. d'Ober Mayer and Mösyö Coste because the financial ability of the Artin Karamanyan and Aslıoğlu Company was confirmed by the Istanbul Chamber of Commerce. It granted an extension until September 12, 1896, for candidates to submit their documents and consolidate their financial resources. In other words, the government demanded competition between the candidates to obtain better terms, and it would choose the candidate that would provide the most favorable conditions and strongest guarantee for the state and the country.[62]

After the Council of State's decision, Mehmed Tevfik Bey, the representative of Dr. d'Ober Mayer and Mösyö Coste, submitted their offers in a sealed tender. Dr. d'Ober Mayer and Mösyö Coste's offer included paying 20% of the annual total revenues of the land to the state, apart from the 100 lire annual payment and apart from the 1,500 lire compensation for the fishing tax to the Public Debt Administration. While 15 percent of this amount would be paid to the government, the other 5 percent would be for Darülaceze. However, Hüseyin Tayyar Bey was unable to submit his documents concerning his financial resources and his offer by September 12, 1896. Thereupon, Mehmed Tevfik Bey stated same day that because Hüseyin Tayyar Bey could not document his financial ability by the deadline, he had lost his right to be a candidate for the concession. He complained that the ministry continued to consider Hüseyin Tayyar Bey as a candidate and almost created a tender. In addition, his clients were com-

62 BOA, BEO, 817/61244, 1314.S.17.

pelled to pay compensation for the fishing tax to the Public Debt Administration and to pay the losses to the owners of fishing weirs, but Hüseyin Tayyar Bey did not.[63]

Hüseyin Tayyar Bey rejected Tevfik Bey's claim that he could not submit his documentation of financial ability by the deadline. He stated that he had submitted his documents, but the issue was a lack of attention of officials in the ministry. Aware of his competitors' offer, he had committed to pay 5 percent more than d'Ober Mayer and Mösyö Coste, that is 25 percent of annual revenue. However, both the Council of Public Works and the Council of State found Hüseyin Tayyar Bey's conduct undue. Hüseyin Tayyar Bey had learned of his competitors' offer and made an open-ended offer based on his knowledge of theirs. This was a light-minded conduct and delayed the project. Meanwhile, Dr. d'Ober Mayer and Mösyö Coste's guarantor, Orosdi-Back Company, was more credible than Hüseyin Tayyar Bey's guarantor, Artin Karamanyan and Aslıoğlu Company. Thus, both the Council of Public Works and the Council of State were inclined to accept Dr. d'Ober Mayer and Mösyö Coste's offer.[64]

Although these two institutions thought that Dr. d'Ober Mayer and Mösyö Coste's offer was more acceptable, the question could not be settled because of Hüseyin Tayyar Bey's persistent objections. These objections led to a delay of the project, and the Council of State complained on March 18, 1897, that protracted conflicts among the candidates for concessions was hindering the state and the country from making use of public works for years. The conflict between Dr. d'Ober Mayer and Mösyö Coste and Hüseyin Tayyar Bey also had led to such a problem. The Council of Public Works, too, complained about the delay of the project, and both councils asked the Sublime Porte to choose the best candidate for the country as soon as possible.[65] Thus, the Ministry of Public Works demanded that a contract for Dr. d'Ober Mayer and Mösyö Coste's offer be prepared; however, Hüseyin Tayyar Bey wrote one more petition on May 20, 1897, objecting to the fact that the concession was being granted to his

63 BOA, ŞD, 1209/02, 1315.S.18.

64 BOA, BEO, 884/66256, 1314.B.16; and BEO, 886/66417, 1314.B.21.

65 BOA, BEO, 923/69216, 1314.L.19.

competitors. He upped his offer up to 30 percent against Dr. d'Ober Mayer and Mösyö Coste's offer of 20 percent. In addition, he committed to consolidate his financial power. For him, his own offer better benefit the state treasury.[66]

Therefore, this new offer led to one more delay in the process of granting the concession. However, Dr. d'Ober Mayer and Mösyö Coste's offer was accepted in line with the opinions of the Council of State and the Council of Public Works. The process of preparing the bills of contract and specifications by the Council of Public Works continued until July 1897, and after amendments and corrections were made by the Council of State, the relevant council sent them to the Grand Vizierate in July 1898. However, despite one year having passed since the bills of contract and specifications were arranged, Dr. d'Ober Mayer and Mösyö Coste had still not obtained the concession in June 1899. They complained of this delay in a petition sent to the Grand Vizierate and demanded the acceleration of the process and confirmation of the concession by the sultan. Thereupon, the Grand Vizierate sent the bills to the secretary of Yıldız Palace in September 1899.[67] However, correspondence between the Sublime Porte and the Ministry of Trade and Public Works in 1902 suggests that the concession to reclaim marshes around Lake Tahyanos and along the Karasu River were never granted and that the project was never completed.[68]

§ 4.4 Conclusion

In the nineteenth century, Eastern Mediterranean gradually came to occupy an important place in international trade especially because of an overall increase in the demand for agricultural products and raw materials such as cotton, tobacco, and grain, which was accentuated by the Crimean War and the American Civil War. This increase in the demand for products cultivated in Ottoman territories increased the importance of

66 BOA, ŞD, 1209/02, 1315.S.18.

67 BOA, Y.A.RES, 93/91, 1316.S.28; Y.A.RES, 97/26, 1316.Ş.25; Y.A.RES, 103/9, 1317.Ca.07

68 BOA, BEO, 1807/135522, 1319.Z.01.

not only Western Anatolia but also Thessalonica and its hinterland with fertile land and great potential for cultivating the demanded products for international trade. Especially the design and construction of new infrastructural facilities such as a great port, new railway lines connecting Thessalonica and its hinterland with Ottoman and European cities, and new roads led to pressing international demand especially for crops cultivated in Kavala, Serez, and Drama in the mid-nineteenth century. They created fierce competition for control over the fertile lands of these regions among various actors such as local and international entrepreneurs (merchants, land owners, and notables), state officials and institutions, the Public Debt Administration, and the local population.

The profitability of cultivating high-demand crops and of having fertile lands for such crops not only created a source of wealth but also created an environment within which agricultural land was crucial. In the second half of the nineteenth century, Ottoman government endeavored to manage and redesign the environment in order to increase the productivity of the land and to relieve damage done to the environment. They tried to intervene in the environment by applying far-reaching development programs, but these efforts turned the environment into an arena of contestation and sometimes failed.

In Thessalonica and its hinterland, projects to reclaim wetlands such as marshes, lakes, and rivers had a crucial place in government efforts to intervene in the environment. Because marshes, especially those resulting from floods, brought agricultural production to a standstill by damaging agricultural land and threatened the health of the local population, such regions became a target of the Ottoman government and local administrations starting in the 1850s. In Serez, the project to reclaim marshes along the Karasu River and Lake Tahyanos was discussed part of such effort by central and local governments starting in the 1850s. The project was initially an effort of the provincial administration and the local population. It turned into a profitable enterprise that promised great revenue for entrepreneurs willing to take it on. For this reason, the history of the project to drain and reclaim Lake Tahyanos and the marshes

along the Karasu River was a story of transformation from a local administrative effort to a commercial activity. However, the project was not completed (though some marshes were partially reclaimed by the end of the 1850s, these clogged again) because of crucial reasons.

First, as seen in the reports of Ottoman statesmen on development, infrastructure, and public works of the Ottoman Empire in the second half of the nineteenth century, Ottoman government initially intended to accomplish not only reclamation projects such as the one in Serez but all public works projects using only the state's own financial resources. However, it was not possible to complete all the projects using the budget of the Ministry of Trade and Public Works because of financial difficulties experienced by the Ottoman treasury during this period. So it was necessary to find new ways to finance such projects, the most common of which was to grant concessions to private companies and entrepreneurs. Because Ottoman statesmen were aware of the significance of great projects such as the one in Serez where fertile land would become available to entrepreneurs for agricultural production in a period when Western Anatolian and the Balkan territories of the empire were becoming integrated, the government tried to obtain as much revenue as possible from the concessions by creating a competitive environment among candidates. However, this competitive environment led to an extended process of granting concessions as sometimes lasting for years and ultimately the failure of some, as was the case for the Karasu River and Lake Tahyanos project.

Second, in Serez various, local and international actors became involved in the process of granting concessions. Because the concession for the Karasu River and Lake Tahyanos included the removal of fishing weirs in Lake Tahyanos, both the Public Debt Administration and local fishermen, who lived off fishing, objected to the conditions of the contract. While the reclamation was popular, the enterprise also brought about serious conflict in the region. Many actors ranging from entrepreneurs to fishermen to tax authorities had a stake in the reclamation, and the clash of interests, in the end, resulted in the project's failure.

Even so, the project enabled the central government to become involved in local politics because it had the authority to approve large-scale projects. According to a decree sent to the provinces in 1881, large-scale projects such as the reclamation of the marshes around the Karasu River and Lake Tahyanos, which would take at least three years, could be granted as a concession only with the permission of the Ministry of Public Works. For this reason, contestation for control over the environment created not only competition for agricultural land in economic terms but also an arena of political struggle.

5

Hydraulic Engineering and the Reclamation of Marshes in Ioannina

This chapter discusses engineering projects to drain and reclaim marshes, lakes, and rivers and addresses how the transformation to modern engineering knowledge paved the way for both the environment and society in the late Ottoman period. It takes the reclamation project of Lake Lapsista and the marshes in Ioannina as the main case study. The chapter has two arguments. First, although local knowledge of hydraulics, which had been produced and applied in Ottoman territories for centuries, continued to have an impact, the reclamation projects of the late Ottoman period were mainly carried out by applying modern engineering knowledge. The employment of foreign engineers and technical experts in Ottoman territories and the introduction of modern engineering education in newly founded schools together with local knowledge contributed to the creation of modern engineering knowledge in the Ottoman Empire in the nineteenth century. Reclamation projects were carried out in accordance with the rules of this modern engineering. The sole practitioners of this engineering knowledge – engineers and technical experts – developed reclamation projects in a detailed manner. They planned projects, wrote reports, drew maps, supervised construction,

and inspected the outcome.[1] In this sense, as the practitioners of the modern engineering knowledge, they were the main actors of the reclamation projects.

Secondly, the chapter argues that reclamation projects led to the transformation of the environment and ecology in the Ottoman Empire in the nineteenth century, creating social tensions among various relevant actors. Although reclamation projects were planned and carried out in accordance with the rules of modern engineering knowledge, not all outcomes were intended and planned. They also sometimes caused unintended consequences and impacts. Engineering applications in the field transformed the physical and ecological landscape, causing the disappearance of fish and bird species and a dramatic change to the daily living activities of those living in nearby environments. As the case of the reclamation of Lake Lapsista demonstrates, the alteration of the ecology in the region robbed the local population, a great part of which were engaged in fishing, of a significant means of subsistence. The disappearance of fish species in Lake Lapsista and Lake Ioannina led to the resistance of fishers against the project. Thus, the reclamation project and the engineering practices in the project were major reasons for social tension and contestation among the concession holders, local fishers, the tax farmer of the fishing tax in the region, and central and local officials.

Engineered reclamation and drainage projects in the Ottoman Empire display, especially of marshes, lakes, and rivers, interfered with the environment and landscape, which also meant intervention in and change to society because it led to social conflict among various actors that in turn had an impact on the environment. There was interaction among conflicting or negotiating social actors, on one hand, and interaction between social actors and the environment and non-human actors, on the other. The latter were not only transformed by the intervention of human actors but also responded to them, leading to the transformation of social actors

1 "The nineteenth century," Edmund Burke argues, "was also the century of engineers" in the Middle East. Edmund Burke III, "The Transformation of the Middle Eastern Environment, 1500 B.C.E.-2000 C.E.," in *The Environment and World History*, eds. Edmund Burke III and Kenneth Pomeranz (Berkeley: University of California Press, 2009), 98.

and of their means of intervention in time. It was a process in which various actors were involved over a definite span of time. Therefore, the chapter narrates the Lapsista case in terms of these actors. The chapter firstly addresses the creation of modern engineering knowledge applied in public works projects in the late Ottoman period and then discusses the Lake Lapsista case in terms of tensions and contestations that the engineering caused among various social actors such as local fishers, the tax farmer, the concession owner, state officials, and engineers and technical experts.

§ 5.1 Reclamation and Drainage Technology in History

In the Ottoman Empire, although local knowledge of hydraulics played a role in reclamation projects, the transmission of modern engineering and technical knowledge produced in Europe via various channels in the eighteenth century constituted one of the most important resources of the technologies of reclamation and drainage used in nineteenth-century Ottoman territories. It is necessary to evaluate the evolution of this technology and its impact on the environment before addressing the development of the modern hydraulic engineering used in reclamation projects in the Ottoman Empire. Therefore, this section traces the history of reclamation and drainage technology from local knowledge and the endeavor to prevent floods in the early modern period to a modern hydraulic engineering in the modern period.

In the early modern period, the practice of reclamation and drainage technology was based on local knowledge applied by local communities and varied from region to region because of regional variations. The modern period witnessed the rise of modern hydraulic engineering, the universal rules of which were to be applied uniformly in different regions and conditions, as well as the introduction of state-sponsored reclamation and drainage activities that used such engineering knowledge. Modern knowledge spread via Dutch hydraulic engineers and were used in reclamation and drainage projects sponsored by modern states through-

out Europe. However, such projects brought about unintended consequences; they not only radically transformed the landscape and environment but also damaged the subsistence economies of local populations by decimating many species of fish and bird or causing their extinction. Although flood control projects resulted in unintended consequences in the early modern period, too, modern states tried to deal with these consequences and the social tensions and conflicts they created by resorting to their bureaucracies and regulations. Therefore, the history of reclamation and drainage technology from the early modern to the modern periods provides insight into how such technology was developed and evolved to a modern hydraulic engineering, how it led to unintended consequences and social tensions, how it caused the disappearance of subsistence economies and thus provoked the resistance of local populations who earned their livelihoods from these economies, and how modern states dealt with such unintended consequences of hydraulic engineering activities and the resulting social unrest.

Humanity's struggle against flooding has a long history. Starting in the fourth millennium BC, the first civilizations in Mesopotamia, Egypt, China, the Indus valley, and the Americas dug canals, ditches, and dikes; drained marshes; and built embankments, dams, and reservoirs to control water and irrigate their fields and lands.[2] Certainly, there were great physical, social, and political differences among these regions. Therefore, ancient societies developed distinctive irrigation and flood control techniques and engineering methods that were suitable for their own conditions and adapted to local needs.[3] Attempts to irrigate land and protect them from the flood waters of rivers sometimes required large-scale flood control and hydraulic engineering projects. Gradually a social group emerged of experts in the construction of dams and canals, the control of

2 Daniel R. Headrick, *Technology: A World History* (New York: Oxford University Press, 2009), 17-28.

3 Norman Smith, *Man and Water: A History of Hydro-Technology* (London: Peter Davies, 1976), 4.

water, and the resolution of surveying problems – namely, hydraulic engineers.[4]

In the early modern period, drainage projects began to increase in Europe. The most important large-scale drainage projects in this period occured in the Netherlands. The Dutch carried out reclamation projects as well as drainage and flood control projects and led the field of hydraulic engineering. They exported their engineering technology and even their engineers to other European countries such as France, England, and Germany in the seventeenth and eighteenth centuries. In the twelfth century, settlement and agricultural production in the lowland zone of the Netherlands required the establishment of a system of drainage, flood control, and water management, and because of the use of simple techniques such as digging small ditches, the region was drained. However, these techniques resulted in some unintended consequences, notably that the subsidence of the drained land made the region even more vulnerable to flooding. The local population thus resorted to more sophisticated drainage works and developed the basic principles of hydraulic engineering to deal with such problems. They realized that some elements were crucial for drainage and reclamation as well as for keeping the land safe from subsidence: the slope or gradient, the efficiency of routes for conveying drain water, fluid dynamics, and the basic principles of engineering. The most important was the realization that drainage works must be carried out in tandem with flood control measures. That is, dikes and dams should be constructed because "dikes and dams to protect against external water became just as important as ditches and canals to drain off internal water."[5] Another technique the Dutch employed to deal with the problem of subsidence was to use windmills to divert water into canals and rivers.

However, these realizations led to even more subsidence. "Further subsidence required more and more effective hydraulic measures for yet

4 Ibid., 7.

5 William H. TeBrake, "Taming the Waterwolf: Hydraulic Engineering and Water Management in the Netherlands During the Middle Ages," *Technology and Culture* 43, no. 3 (July 2002), 486.

deeper drainage, which, in turn, led to even further subsidence. In the end, the people of the lowland zone became trapped in a cycle that has continued to the present." Eventually, by the end of the thirteenth century, a complex system of system of dikes, dams, sluices, and drainage canals emerged to control water levels. However, this system "became ever more complex and expensive, increasing attention had to be paid to coordinating and monitoring the planning, construction, and maintenance of hydraulic works."[6] Thus, institutions and regional corporations, which specialized in hydraulic engineering, were created to establish and maintain the drainage and flood control systems. According to William H. TeBrake, they played an important role in the introduction of hydraulic engineering and accumulated a considerable amount of technical knowledge.[7] Because of them, an administrative and judicial system emerged to control drainage and flood control systems. These regional institutions and corporations were also important for introduction of windmills, which were the most important means of reclamation and drainage starting in the fifteenth century.[8]

Until the nineteenth century, drainage, reclamation, and flood control technology was primitive and based on an expanding network of ditches and watercourses. However, floods resulting from rainfall or weir could lead to these ditches and watercourses becoming silted up, leaving the surrounding land under water.[9] The classic technique the Dutch used to reclaim these submerged regions was to divert water into canals and rivers by the use of windmills. Windmills, which first appeared as a means of milling corn in the Netherlands at the beginning of the thirteenth century, began to be used as water-raising wind devices (known as *wipmolen*) starting in the fifteenth century. These mills were installed to pump water. The Dutch employed a series of three or four windmills to reclaim

6 Ibid., 477.

7 Ibid., 475-77.

8 Richard L. Hills, *Power from Wind: A History of Windmill Technology* (New York: Cambridge University Press, 1994), 116.

9 Andrew Gritt, "Making Good Land from Bad: The Drainage of West Lancashire, C. 1650-1850," *Rural History* 19, no. 1 (April 2008), 7.

marshy areas, with one windmill "raising water to a basin from which the next windmill took it a stage higher."[10] By the seventeenth century, windmills were used in large-scale projects. Jan Adriaensz Leeghwater, a Dutch engineer, was a leader in the use of windmills to reclaim land and was known as mill constructer and engineer. He proposed to use 160 windmills to pump out the Haarlemmermeer because he thought that "the draining of lakes is one of the most necessary, most profitable and the most holy works in Holland."[11]

By the seventeenth century, as the result of these attempts by the Dutch, the drainage and flood control system they developed became a model for all Europe, and the accompanying technical knowledge spread in time. The Dutch exported not only their technology and knowledge developed over centuries of experience but also their engineers to other European countries – such as France, Britain, Germany, Russia, and Italy – in the seventeenth and eighteenth centuries. According to David Blackbourn, the Dutch earned a reputation as "the hydraulic masters of the Continent" by the middle of the seventeenth century, partly because of the deeds of their celebrated engineers.[12] For example, Leeghwater's expertise in the use of windmills for reclamation took him to France, Germany, Denmark, and Poland. Dutch engineers and entrepreneurs, in alliance with the French government, played an important role in draining marshes in Petit Poitou and Arles in France in the seventeenth century. Humphrey Bradley, another Dutch engineer, worked first in England and then in France.[13] Cornelius Vermuyden, yet another famous Dutch engineer, who exported the Dutch reclamation technology of drainage mills, drained and transformed Hatfield Chase after being contracted to do so

10 Smith, *Man and Water*, 30.

11 Richard Shelton Kirby et al., *Engineering in History* (New York: Dover Publications, 1990), 461.

12 Blackbourn, *The Conquest of Nature*, 29.

13 Raphaël Morera, "Environmental Change and Globalization in Seventeenth-Century France: Dutch Traders and the Draining of French Wetlands (Arles, Petit Poitou)," *Internationaal Instituut voor Sociale Geschiedenis* 55 (2010), 80.

by Charles I in 1626.[14] Their effort reflected the Dutch experience in terms of using drainage channels and windmills.

Frederick the Great of Prussia called on Simon Leonhard Haerlem, another Dutch engineer, to reclaim the Oder Marshes (or Oderbruch) in 1746, which was also a manifestation of the continued influence of Dutch hydraulic engineering and engineers in Europe. Although Haerlem's plan for the large-scale drainage of the Oder Marshes was later revised, it was the basis for the subsequent reclamation project in the region. The project was intended to transform the ecology of the region for the sake of agricultural improvement and internal colonization: "in spots of that now feed a few fish, it will be possible in the future to maintain a cow."[15] However, there were serious obstacles to the implementation of the project, the most crucial one of which was acts of sabotage and resistance by the local population that appeared the ultimate outcome of the project.

From the nineteenth century onward, mechanization gradually spread, and steam engines began to be used to pump water. In the Netherlands, the steam engine was first used for a reclamation project near Rotterdam in 1776. Steam engines were cheaper than windmills because they worked via coal, which was more economical and more abundant than the materials to build windmills.[16] About half a century later, it replaced windmills in England, too. Because of differences between the English and the Dutch marshes, windmills were incapable of reclaiming fens although they had been improved by British engineers. Steam pump engines were used to drain land in England in 1820, about a century after the Newcomen engine was first used for mine drainage.[17]

However, rapid progress and improvements in the science of hydraulic engineering and the technologies of reclamation and drainage did not reflect the state of contemporaneous construction. Construction work in reclamation and drainage projects relied on ancient techniques even in

14 Carolyn Merchant, "Hydraulic Technologies and the Agricultural Transformation of the English Fens," *Environmental Review* 7, no. 2 (Summer 1983), 170.

15 Blackbourn, *The Conquest of Nature*, 33.

16 Hills, *Power from Wind*, 129-30.

17 Smith, *Man and Water*, 36.

the middle of the nineteenth century. "Maps, measuring instruments, and the science of hydraulic engineering had all advanced since the eighteenth century; the technology of digging ditches had not. At least through the 1850s it was human muscles wielding picks, shovels, spades, and buckets that did most of the work."[18] Therefore, despite the mechanization of hydraulic engineering, reclamation projects relied mainly on human labor and the power of horses. Ditches were dug by humans with digging tools. Thus, it is unsurprising that reclamations of marshes, lakes, and rivers took a long time, sometimes years.

Draining, reclaiming, and correcting marshes, lakes, and rivers entailed not only transforming the physical landscape but also altering an ecology by use of hydraulic technology and engineering.[19] In fact, flood control systems and drainage projects led to conflicts, social tensions, and the resistance of local populations in both the early modern and modern periods. However, there were two main differences between early modern and modern practices respect to the social tensions and resistance that resulted from flood control and drainage projects. Firstly, resistance to modern practices was caused by the replacement of traditional modes of subsistence with a new style of market production. Secondly, the modern state played a part in solving these conflicts and in dealing with the resistance by the use of its bureaucracy and regulations, while in the early modern period, local communities and organizations handled them (except in the Netherlands, which resorted to state regulation).

Starting in the early modern period, drainage and reclamation projects spread throughout Europe. However, these projects led not only to conflicts among various actors such as landlords, state officials, engineers and other technical experts, commoners, and cities but also contributed to riots, sabotage, and endless lawsuits over land. In comparison with the French and British, the Dutch – who became pioneers in hydraulic engineering, drainage technology, and wetland reclamation in Europe

18 Blackbourn, *The Conquest of Nature*, 98.

19 Merchant, "Hydraulic Technologies and the Agricultural Transformation of the English Fens," 165.

in the sixteenth and seventeenth centuries, reclaiming 131,000 hectares between 1590 and 1665 – developed state regulations and methods to deal with conflicts resulting from the implementation of such projects.[20] Andrew Gritt attributes the success of Dutch regulation of the process of drainage and reclamation to its stable administrative regime that coordinated the projects and was integrated with drainage authorities. In contrast, English drainage and land reclamation projects were carried out by private enterprises or through local administrative arrangements, a feature that led to the failure to establish a sufficient administrative framework in the seventeenth century. A large-scale drainage project required significant financial resources, employment of a technology suitable and sufficient for the nature of the work, and political will to solve problems and handle conflicts over the projects. In England, such will emerged only in the nineteenth century when the government was inclined to finance drainage projects itself.[21]

According to Piet van Cruyningen, in the early modern period "large infrastructural projects such as wetland reclamation or river regulation invariably caused conflict because land had to be expropriated, existing means of communication were disturbed, or weirs in rivers had to be removed."[22] The most important reason for these conflicts was the use of wetland areas by various actors who attributed significance to them for a variety of reasons, challenging the commonly held idea that wetland areas such as marshes, lakes, and rivers had no economic value. For example, while lakes and rivers were sources of reeds and fish, marshes provided opportunities for local populations to graze sheep and cattle and, again, fish. Thus, drainage projects sometimes took local populations' livelihoods away, as when fishing weirs were removed from rivers or lakes. Landowners also faced the risk of the expropriation of their land

20 Piet van Cruyningen, "Dealing with Drainage: State Regulation of Drainage Projects in the Dutch Republic, France, and England During the Sixteenth and Seventeenth Centuries," *The Economic History Review* 68, no. 2 (May 2015), 420.

21 Gritt, "Making Good Land from Bad," 1-2.

22 Cruyningen, "Dealing with Drainage," 421.

adjacent to wetlands when the state deemed it necessary. Therefore, conflicts resulting from drainage and reclamation projects occurred across Europe in the early modern period. For van Cruyningen, the best way to deal with conflicts over the implementation of such projects was creating a state regulation "by guaranteeing the rights and interests of individuals and communities in and around the wetlands, or at least by offering them compensation when those rights or interests were harmed" during the promotion of the projects.[23] However, because of the conflicting interests of the relevant parties and political conditions of the period, this was no easy task. While the Dutch state, the pioneer of drainage and reclamation technology in the sixteenth and seventeenth centuries, developed efficient institutions to deal with such problems and a system of arbitration in which a Supreme Court made final decisions in cases of dispute to which the parties could not object, French and English bureaucracies lacked such established institutions and procedures and thus faced endless lawsuits, sabotage, and resistance to drainage projects even if they finally managed to reach compromises.

The intervention of human engineering that was aimed at making especially marshes suitable for agricultural production led to transformation of an older type of natural life. According to Carolyn Merchant, the drainage of English Fens following the introduction of hydraulic technologies – especially of the Dutch hydraulic technologies – in the seventeenth century disrupted a developed biological ecosystem consisting of particular species of fish and birds. This drainage process turned large regions of marsh into farmland for cultivating grain, sugar beets, and potatoes by means of dikes, sluices, and windmills. It deprived the fen dwellers, who were dubbed rude, barbarous people, of their means of existence. Therefore, "progress, commerce, and technology permanently transformed the ecological balance of nature and the economic livelihoods of the people who had called the fen their own."[24] Appropriation

23 Ibid., 422.

24 Merchant, "Hydraulic Technologies and the Agricultural Transformation of the English Fens," 169.

of reclaimed lands by the entrepreneurs led to the reaction of fen dwellers, who claimed that their common rights were being violated. Sabotage of drainage constructions such as dikes and sluices and the destruction of the crops cultivated on reclaimed lands were common forms of reaction and resistance in Hatfield Chase in the 1630-40s.

Similarly, the reclamation of the Oder Marshes in Germany faced the resistance of the local population which took violent forms such as sabotage, the breach of dikes, and, at other times, long legal struggles involving lawsuits and petitions. For example, Haerlem reported in 1754 that some marsh-dwellers, especially fishers, pierced the dikes built as a part of the project, in some places. Fishers, who made a living from weirs in the marsh and lakes owing to periodic flooding, risked losing their means of living after reclamation projects that eliminated these marshes and weirs. Their fear was not unfounded. After the reclamation of the Oder Marshes was completed, the economy of the region transformed; the fishing business was replaced with an agriculture-based economy because the transformation of the physical landscape led to the perishing of fish species such as eels.[25]

Therefore, knowledge, techniques, and instruments of hydraulic engineering underwent a great change between the ancient and modern periods. Dutch engineers played an especially important role not only in the production of modern hydraulic engineering but also its spread throughout Europe. Modern hydraulic engineering was further encouraged by agriculture-based, market-oriented economies that demanded the creation of more agricultural land from wetlands and other marshy regions. However, the application of this engineering knowledge in the field brought about unintended consequences such as the disappearance of fish and bird species, leading to a great change in ecology. Thus, those who stood to lose their traditional means of subsistence because of hydraulic engineering projects resisted them. The modern state had to deal with such acts of resistance and the social tensions that engineering projects created.

25 Blackbourn, *The Conquest of Nature*, 66-67.

§ 5.2 Modern Engineering and the Environment in the Ottoman Empire

In the nineteenth-century Ottoman Empire, the relationship between the environment and human-beings was questioned and deeply transformed largely as a result of state intervention and large-scale engineering projects that were devised as a part of the programs of a developmentalist agenda. Engineers were crucial players in this process of transformation in the Ottoman Empire, both as practitioners of public works projects and as a symbol of progress and mastery over nature. Ottoman engineers acquired a significant place in Ottoman society in general – and in the Ottoman bureaucratic elite and public works bureaucracy in particular – because of their expertise and technical and engineering knowledge. Ottoman engineering was gradually formalized and institutionalized in the eighteenth and especially the nineteenth centuries and was reshaped in accordance with the formation of a modern Ottoman state that viewed the development of the country and public works as its responsibility. Especially the introduction of modern, civilian engineering education made possible the production of engineers and technical experts to work on the public works and engineering projects of the empire – such as the construction of roads, railways, ports, and bridges; the reclamation of marshes, rivers, and lakes; the establishment of irrigation systems; and the installation of telegraph lines, which were carried out by the Ministry of Public Works.

Ottoman engineers also worked on the reclamation and drainage of rivers, lakes, and marshes in various parts of the empire, especially toward the end of the nineteenth century. They were involved in the decision-making, planning, concession, and implementation of reclamation projects. In this sense they became vital actors in reclamation projects because of their expertise and technical knowledge. Their knowledge and expertise were a combination of the dissemination of western scientific and engineering knowledge in the Ottoman Empire via various channels, starting especially in the eighteenth century, as well as of the accumulation of local knowledge of hydraulic engineering which had a centuries-

old history in the Ottoman territories. This section traces the development of such knowledge from the early modern to the modern period.

5.2.1 *The Legacy of Early Modern Hydraulic Engineering Practices in the Ottoman Empire*

Ottoman engineers worked in various public works and engineering projects carried out by the Ministry of Trade and Public Works. The intervention of Ottoman engineering and engineers had a deep impact on the environment in Ottoman territories. The introduction of modern technology and engineering transformed not only the landscape but also social relations by creating new patterns. The practices of hydraulic engineering in the Ottoman Empire provide many examples of this transformation. Therefore, the transformation of the environment and landscape in the Middle East in general and in the Ottoman Empire in particular was largely the result of the introduction of modern engineering and technology, supervised and encouraged by the formation of a modern state. However, the early modern centuries were also dynamic with respect to environmental change, and the local technical expertise and engineering knowledge of the early modern period persisted even into the nineteenth century.[26] Therefore, this section traces the legacy of hydraulic engineering practices in Ottoman territories in the early modern period. It argues that in the early modern period, Ottoman hydraulic engineering projects were carried out locally with the use of a local knowledge and local expertise. Problems and conflicts resulting from these projects were solved in a local level, unlike in the modern period when the modern Ottoman state exerted authority over reclamation projects in terms of decision-making, concession, construction, engineering, and regulation.

Water-management technologies were then used in the Middle East, especially in the Nile Valley in Egypt and in the Tigris-Euphrates basin in Mesopotamia for 7000 years, and differing flood patterns required the formation of different types of hydraulic engineering in the regions that

26 Mikhail, *Under Osman's Tree*, 104-08.

would become Ottoman territory thousands of years later.[27] Irrigation and flood control based on water-lifting devices such as *noria* or *shaduf*, canals, dams, weirs, and floodgates especially led to a gradual transformation of the Middle Eastern environment. In this sense, the Ottoman Empire inherited a legacy of knowledge of water-management and hydraulic engineering from earlier local engineering projects, especially in Iraq and Egypt.

In the Ottoman Empire, local populations had for centuries used various methods to control water, irrigate their agricultural land, and reclaim marshes. Especially in Egypt and Iraq, which both had long histories of hydraulic engineering because of the differing flood patterns of the Nile and Tigris-Euphrates rivers that required the introduction of water-management techniques to irrigate agricultural land, local populations developed their own methods and expertise. Until the middle of the nineteenth century, this local expertise was especially significant in the management of water.

Alan Mikhail claims that in Egypt irrigation afforded local communities a degree of autonomy and power.[28] In Ottoman Egypt, local engineers who worked as middlemen navigating local interests and knowledge on one hand and the imperial aims of the Ottoman state on the other, played a definitive role in the transformation of the rural environment up until the nineteenth century by constructing and maintaining infrastructure and public works projects such as canals, embankments, roads, and bridges. There was interdependence between the Ottoman administration and local engineers in Egypt; the administration needed local engineers because of their familiarity with local conditions and their expertise on local infrastructure. Especially irrigation, water-management, and the maintenance of canals, embankments, and roads were crucial for the Ottoman administration because they played vital roles in the continuation of grain production and, thus, in the payment of taxes. Therefore, the Ottoman administration relied on local engineers in Egypt to deal with

27 For a general of review of the history of water management in the Middle East, see Burke III, "The Transformation of the Middle Eastern Environment."

28 Mikhail, *Under Osman's Tree*, 14.

technical issues such as the maintenance and repair of infrastructure projects in the early modern period. This reliance on the expertise of local engineers rendered them elite authorities who were primarily involved in the decision-making process for infrastructure projects in Ottoman Egypt.

For example, when a problem occurred with a canal embankment in the village of Sharimsah in the subprovince of al-Daqahliyya in 1664, Al-Mu'allim Ata' Allah, a local engineer, was charged by the local court with its repair. After he consulted with rural cultivators on the state of the embankment, he conducted a survey of the region and the embankment. Then, he estimated the total cost of the repair. Although the cost was high, he was sure that its current disrepair would damage both the surrounding agricultural land and the tax revenues of the Ottoman administration; thus, the cost of its disrepair was higher than that of its repair. Therefore, Al-Mu'allim Ata' Allah recommended that the embankment be repaired as soon as possible, and the local court approved the decision.[29] This case shows the extent to which local engineers in Ottoman Egypt had authority in the decision-making process for infrastructure projects because of their expertise in local technical knowledge and conditions, and the extent of the credit that the Ottoman administration gave to this local knowledge and expertise. In this sense, like in early modern Europe, hydraulic engineering projects were carried out locally with the use of a local knowledge and expertise.

Ottoman Iraq was another region with a long history of hydraulics because of the existence of two important rivers, the Tigris and the Euphrates. Especially the Euphrates River was one of the most important factors that shaped the ecology of both Anatolia and Iraq because it made the movement of natural resources, goods, and people possible. Its water, together with that of the Tigris River, "made irrigation agriculture in vast tracts of arid land possible and nurtured the daily lives of tens of thousands of productive, tax-paying peasants. Moreover, water made both riv-

29 Ibid., 94-97.

ers a low-cost and navigable transportation network that knitted together various Ottoman provinces in Anatolia, Syria, and Iraq and connected the Ottoman heartland with the world of the Indian Ocean."[30] Thus, it held great significance for the Ottoman Empire.

The river had some marshy regions in Iraqi territory with which the provincial administration of the Ottoman Empire had to deal. The Ottoman administration especially undertook a great effort to reclaim the marshes of Hasaka in Iraq's Middle Euphrates region in the eighteenth century. According to Faisal Husain, the most important reason for the Ottoman state's efforts to clean these marshes was the desire to establish authority over the region vis-à-vis an Arab tribe, the Khaza'il, that was a powerful political force that had been challenging Ottoman power in the region for a century. The ecology of the region "enabled the Khaza'il to raise their herds, grow their crops, build their huts and boats, and barricade themselves behind the marshes to carry out their acts of subversion of Ottoman authority." Therefore, because of the significance of the marshy region, the Ottoman administration in Baghdad carried out hydraulic warfare to weaken the power that the tribe took from the marshes.[31]

This warfare included the digging of a new, enlarged channel to replace the old one, the damming of the new channel and diversion of the river's water to this channel and an accompanying military expedition. This warfare, which began in 1701-2 and included military clashes in addition to the damming and drainage efforts, continued in the eighteenth century. Lastly, the separation of the floodplain from the older channel by the digging of a new one weakened the ecosystem that was fed by water of the river, and thus weakened the local power of the Khaza'il in 1780s. However, according to Husain, this hydraulic warfare had unintended

30 Faisal H. Husain, "Changes in the Euphrates River: Ecology and Politics in a Rural Ottoman Periphery, 1687-1702," *Journal of Interdisciplinary History* 47, no. 1 (Summer 2016), 2-3.

31 Faisal Husain, "In the Bellies of the Marshes: Water and Power in the Countryside of Ottoman Baghdad," *Environmental History* 19, no. 4 (October 2014), 639-40.

consequences in the long run that changed and reduced the Ottoman administration's authority in Iraq: by shifting the Euphrates westward it facilitated the consolidation of Shiism as the majority religion in the region.[32] Therefore, although the central Ottoman state was seeking to establish authority over Iraq by getting involved in hydraulic warfare with local actors, this warfare was mainly waged by the local administration and local expertise.

Both the cases in Egypt and Iraq display that in the early modern period, hydraulic engineering projects in the Ottoman Empire were locally carried out, and it was local knowledge and expertise that shaped these drainage and reclamation projects. In different parts of the empire, local populations had various methods of controlling water, irrigating their agricultural land, and reclaiming marshes, and the central government conceded a degree of autonomy and power to local communities and to expertise. Therefore, early modern centuries were dynamic with respect to traditional knowledge of hydraulic engineering and to environmental change. And this local technical expertise and engineering knowledge persisted in the modern period and played a role in the reclamation projects of the nineteenth century. However, as stated above, the transformation of the environment and landscape in general and reclamation projects in particular in the late Ottoman period were largely the result of the introduction of modern engineering and technology, supervised and encouraged by the modern state. The next section discusses the development of modern engineering in the Ottoman Empire.

5.2.2 *The Emergence of Modern Engineering Knowledge*

As discussed above, there was a legacy of local knowledge of hydraulics in the Ottoman Empire in the early modern period that played a role in reclamation projects, but it was modern engineering and technical knowledge that constituted the most important source of reclamation and drainage technology used in the nineteenth century. This knowledge was a combination of the accumulation of local knowledge on hydraulic

32 Ibid., 649-53.

engineering and of the dissemination of western scientific and engineering knowledge in the Ottoman Empire via various channels starting in the eighteenth century.

This section argues that together with local knowledge, two main channels contributed to the development of modern engineering and the combination of local knowledge and western scientific and engineering knowledge in the Ottoman Empire: foreign engineers and technical experts and newly-founded modern educational institutions. State power and intervention integrated these elements in the eighteenth and nineteenth centuries, leading to the development of a modern engineering knowledge. Thus, this knowledge became the most important source of reclamation and drainage technology used in the nineteenth century Ottoman territories.

In the history of Ottoman science and technology, there is a literature on the dissemination of scientific and technological knowledge in the Ottoman Empire.[33] This literature discusses the development of scientific and technological knowledge in the empire as a unidirectional process in which the knowledge of the West was literally translated and passively adopted by local elites. For example, according to Caesar E. Farah, who associates the interest in scientific and technological knowledge in Ottoman Syria with growing publication activities and institutions of higher learning founded in the late Ottoman period, an influential group emerged that was familiar with and interested in scientific-technological knowledge produced in Western Europe. They applied this knowledge in areas ranging from engineering to civil service to medicine in the Ottoman territories. However, Farah, discusses this in the Syrian context,

33 This literature includes Ekmeleddin İhsanoğlu, "Osmanlı İmparatorluğu'nda Bilim, Teknoloji ve Sanayide Modernleşme Gayretleri," in *Osmanlı Bilimi Araştırmaları II*, ed. Feza Günergun (Istanbul: İstanbul Üniversitesi Edebiyat Fakültesi Yayınları, 1998); "Osmanlıların Batı'da Gelişen Bazı Teknolojik Yeniliklerden Etkilenmeleri," in *Osmanlılar ve Batı Teknolojisi: Yeni Araştırmalar ve Yeni Görüşler*, ed. Ekmeleddin İhsanoğlu (Istanbul: İstanbul Üniversitesi Edebiyat Fakültesi Yayınları, 1992); and *Transfer of Modern Science and Technology to the Muslim World* (Istanbul: IRCICA, 1992).

claims that missionary schools and publications comprised of translations of scientific works produced in the Western Europe or the primary actors in the dissemination of knowledge.[34]

However, this analysis neglects the knowledge produced by local populations, especially with respect to technical issues.[35] In fact, processes of adaptation and mutual interaction are usually observed in the engineering projects of the Ottoman Empire. This is not to say that new engineering schools inspired by the West, publications translated from Western languages, and foreign engineers and experts were not important in the production of technological knowledge in the Ottoman Empire. On the contrary, they were major factors in engineering and technical knowledge in the Ottoman Empire, along with the legacy of local knowledge. And they played an important part in the transformation of the environment and landscape in general and in reclamation projects in particular in the late Ottoman period. Therefore, this section firstly addresses the role of foreign engineers and technical experts in Ottoman engineering and public works projects and secondly discusses engineering education as an instrument to produce local professionals to be employed in technological and engineering projects.

5.2.2.1 Foreign Engineers and Technical Experts in the Ottoman Empire

When public works and infrastructure projects were taken up as an area of responsibility of the central government, the administration established a wide network of public works at the center and in the provinces under the auspices of the Ministry of Public Works in order to plan and

34 Caesar E. Farah, "Awakening Interest in Western Science and Technology in Ottoman Syria," in *Transfer of Modern Science and Technology to the Muslim World*, ed. Ekmeleddin İhsanoğlu (Istanbul: IRCICA, 1992), 405-11.

35 Miri Shefer-Mossensohn addresses the dynamics of production and the exchange of scientific knowledge in the Ottoman Empire from the fourteenth to the twentieth centuries and rejects the notion of unidirectional dissemination of knowledge. See Miri Shefer-Mossensohn, *Science among the Ottomans: The Cultural Creation and Exchange of Knowledge* (Austin: University of Texas Press, 2016).

carry out public works in various fields. This department employed many officials and statesmen – from technical staff such as engineers and technicians to civil servants – who believed in the power of development and public works in solving the problems of the empire. Technical staff constituted one of the most crucial parts of this bureaucracy. In the second half of the nineteenth century, it was necessary to ensure a qualified workforce to carry out such projects in accordance with the rules of modern technology and engineering. These rules required the employment of a staff of engineers and technicians who were closely acquainted with state-of-the-art engineering technology. Thus, it was important to train engineers and technicians in various fields, ranging from civil engineering to railways to hydraulic engineering, or employment in public works and infrastructure projects in various parts of the empire and to create an efficient working environment for them.

In the second half of the nineteenth century, the Ottoman Empire employed foreign engineers for its public works projects due to a lack of qualified labor force to deal with technical issues. In fact, Ottoman governments had employed foreign military experts and engineers for the reorganization of the Ottoman army and navy and the modernization of the Ottoman military technology since the fifteenth century. According to Rhoads Murphey, the Ottoman Empire, starting in the beginning of the fifteenth century, became receptive to the dissemination of knowledge and technology, produced in Europe in important sectors such as military innovation, clock making, and mining. It became into contact with the Eastern European culture and employed experts (*tâ'ife-i efrenciyân*) from various cultures of Europe in its civil and military projects.[36] Starting with the Hungarian François de Toot in the 1770s, foreign engineers and technical experts from European states such as France, Germany, Austria, Britain, and Italy went to Ottoman territories in waves to work in areas such as the army, navy, public works, and engineering – sometimes as a

36 Rhoads Murphey, "Osmanlıların Batı Teknolojisini Benimsemedeki Tutumları: Efrenci Teknisyenlerin Sivil ve Askerî Uygulamalardaki Rolü," in *Osmanlılar ve Batı Teknolojisi*, ed. Ekmeleddin İhsanoğlu (Istanbul: İstanbul Üniversitesi Edebiyat Fakültesi Yayınları, 1992), 17.

result of bilateral agreements and collaborations between Ottomans and other states and sometimes as a consequence of the Ottoman state's demand for the labor of foreign experts.

At the end of the eighteenth century, rapprochement and collaboration between the Ottoman state and France led many French experts and engineers such as Joseph Gabriel Monnier, André-Joseph Lafitte-Clavé, and Antoine-Charles Aubert to go to the Ottoman capital. These experts not only worked to modernize Ottoman military technology, especially in the fields of artillery and fortification, but also contributed to the formation of modern engineering education by teaching courses in the School of Engineering (*Mühendishâne*). However, after France allied with the Russian Empire, they had to return to their homelands. According to Meltem Kocaman and Darina Martykánová, although these kinds of collaborations between the Ottoman state and the Great Powers of Europe continued until the end of the Ottoman Empire, the Ottoman government was always concerned about the possibility that foreign experts would report confidential information about the Ottoman army or navy to their own governments.[37]

Kocaman and Martykánová point out that as the Ottoman Empire became integrated with European power politics and global capitalism, it became home to foreign engineers who saw the empire as a land of opportunity. It provided generous salaries, favorable working conditions, a good reputation, an opportunity for adventure, and a good environment for escape from their homelands. Although the empire had begun to train domestic engineers in its newly established schools, it continued to employ foreign engineers and technicians in various parts of the empire.[38] The flow of foreign engineers into the empire accelerated especially in the 1880s when the number of public works and engineering projects increased.

37 Meltem Kocaman and Darina Martykánová, "A Land of Opportunities: Foreign Engineers in the Ottoman Empire," in *Philosophy of Globalization*, eds. Daniel Brauer, Johannes Rohbeck, and Concha Roldán (Berlin: De Gruyter, 2018), 238.

38 Ibid., 249.

Foreign engineers not only worked on such projects in the provinces of the empire but also trained locals in schools of engineering and in the field. As Kocaman and Martykánová point out, foreign engineers and technicians integrated local practices and knowledge with respect to technical issues such as the construction of roads, opening of canals, and reclamation of marshes, lakes, and rivers with their own technical expertise and knowledge of modern engineering rather than simply applying their theoretical knowledge of engineering. This approach gave them the opportunity to adapt to local conditions and to produce effective solutions to local problems as well as to find local support.[39]

5.2.2.2 Engineering Education in the Ottoman Empire

Although Ottoman governments employed foreign engineers and experts to meet their need for technical knowledge and expertise for growing public works and infrastructure projects, they were not enough for the increasing number of such projects. Therefore, it became essential to create a domestic source of technical staff for such projects. Because of the urgent need for technical staff to meet the empire's demand at the end of the nineteenth century, the government put the establishment of a civil engineering school in Istanbul to train new engineers and technicians on its agenda. The School of Civil Engineering (Hendese-i Mülkiye Mektebi) was founded in Istanbul in 1883.

In fact, the history of modern engineering education in the Ottoman Empire dates back to the end of the eighteenth century. Since the foundation of the first engineering school for military purposes in Tersâne-i Amire in 1775,[40] the Ottoman state had established various military engineering schools at different times. These schools were established to

39 Ibid., 244.

40 According to Şinasi Acar, Atilla Bir and Mustafa Kaçar, contrary to popular wisdom, the first school of military engineering in the empire was Hendese Odası, not Mühendishâne-i Bahrî-i Hümâyûn. Its founding date was 1775, not 1773. Şinasi Acar, Atilla Bir, and Mustafa Kaçar, "Osmanlı'da Sivil Mühendis Yetiştirmek Üzere Açılan Hendese-i Mülkiye Mektebi," *Osmanlı Bilimi Araştırmaları* 17, no. 2 (2016), 2; and Mustafa Kaçar,

meet the needs of the Ottoman army and navy for military engineers, especially for experts in the fields of fortification, artillery, and navigation. Thus, their sphere of activity was limited to military needs. However, as the central government began claiming responsibility for public works and infrastructure projects such as the construction of highways, railways, bridges, and ports; the establishment of new irrigation systems; and the reclamation of wetlands starting in the second half of the nineteenth century, the foundation of a civil school of engineering to create a new source of expert engineers and technicians trained according to the rules of modern technology and engineering to work on such projects became inevitable. It required the training of experts in many fields ranging from civil engineering to railway and road engineering to hydraulic engineering.

Before addressing civil engineering education in the Ottoman Empire, the background of schools of military engineering is worth considering as it contributed to the development of modern engineering knowledge in the Ottoman Empire. A great part of the modern literature on the Ottoman history of science and technology associates the early formation of science, technology, and engineering education in the Ottoman Empire with its attempts to modernize and reform its army and navy starting in the first half of the eighteenth century. According to this literature, the Ottoman state tried to modernize its army and navy in parallel with military and technological developments in Europe because it had lost its military supremacy over European states. The establishment of new military schools that taught modern military technology and engineering was part of these efforts. These engineering schools, established for military purposes under the guidance of European – especially French – ex-

"Osmanlı İmparatorluğu'nda Askerî Teknik Eğitimde Modernleşme Çalışmaları ve Mühendishanelerin Kuruluşu (1808'e Kadar)," in *Osmanlı Bilimi Araştırmaları II*, ed. Feza Günergun (Istanbul: İstanbul Üniversitesi Edebiyat Fakültesi Yayınları, 1998), 82.

perts, trained officers for the Ottoman army and navy who had a command of engineering and military technology.[41] Although attempts to train experts of military technology in the Ottoman army began with the appointment of Compte de Bonneval as the chief bombardier (Humbaracıbaşı) and the establishment of the Corps of Bombardier (Humbaracı Ocağı) in 1735 – and some people such as Said Efendi and Mühendis Selim taught courses on engineering within this corps[42] – the institutionalization of military engineering education dates back only to the 1770s.

The first engineering school in the empire was Hendese Odası (or Hendesehâne), which was founded for military purposes in Tersâne-i Amire in Istanbul in 1775. The aim of the school was to train naval officers familiar with geometry and geography who could read maps and had a comprehensive knowledge of ship construction.[43] This institution, founded under the supervision of Baron de Tott,[44] concentrated on subjects such as mathematics and naval engineering and used textbooks and course materials such as maps, water balances, pendulum clocks and compasses imported from France.[45] The school came to be called "Mühendishâne" (the school of engineering) in 1781 when it employed two French engineers, Joseph Gabriel Monnier and André-Joseph Lafitte-

41 For some examples, see İhsanoğlu, "Osmanlı İmparatorluğu'nda Bilim, Teknoloji ve Sanayide Modernleşme Gayretleri"; Mustafa Kaçar, "Osmanlı İmparatorluğunda Askerî Sahada Yenileşme Döneminin Başlangıcı," in *Osmanlı Bilimi Araştırmaları*, ed. Feza Günergun (Istanbul: İstanbul Üniversitesi Edebiyat Fakültesi Yayınları, 1995); Kaçar, "Osmanlı İmparatorluğu'nda Askerî Teknik Eğitimde Modernleşme Çalışmaları "; Aykut Kazancıgil, *Osmanlılarda Bilim ve Teknoloji* (Istanbul: Gazeteciler ve Yazarlar Vakfı Yayınları, 1999); and George N. Vlahakis et al., *Imperialism and Science: Social Impact and Interaction* (California: ABC-Clio, 2006).

42 Kaçar, "Osmanlı İmparatorluğunda Askerî Sahada Yenileşme," 212-19.

43 Kazancıgil, *Osmanlılarda Bilim ve Teknoloji*, 247.

44 For detailed information on Baron de Tott, his contribution to the establishment of a military engineering school, and the transfer of fortifications and artillery technology to the Ottoman Empire, see Kaçar, "Osmanlı İmparatorluğu'nda Askerî Teknik Eğitimde Modernleşme Çalışmaları."

45 Ibid., 86.

Clavé, to teach courses on military engineering and fortification in 1784.[46] They not only taught in the school but also helped the Ottoman government strengthen forts along the Danube and the Dardenelles, together with another Frenchman, Antoine-Charles Aubert.[47]

After Selim III came to the throne in 1789, he decided to establish a new school of military engineering to train officers who would serve in the Ottoman army, on artillery and fortification. He was influenced by Ignatius Mouradgea D'Ohsson's detailed report on the formation of modern military education in which he proposed the adoption of French military engineering as a model.[48] This school, founded in Hasköy in 1795, was renamed as Mühendishâne-i Berrî-i Hümâyûn in 1806.[49] Training in the new Mühendishane was also based on the engineering, construction, and maintenance of fortifications and the theoretical knowledge that provided its basis. Courses included both theoretical and applied sciences, including mathematics, geometry, mechanical drawing, fortification, artillery, mechanics, hydraulics, astronomy, geography, Arabic, and French. The subjects of textbooks used in the school reflected the orientation of its engineering training: arithmetic, geometry, astronomy, geography, navigation, fortification, artillery, physics, engineering, mechanics, hydraulics, and optics.[50]

As stated above, all these military engineering schools were established to meet the Ottoman military's need for engineering knowledge, especially at the end of the eighteenth century. Their operations contrib-

46 Acar, Bir, and Kaçar, "Osmanlı'da Sivil Mühendis Yetiştirmek Üzere Açılan Hendese-i Mülkiye Mektebi," 6.

47 Ethan L. Menchinger, *The First of the Modern Ottomans: The Intellectual History of Ahmed Vasıf* (Cambridge: Cambridge University Press, 2017).

48 Kemal Beydilli, *Türk Bilim ve Matbaacılık Tarihinde Mühendishâne, Mühendishâne Matbaası ve Kütüphânesi, 1776-1826* (Istanbul: Eren Yayınları, 1995), 29-32.

49 According to the first code of Mühendishâne issued in 1806, the old Mühendishâne in Tersane was called Mühendishâne-i Bahrî-i Hümâyûn, the new one was Mühendishâne-i Berrî-i Hümâyûn. Kaçar, "Osmanlı İmparatorluğu'nda Askerî Teknik Eğitimde Modernleşme Çalışmaları," 113.

50 Ibid., 113-14.

uted to the development of modern engineering knowledge in the Ottoman Empire. However, by the middle of the nineteenth century public works and infrastructure projects came to be an area of the government's responsibility and increased as part of a new conception of development. The need for civil engineering knowledge and a new source of engineers and technicians to be employed in such projects gradually became apparent. Neither foreign experts nor local military experts and engineers were sufficient to meet this need. Therefore, establishing a civil school of engineering in the empire became an inevitability.

The first civil school of engineering, which was affiliated with the Ministry of Public Works, was established in 1867 under the name Mühendisin-i Mülkiye Mektebi to train civil engineers, technicians, and architects. This school was reopened as a part of Darülfünun-u Sultani together with its establishment in 1874.[51] When Darülfünun-u Sultani was first established, it was comprised of two schools: the law school and the engineering one, Mühendisin-i Mülkiye Mektebi. The name of the engineering division of the school became Turuk ve Meabir Mektebi in 1875. The period of study in the school was four years, and students who successfully completed the course of study and prepared a thesis began to work as engineers in the Ministry of Public Works. Those who did not write a thesis became technicians in the ministry following an easier exam. In 1875, twenty-six students attended classes in the Turuk ve Meabir Mektebi.[52] However, the activities of the school ended together with the closing of Darülfünun-u Sultani in the 1880s.

After the close of Turuk ve Meabir Mektebi, Abdülhamid II established a new school of engineering called the Hendese-i Mülkiye Mektebi in Istanbul in 1883 to meet the ongoing demand. It took the École des Ponts et Chaussées in France as a model. Some graduates of the school stated in their memoires that Hasan Fehmi Paşa, the Minister of Public Works,

51 Osman Öztürk, "Osmanlılarda Sivil Mühendislik Fakülteleri," in *I. Uluslararası Türk-İslam Bilim ve Teknoloji Tarihi Kongresi* (Istanbul: İ.T.Ü. Mimarlık Fakültesi Baskı Atölyesi, 1981).

52 Ekmeleddin İhsanoğlu, "Dârülfünûn," in *İslam Ansiklopedisi* (Istanbul: Türkiye Diyanet Vakfı), 523; and Öztürk, "Osmanlılarda Sivil Mühendislik Fakülteleri," 122.

played an important role in the establishment of the school.[53] The School of Civil Engineering continued to provide engineering education under this name until 1909 when it took the name Mühendis Mekteb-i Âlîsi. The school produced its first graduates in 1888 when thirteen students graduated.[54] From 1888 to 1908, 230 students graduated from the School of Civil Engineering.[55] While a few stayed on as instructors in the school, the majority was appointed as state officials and worked as engineers on public works and engineering projects such as the construction of roads, railways, ports and bridges; the reclamation of marshes, rivers, and lakes; the establishment of irrigation systems; and the installation of telegraph lines carried out by the Ministry of Trade and Public Works. A large number of graduates worked on the construction of the Hicaz Railway.

Although according to its official charter, the school was established as an affiliate of the Mühendishâne-i Berrî-i Hümâyûn and under military authority,[56] it was a civilian school to train engineers to work in public works and infrastructure projects under the supervision of the Ministry of Trade and Public Works. The school had two sections. One was the high school, in which students who had graduated from military and civilian secondary schools could enroll. The other was the college, in which students who had graduated from the Mekteb-i Mülkiye, Mekteb-i Sultani, Darüşşafaka, or the high school section of the school could directly enroll. The period of the education in the school was seven years in total including the three-year high school education.[57]

---

53 For memoirs of graduates of the school, see Çağatay Uluçay and Enver Kartekin, *Yüksek Mühendis Okulu: Yüksek Mühendis ve Yüksek Mimar Yetiştiren Müesseselerin Tarihi* (Istanbul: İstanbul Teknik Üniversitesi, 1958), 560-636.

54 Ibid., 154.

55 Kazım Çeçen, *İstanbul Teknik Üniversitesi'nin Kısa Tarihçesi* (Istanbul: İstanbul Teknik Üniversitesi Bilim ve Teknoloji Tarihi Araştırma Merkezi, 1990), 42.

56 Acar, Bir, and Kaçar, "Osmanlı'da Sivil Mühendis Yetiştirmek Üzere Açılan Hendese-i Mülkiye Mektebi," 11; and Uluçay and Kartekin, *Yüksek Mühendis Okulu*, 130-32.

57 However, in subsequent years, the duration of study in the high school section increased to six years. See Acar, Bir, and Kaçar, "Osmanlı'da Sivil Mühendis Yetiştirmek Üzere Açılan Hendese-i Mülkiye Mektebi," 13-15.

The curriculum concentrated on basic and technical sciences including not only engineering but also construction and architecture. Courses on civil engineering, railway and road engineering, hydraulic engineering, topography, architecture, and engineering drawing were the most prominent. There were French courses in the curriculum every year.[58] Indeed, it was crucial for students to learn French not only because they had to read textbooks in French and take courses from European professors, but because they would eventually be working in cooperation with European engineers.[59]

Students used textbooks such as *Mecmûa-i Ulum-u Riyâziyye* by Hoca İshak Efendi and *Lugât-ı Riyâziyye* and *Hesâb-ı Tefâzulî* by Hippolyte Sonnet.[60] Hoca İshak Efendi was known for as a pioneer of modern science in the Ottoman Empire.[61] His famous work, *Mecmûa-i Ulum-i Riyâziyye,* introduced the latest worldwide developments in science to the Ottoman Empire and translated modern science terminology into Turkish. The four-volume book became a tool for the dissemination of modern science

58 Uluçay and Kartekin, *Yüksek Mühendis Okulu*, 140-43.

59 The majority of the teaching staff of the school was comprised of officers and teachers of the Mühendishâne-i Berrî-i Hümâyûn. However, many foreign teachers also taught courses in the school in various fields. Among them, Austrian engineer Philipp Forchheimer gave lessons on hydraulic engineering. One of the most respected experts of hydraulics in Europe, Forchheimer worked at the school at two, different times, first between 1889 and 1891 and then after 1913 (when the name of the school had changed to Mühendis Mekteb-i Alisi).

60 Acar, Bir, and Kaçar, "Osmanlı'da Sivil Mühendis Yetiştirmek Üzere Açılan Hendese-i Mülkiye Mektebi," 17-22.

61 For Hoca İshak Efendi and his importance in the history of Ottoman science, see Melek Dosay Gökdoğan and Mutlu Kılıç, "Hoca İshak Efendi ve Eseri Mecm'ua-i 'Ulûm-u Riyâziyye," in *Osmanlılarda Bilim ve Teknoloji: Makaleler*, ed. Yavuz Unat (Ankara: Nobel Yayın Dağıtım, 2010); Ekmeleddin İhsanoğlu, *Başhoca İshak Efendi: Türkiye'de Modern Bilimin Öncüsü* (Ankara: Kültür Bakanlığı Yayınları, 1989); Ekmeleddin İhsanoğlu, "Mühendishâne-i Berrî-i Hümâyûn Başhocası İshak Efendi: Hayatı ve Çalışmaları Hakkında Arşiv Belgelerine Dayalı Bir Değerlendirme Denemesi," *Belleten* 53, no. 207-208 (August-December 1989): 735-65; and Faik Reşit Unat, "Başhoca İshak Efendi," *Belleten* 28, no. 109 (January 1964): 89-115.

in the Ottoman Empire. Touching on various subjects such as mathematics, geometry, physics, mechanics, chemistry, mineralogy, and botany, the book's third volume also included hydraulics and river hydraulics.[62] It became a primary source for science and engineering education in the Ottoman Empire in the nineteenth century and was used as textbook in both the Mühendishane and the School of Civil Engineering.

Since the seventeenth century in the Ottoman Empire, it was also possible to find translations of many works on various disciplines of science such as astronomy, geography, medicine, mathematics, engineering, and navigation from various European languages from onwards. These translations and collections subsequently became a primary channel for the transfer of knowledge on science and engineering in the Ottoman Empire. Especially at the end of the eighteenth century and in the nineteenth century, the establishment of modern technical schools increased the importance of such translations into Turkish. The process of disseminating technical knowledge accelerated because of the new concept of technical education in these schools, based on both theoretical and applied sciences, necessitated the use of new books on science and engineering that included technological knowledge. Translations and collections translated from European languages accounted for a considerable number among the 242 titles on sciences that were published between 1840 and 1876. Among the books most printed, subjects such as "mathematics, medicine, geography, military sciences, engineering, astronomy and navigation" were in the lead.[63] In this role of providing modern engineering training, the Mühendishane also had a library and printing press that published textbooks on engineering and military issues used in its courses. Among the books that the printing press published were many

62 Melek Dosay, "Mecmûa-i Ulûm-ı Riyâziye," in *Osmanlılarda Bilim ve Teknoloji: Makaleler*, ed. Yavuz Unat (Ankara: Nobel Yayın Dağıtım, 2010), 221.

63 İhsanoğlu, "Osmanlı İmparatorluğu'nda Bilim, Teknoloji ve Sanayide Modernleşme Gayretleri," 10.

on engineering, mathematics, the science of warfare, geography, and dictionaries.[64] Both printed books and the collection in the Mühendishâne library became a crucial tool for the dissemination of technical and engineering knowledge in the Ottoman Empire. It "played a key role in the transfer and production of specialized knowledge in the Ottoman Empire."[65]

Therefore, the School of Civil Engineering played a great role in training local experts in various branches of engineering. Graduates of the school worked as engineers or technicians on public works projects in the Ottoman Empire carried out by the Ministry of Trade and Public Works. Graduates memoirs suggest that as Ottoman engineers of the late Ottoman period who witnessed tumultuous events such as the Balkan Wars of 1912-193 and World War I, they kept their faith in science, technology, and engineering in spite of the difficult conditions of the period.[66] This was the result of the education they received in the School of Civil Engineering.

64 For a detailed list of books printed by the Mühendishâne Printing Press between 1797-1824, see Beydilli, *Türk Bilim ve Matbaacılık Tarihinde Mühendishâne*, 253-74; and Kemal Beydilli, *Mühendishâne ve Üsküdar Matbaalarında Basılan Kitapların Listesi ve Bir Katalog* (Istanbul: Eren Yayıncılık, 1997).

65 Darina Martykánová, *Reconstructing Ottoman Engineers: Archaeology of a Profession (1789-1914)* (Pisa: Edizioni Plus-Pisa University Press, 2010), 14.

66 Mustafa Şevki Atayman was one. Having graduated from the School of Civil Engineering at the end of 1897, he became the assistant to the chief engineer of the province of Ankara the next year and worked as an engineer on various public works projects of the late Ottoman and republican states in various locations such as Ankara (1897-1907), Kosova (1907-1910), and Sivas until he retired in 1937. He claimed that his field of expertise was the construction of highways, railways, and bridges, and he usually worked on such projects. Atayman, despite the obstacles and threats, had deep faith in in science, technology, and engineering and thought that the duty that he fulfilled as an engineer was important and necessary for the country. Mustafa Şevki Atayman, *Bir İnşaat Mühendisinin Anıları* (Istanbul: İstanbul Teknik Üniversitesi İnşaat Fakültesi Matbaası, 1984).

§ 5.3 Engineering and Public Works in the Late Ottoman Period

In the Ottoman Empire, the modern engineering knowledge constituted the main source of reclamation and drainage technology in the nineteenth century. This knowledge was a combination of local knowledge of hydraulic engineering with a centuries-old history on one hand, and of western scientific and engineering knowledge that emerged in the Ottoman Empire via various channels such as foreign engineers and technical experts working in Ottoman territory as well as the newly-founded engineering schools. Both foreign and local engineers and technical experts applied this engineering knowledge to reclamation and drainage projects. Ottoman engineers had a belief in the power of science, technology, and engineering and thought that this knowledge was significant for the country. For them, these made it possible to dominate nature and thus be a resource for the country's development. Therefore, they attributed great importance to both themselves and the public works and reclamation projects on which they worked. However, their belief in technology, engineering, and progress was usually at odds with the reality of these projects in the fields. Not only did the projects create social tension among various actors, but the knowledge these engineers applied to the projects often led to unintended consequences such as perishing of species and ecological change.

The Ottoman Empire established a widespread public works bureaucracy to draw up and carry out development programs and to supervise specific public works projects drawn up as a part of such programs in the second half of the nineteenth century. This bureaucracy was organized within the Ministry of Public Works and was comprised of various offices, councils, officials, engineers, and technical experts.[67] Engineers and technical experts constituted a crucial element of this apparatus. Each prov-

67 For more information on officials and offices in the late Ottoman public works bureaucracy, see Sevim Erdem, "Sultan II. Abdülhamit Devri (1876-1908) Osmanlı Devleti'nde Bayındırlık Faaliyetleri," 18-32.

ince of the empire had an official engineer-in-chief (*sermühendis*) that administered public works in its own territory. The engineer-in-chief of each province, who was assisted by an assistant engineer (*sermühendis muavini*), relied on technicians, engineers, and mid-ranking technical staff (*kondoktör*).[68]

Until the first attempts to generate local experts in the construction of public works and engineering and establishment of new civil schools of engineering in the last quarter of the nineteenth century, foreign engineers constituted the majority of technical experts in the Ottoman public works bureaucracy. However, as the importance of development programs and public works increased in the eyes of Ottoman statesmen, the drive to create a local source of technical expertise and establish new technical schools gained momentum, leading to the replacement of foreign technical experts with Ottoman engineers in time. Although foreign engineers continued to work on many important public works projects in the empire, Ottoman engineers gradually came to play a significant role in the Ottoman public works bureaucracy in both the center and the provinces as well as in Ottoman society.

Ottoman engineers were not only a professional group that applied and carried out public works projects but also became a social group that legitimized its existence by its members' expertise on science and technology. They were seen "as a vehicle of progress and as a remedy for the evils of the fatherland."[69] In the nineteenth century there was a universal belief in progress, and according to David Blackbourn, this belief carried with it larger political and cultural hopes for the future.[70] One of the most important elements of the belief in progress was the power attributed to technology and engineering to transform life. Blackbourn cites the German chemical engineer Eberhard Zschimmer as an example of a philosophy of technology that viewed nature as either a servant or an enemy and established a relation between progress and the struggle against nature

68 Martykánová, *Reconstructing Ottoman Engineers*, 144.

69 For a relatively new study on the profession of engineering in the late Ottoman Empire, see ibid., XVII.

70 Blackbourn, *The Conquest of Nature*, 175.

through technology.[71] According to Zschimmer, technology was a means to human freedom that could rescue human beings from the limitations of nature.[72] At the beginning of the nineteenth century, German engineers believed "human beings could improve upon nature, preventing floods, eliminating disease, creating farmlands, and ensuring active commerce by harnessing the power of water for utilitarian ends."[73] The homeland could be improved through such an intervention on nature. This belief, which saw technology and engineering as driving forces of the country and the homeland in the nineteenth and twentieth centuries, also attributed a great role to engineers as the actors of this progress.

Rita Gudermann also emphasizes the belief of hydraulic engineers in technology and engineering in her discussion of agricultural amelioration projects in nineteenth century Prussia. In Prussia, hydraulic engineers emerged as a professional group that served the nation through their expertise in hydraulic engineering and water. They believed that controlling rivers and swamps through technology and science would improve hygienic conditions, increase the fertility of farmland and agricultural production, and lessen poverty, thus solving social problems. They cast themselves in a heroic role in the struggle against nature and water which they saw as a symbol of nature's mastery over human beings. Therefore, their expertise provided an advantage for their own nation.[74]

Ottoman engineers shared this universal belief. According to Darina Martykánová, the expansion of the public works administration in the Ottoman Empire was intertwined with the consolidation of "a figure of the civil(ian) engineer (*mühendis*)."[75] While engineering education played a

71 Ibid., 192-93.

72 Carl Mitcham, *Thinking through Technology: The Path between Engineering and Philosophy* (Chicago: The University of Chicago Press, 1994), 28.

73 Thomas Lekan and Thomas Zeller, eds., *Germany's Nature: Cultural Landscapes and Environmental History* (New Brunswick: Rutgers University Press, 2005), 4.

74 Rita Gudermann, "Conviction and Constraint: Hydraulic Engineers and Agricultural Amelioration Projects in Nineteenth-Century Prussia," in *Germany's Nature: Cultural Landscapes and Environmental History*, eds. Thomas Lekan and Thomas Zeller (New Brunswick: Rutgers University Press, 2005), 34-37.

75 Martykánová, *Reconstructing Ottoman Engineers*, 117.

crucial role in the construction of such a figure, state supervision and support and the vital importance it attributed to public works reinforced this process of construction. By the end of the nineteenth century, engineers strongly identified with belief in the power of technical and scientific knowledge and expertise to save and develop the country. One of the most important elements of this identity was the link that Ottoman engineers established between progress and the public works projects on which they were working. "To carry out their work and to fight for their collective professional interests was not to be understood as a simple breadwinning and a struggle for privileges, but as working for the benefit of all, for the progress of the country."[76] However, as the case study of Lake Lapsista and marshes suggests, their belief in progress and engineering not only brought about intended and planned impacts but also sometimes led to unintended consequences.

§ 5.4 Hydraulic Engineering and the Environment in the Ottoman Empire: Reclaiming Lake Lapsista and Marshes in Ioannina

Engineering and engineers became vital actors in the transformation of the environment. Engineers and technical experts played a great role in determining reclamation projects by planning, preparing reports, drawing maps, supervising the process of construction, and inspecting the project. Relevant official institutions and bureaucrats who would decide the fates of the projects paid attention to their actions, plans, reports, and maps. In this sense, they played a determining role in public works. However, engineering and technical intervention in reclamation projects had not only intended and planned impacts but also sometimes unintended consequences. As the case of the reclamation of Lake Lapsista and the marshes in Ioannina around it suggests, such projects led not only to the transformation of the physical landscape but also to the alteration of ecology by means of hydraulic engineering and technology. And this led

76 Ibid., 137.

to the disappearance of traditional modes of subsistence. In the case of Lake Lapsista, efforts to turn marshy regions into agricultural land to be cultivated to supply both domestic and international markets made fishing in Lapsista and Ioannina lakes, which was an important mode of subsistence for local communities, impossible because it interfered with the lakes' ecology and led to the perishing of fish species. This process led to a long-lasting dispute and to tension among relevant actors such as local fishers, the concession holder, landowners, officials, and the tax farmer of the fishing tax. This section narrates the case of Lapsista as an example of tension and contestation among these various social actors caused by the engineering of the reclamation project.

5.4.1 *The Lapsista Region*

The Lapsista region took its name from the small village of Lapsista in the province of Ioannina, and the lake in this region was called Lake Lapsista. The Ioannina valley is a region 20 miles in length from north to south that is "so completely surrounded by mountains that the superfluous waters have no efflux but through the mountains themselves. To this obstruction we may attribute the existence of the two lakes of Lapsista and Ioannina, with the intermediate marshes which unite them."[77]

The valley was:

> "divided longitudinally by a low ridge. The western portion consists of a dry, stony, and not very fertile soil, but which produces wheat, barley, millet, maize, and vines. The eastern plain is occupied entirely, with the exception of a branch from the southern extremity lying between the hill of Kastritza and Mount Dhrysko, by the two lakes, the intermediate marsh, and the meadows, which border their whole extent, and the breadth of which is much increased in the summer by the retreat of waters."[78]

A channel and the marshes around it separated the two lakes of Ioannina.

77 Leake, *Travels in Northern Greece*, Volume 4, 131.

78 Ibid., 133.

A large number of villages in the region adjacent the two lakes were inhabited by fishermen because fishing in the lakes was a significant means of earning a living. Especially Lake Ioannina hosted a variety of fish species. The most common fish in this lake were lake carp and eels, but there were other species such as pike, perch, and tench that were caught in fine nets of silk.[79] Eels were especially common in the waters of Lake Ioannina. The channel between Lake Lapsista and Lake Ioannina made it possible for fish to pass between them, and thus, it was possible to fish in either lake.

Land between the two lakes was often under water because of flooding and marshes. The region's heavy rainfall and topographical features increased this danger: "the elevation of Ioannina above the sea, probably not much less than 1000 feet, its inclosure of mountains, covered for more than half the year with snow, the frequent showers which refresh it throughout the spring and early summer, added to its marshes and inundated meadows."[80]

5.4.2 *Attempts to Clean Lake Lapsista*

As discussed in Chapter 4, the commercialization of agriculture in the Ottoman Empire and the increasing importance of Eastern Mediterranean ports for international trade in the second half of the nineteenth century made agricultural land in Balkan territories of the empire significant and profitable for entrepreneurs and landowners. Thus, turning marshes and lakes into agricultural land on which valuable crops for both domestic and international markets could be produced was a large-scale enterprise. Ottoman central and provincial officials saw the increase in agricultural land and production as a tax resource for the treasury. Local administrators in Ioannina tried to clean Lake Lapsista and its marshes to remove obstacles to agricultural production and increase agricultural land starting in the 1880s. The region had the potential to produce Egyptian corn as a cash crop for international trade.

79 Ibid., 155.

80 Ibid., 157.

In 1886, Yorgi Vasiliyadi and his partner, Dimitri Atnas, took up the project of draining and reclaiming Lake Lapsista and the marshes between it and Lake Ioannina with the granting of a concession.[81] In accordance with the contract, Yorgi Vasiliyadi guaranteed the project would be completed within four years. In this period, he would drain the whole of the lake and its marshes or at least half of them. He would hold the rights to the land he reclaimed.

Yorgi Vasiliyadi and Dimitri Atnaş signed a technical specification with the Ministry of Trade and Public Works on March 15, 1886, that included the technical aspects of the project and the concession holders' commitments and obligations with respect to the construction process. The validity of the concession contract signed with the ministry depended on the project being carried out in compliance with the terms of this specification, and a technical commission was to inspect its compliance after the construction was completed. The concession holders would be able to recieve the title deed of the reclaimed land only if this commission confirmed that the project complied with the terms of the specification.[82]

According to the technical specification, the concession holders had to reclaim both Lake Lapsista and at least half of the marshes between it and Lake Ioannina, and turn the reclaimed region into farmland. For this purpose, they first had to clean existing ditches and then construct additional ditches, dikes, and dams without raising the water surface of Lake Ioannina. The construction of these ditches and dikes was necessary to prevent the emergence of new marshy areas or the enlargement of existing marshes. When standing water fed from various sources such as rain gathered at a point in which its flow was prevented, it led to the formation of a marsh. And the main reason for the emergence of Lake Lapsista and the marshes around it was such standing water; hence, the ditches and

81 Erdem, "Sultan II. Abdülhamit Devri (1876-1908) Osmanlı Devleti'nde Bayındırlık Faaliyetleri," 460-61.

82 BOA, T.NF.VRK 1373/34, n.316, 317, 318, 1328.Ca.26.

dikes provided for the flow of water so that water surface level would decrease.[83]

The technical specification also specified the features and sizes of these constructions. Because floods could damage them, the ditches, dikes, levees and dams were to be flood-resistant and constructed at an ideal height and quality. According to the third article of the specification, the size of the dikes and levees planned in the marshes, was to be sufficient that water from the lake and marshes would easily flow without damaging the reclaimed land and neighboring lands in any flood. Their quality should mitigate the potential effects and damage of not only floods but also rainwater. Places where there was any possibility of breach would be strengthened by the laying of stones or construction of stone retaining walls along dikes.

However, it was not enough to construct dikes to reclaim the region and protect it from floods. The fourth article indicated another crucial step for preserving the reclaimed region from floods, which was to construct dams at the beginning and departure points of the dikes. There were some ways to protect these dams and prevent floodwater from damaging them. Firstly, it was important to hold a distance between them and watersides of dikes. Secondly, placing stakes and planting trees could also provide protection for them. Dams were to be constructed about fifty centimeters higher than the highest level that water would reach during a flood.[84]

The technical specification also included information on the technical map to be provided by the concession holder to the Ministry of Trade and Public Works. Its second article emphasized that the map should display water levels in the marsh during both floods and normal times to make it possible to determine the level that water would reach during floods and, thus, the height of the dikes to be constructed. The map should also indicate the places where construction would take place and the directions

83 BOA, T.NF.VRK 1373/34, n.316, 317, 318, 1328.Ca.26.

84 BOA, T.NF.VRK 1373/34, n.316, 317, 318, 1328.Ca.26.

of the dikes. And it should include information on the benefits and damage to which the construction could lead. The technical specification also necessitated the drawing of another map to demarcate property boundaries. According to the tenth article, the concession holders were to demarcate any land that could possibly be under water during a flood before they began to carry out the construction. The process of demarcation would be carried out with the participation of the concession holder as well as landowners or their deputies under the supervision of a commission of demarcation of borders (tahdid-i hudud komisyonu) appointed by the local administration. After the demarcation was completed in the field, the borders of all land belonging to current landowners would be depicted on a map that, after the process, would be delivered to the Ministry of Trade and Public Works for confirmation.[85]

5.4.2.1 The Technical Content of the Project

After the signing of the contract and the specification on March 15, 1886, the concession holders presented their project reports and maps to the Ministry of Trade and Public Works on February 16, 1887, within the time period of eighteen months that the contract allowed for the beginning of construction. Among documents presented to the ministry were a general map of the two lakes (Lake Ioannina and Lake Lapsista) and their marshes and vicinity; longitudinal (makta-i tûlânî) and transverse (makta-i arzânî) sections of the Lapsista canal where the waters of marshes between the two lakes gathered; longitudinal and transverse sections of the dam to be constructed between Sen Nicola and İramv and of the canals through Piri and Radotori; a map displaying lands that were submerged because of the marshes; a detailed report explaining why the work and construction depicted on the map were necessary; and finally, a reconnaissance report on the projected expenses for the work.

The project report gave brief information on Ioannina and Lapsista lakes and the marshes between them before listing the work and con-

85 BOA, T.NF.VRK 1373/34, n.316, 317, 318, 1328.Ca.26.

struction necessary for their reclamation and draining. Located in a valley surrounded by mountains, Ioannina was a length of twenty-one kilometers from north to south while its breadth was between one and five kilometers. Located south of the city, Lake Ioannina's length was seven kilometers and its breadth was three kilometers. Its depth was fifteen meters and its surface twenty square kilometers. On the other hand, Lake Lapsista was located north of the city. Its length was 1700 meters, its breadth 1000 meters, and its surface approximately 1.5 kilometers. However, the lake's depth varied throughout the year according to seasonal conditions. While the depth of the lake was ordinarily one meter, it reached up to three meters when its waters rose. Its depth even reached six meters every four or five years, which explained why the marshes between Ioannina and Lapsista lakes emerged. When the depth of Lake Lapsista reached six meters, the waters of the two lakes merged, leading to the submerging of surrounding lands and the emergence of marshes.[86]

The length of the marshy region that emerged between the Ioannina and Lapsista lakes was between one and two kilometers. Their waters, which originated from rainwaters and surrounding springs, flowed into whirlpools located at the northern and southern ends of Lake Ioannina and the southern end of Lake Lapsista. While in Lake Ioannina there were twenty nine such whirlpools not including other smaller ones, at the southern end of Lake Lapsista, their number was over twenty, including thirteen in the Piri canal and seven in the Radotori canal. Some whirlpools in Piri were large enough to absorb the flow of the water of the lakes and marshes; that is disappeared into the whirlpools there. Therefore, the water of the lakes and marshes did not overflow and submerge the surrounding land and farms.

However, when the waters of Lake Ioannina rose even a few centimeters because of rainfall, they overflowed between Sen Nicola and İramv, and the whirlpools around Lake Ioannina were incapable of absorbing the outflowing waters. During floods, the waters of Lake Ioannina flowed

86 BOA, T.NF.VRK 1373/34, n.316, 317, 318, 1328.Ca.26.

toward Lake Lapsista over the marshes and led to the submerging of surrounding land, farms, and orchards. Thus, the location between Sen Nicola and İramv was crucial for the flow of water, and it was necessary to strengthen that point.[87]

After the report provided information on Ioannina and Lapsista lakes, the marshes between them, and the critical points that led to the emergence of the marshy region, it listed the work and construction necessary for their reclamation and draining:

1. Clean the shores of Lake Ioannina sides and open and clean ditches in order to funnel water from these shores.
2. Construct a dam close to the lake between Sen Nicola and İramv, which would be sufficiently high that water from Lake Ioannina could not flow over it.
3. Dig a canal from İramv to Radotri to gather spring water and rainwater flowing toward Lake Lapsista and its marshes and to funnel them toward Radotori.
4. Dig another canal from Sen Nikola to Piri to gather spring water and rainwater from the marshes along its own route and direct them toward Piri.
5. Dig the Lapsista canal and other connected canals to gather waters from the marshes and funnel them into the Sivari canal.
6. Dig a canal to reclaim Lake Lapsista by directing its waters into the Sivari canal.
7. Dig a canal to redirect the waters of Pekpiyani stream into the Sivari canal.
8. Enlarge the Sivari canal and correct its route.
9. Enlarge and correct the canal that funnels the waters of the Sivari canal toward Radotri.
10. Enlarge and correct the canal that funnels the waters of the Sivari canal into the whirlpools in Piri.
11. Reclaim the mouths of the Piri and Radotri canals.

87 BOA, T.NF.VRK 1373/34, n.327, 1328.Ca.26.

12. Reclaim old waterways in the marshy area as necessary during the work.

Therefore, the project, prepared for the draining and reclamation of Lake Ioannina and the marshes around it, involved, to a large extent, the digging of new canals and correction of old ones to funnel the waters of Lapsista and Ioannina lakes originating from rainwater and surrounding springs into the Sivari, Piri, and Radotri canal so that the flowing water could be absorbed into the whirlpools there. The concession holders estimated that the project would cost 3.6 million kuruş.[88]

5.4.2.2 Deadlock in the Process of Construction

Mösyö Galan, the director of roads and bridges and the technical advisor, who examined the project reports and maps presented by the concession holders, confirmed the project on May 10, 1887. However, this confirmation had a condition. Galan found the depictions of the work and construction necessary for the drainage and reclamation that were plotted on the general map to be insufficient. He stated that the project could be confirmed by the Ministry of Trade and Public Works if the concession holders presented more specific depictions of bridges and other works to be constructed during the project.[89] On June 4, 1887, after about a month, the Directorate of Roads and Bridges, an office within the Ministry of Trade and Public Works, informed the concession holders of Mösyö Galan's opinion and asked them to begin work within eighteen months from the date of the signing of the contract and specification (March 15, 1886) provided they present the requested depictions.[90] In other words, according to the Article 3 of the contract, the concession holders had to start construction within eighteen months at the latest – that is, no later than September 15, 1887. If they did not, the contract of the concession would no longer be valid.

88 BOA, T.NF.VRK 1373/34, n.326, 1328.Ca.26.

89 BOA, T.NF.VRK 1373/34, n.344, 1328.Ca.26.

90 BOA, T.NF.VRK 1373/34, n.346, 1328.Ca.26.

However, on September 14, 1887, the day before the deadline, the Ministry of the Trade and Public Works had doubts about whether the concession holders had started work and asked for information on the issue from the province of Ioannina. The ministry wondered whether the concession holders had started the drainage works to which they had committed in their own technical reports, and if they had started, when had they done so.[91] The response of the province jeopardized the validity of the concession because Ahmed Hıfzı Paşa, the governor of Ioannina province, stated on September 21, 1887, that although Yorgis Vasiliyadi's deputy insisted that work had started in accordance with the relevant provision of the contract and specification, they had not done anything at Lake Lapsista up to that time apart from some minor work. According to Ahmed Hıfzı Paşa, the concession holders only pretended to start work by enlarging some small whirlpools by employing 8-10 workers with shovels.[92]

Given the governor's response, the concession holders would nearly lose their concession and the rights resulting from the contract because the Ministry of the Trade and Public Works decided to declare the concession invalid by virtue of the Article 3 of the contract.[93] The ministry informed the concession holders that the concession held by them was no longer valid;[94] however, after the concession holders objected, the legal advisor (*hukuk müşaviri*) to the Ministry of the Trade and Public Works suggested on October 13 to wait for further information from the province of Ioannina and act according to their response.[95] The ministry had asked for more information on state of the work from the province three days before and again wanted to learn how much work had been

91 BOA, T.NF.VRK 1373/34, n.350, 1328.Ca.26.

92 BOA, T.NF.VRK 1373/34, n.354-355, 1328.Ca.26.

93 On September 28, just two weeks after the deadline to start the work no later than September 15, the ministry asked the Ottoman Bank to keep the deposits paid by the concession holders because they had not fulfilled their obligation. BOA, T.NF.VRK 1373/34, n.356, 1328.Ca.26.

94 BOA, T.NF.VRK 1373/34, n.352 and 362, 1328.Ca.26.

95 BOA, T.NF.VRK 1373/34, n.362, 1328.Ca.26.

done by September 15, 1887, and how much money the concession holders had spent on the project.[96] Thus, the ministry found its legal advisor's suggestion acceptable and decided to wait for the response of the governor, Ahmed Hıfzı Paşa.

At the Ministry of the Trade and Public Works' request, the governor had the work inspected once again and reported on its state on October 17. However, he was not persuaded that the concession holders had started the work of draining Lake Lapsista or that they had made progress apart from enlarging some whirlpools. There were many whirlpools around Lake Ioannina that absorbed rising water during floods. According to the governor, the concession holders had done nothing more than to enlarge one of these by employing 8-10 workers and had spent only 1700 kuruş between August 17 and September 5. By the end of September, they had spent another 1500 kuruş to open a ditch of sixty meters in length, half a meter in depth, and two meters in width between the enlarged whirlpool and Lake Ioannina. That is, they had not done anything substantive to drain and reclaim Lake Lapsista and, thus, had not started the work. Therefore, the governor thought that the concession holders had not met the conditions of the contract and implied that the concession should be invalidated.[97]

Ahmed Hıfzı Paşa's insistence and negative attitude toward the concession again calls attention to the competition and disputes between the concession holders and landowners around Lake Ioannina. In fact, as pointed out in Chapter 6, Yorgi Vasiliyadi, the holder of the concession, thought that Governor Ahmed Hıfzı Paşa was cooperating with landowners and, under the influence of landowners and especially one Esad Efendi, was trying to hinder the project from being put into effect. Yorgi Vasiliyadi's numerous petitions in subsequent years, which he continued wrote as late as 1903 because he had not received the title deed for the reclaimed land, shed light on this competition. He held the local administrative council in Ioannina and, implicitly, Ahmed Hıfzı Paşa, the governor

96 BOA, T.NF.VRK 1373/34, n.358-359, 1328.Ca.26.

97 BOA, T.NF.VRK 1373/34, n.364, 1328.Ca.26.

of Ioannina, responsible for the delay. Some members of the council – especially Esad Efendi, the first secretary of the council – had land and fields around the reclaimed land or were the kin or even partners of other *çiftlik* owners in the region.[98] Yorgi Vasiliyadi thought that he had persuaded Governor Hıfzı Paşa about this issue. Therefore, this competition and Vasiliyadi's thoughts on Hıfzı Paşa's intentions must be taken into consideration when scrutinizing the governor's negative attitude toward the concession.

The concession holders' response was swift. In a petition Yorgi Vasiliyadi and Dimitri Atnaş wrote to the Ministry of Trade and Public Works on October 24, 1887, they rejected the governor's claim that they had not done anything substantive at Lake Lapsista. They claimed that they started the work on some whirlpools around Lake Lapsista on August 29. They had dug a ditch of 180 cubic meters at one whirlpool that the engineer of the local administration inspected on October 1. And they had dug a ditch of 208 cubic meters at another whirlpool. In addition, they had dug a ditch of 312 cubic meters between these whirlpools and Lake Ioannina. That is, they had carried out the work of removing 700 cubic meters most necessary and significant for the project in only a month. Therefore, they had not only started the work but carried out some of the most important work and construction within that time. They added that although they were not obliged to report the number of workers employed and the amount of money spent, they provided this information to reveal the truth about the work.[99]

However, concession holders had to submit another petition to the Ministry of Public Works on December 10, 1887, because the discussion about the validity of the contract had not come to an end. This time they explained where they had started the work and the reason for it in more detail. According to them, this work was necessary to later carry out some significant work for the draining of Lake Lapsista. Because of this necessity, it took a while to start. Additional whirlpools in two places

98 BOA, DH.MKT 551/12, 1320.R.24.

99 BOA, T.NF.VRK 1373/34, n.366, 1328.Ca.26.

named Panaiya and Poro between the whirlpools around Lake Ioannina had close mouths of fifty meters in length facing the mountain. Because some small holes in these mouths were one meter higher than the water of Lake Ioannina in summer time, the waters of the lake, rather than flowing into these whirlpools, flowed into and submerged the land between Lakes Ioannina and Lapsista, the latter of which was 5 meters lower, creating a large lake. Thus, rising waters exited holes in mouths of these whirlpools and submerged not only the city of Ioannina and its surrounding villages and lands but also hindered the cultivation of land.

The concession holder argued that because of the importance of these whirlpools, they had started work around Lake Ioannina before turning to Lake Lapsista. The engineer Bernasconi, whom they employed for this project, also confirmed its necessity. According to Bernasconi's report, it was necessary to clean the whirlpools in Panaiya and Poro around Lake Ioannina before draining Lake Lapsista. Once long, deep waterways at the bottom of these whirlpools were cleaned by employing technical interventions, it would be possible to convey the water around Lake Ioannina into the lake itself. Only after these measures were taken and factors leading to the emergence of marshes and Lake Lapsista were removed could the lake be drained and reclaimed. The concession holder once again argued that these works had begun on August 29, 1887, and were completed within three months. In addition, they emphasized that because some canals, ditches, and dikes that they planned to construct would necessarily pass through private lands around the lake, the government should immediately appoint a commission of demarcation of borders to prevent land disputes.[100]

5.4.2.3 The Role of Engineers in the Project

The government's attitude toward the project displays the role that engineers and technical experts played in public works projects in the late Ottoman period. They had a significant place in the decision-making process of such projects as well as the public works bureaucracy. Following

100 BOA, T.NF.VRK 1373/34, n.374-375, 1328.Ca.26.

the concession holders' petition and claims, the Ministry of Public Works referred the issue to the technical commission on December 14, 1887. The Technical Commission charged the engineer Mösyö Beriyo with the inspection of works done by the concession holders. Mösyö Beriyo carried out his inspection and presented his report on January 13, 1888. Mösyö Beriyo also thought that there was no need to invalidate the contract of concession because the concession holders had undertaken preliminary measures necessary for the draining of Lake Lapsista. The concession holders had dug out whirlpools in Panaiya and Poro around Lake Ioannina so that they could absorb waters flowing into the lake and thus prevent floods. Heavy rainfall over the previous weeks proved that these measures were serving their purpose. In addition, they could dig other whirlpools around Lake Ioannina if necessary. Pickaxes and shovels were sufficient for such work. Even the stones necessary for the work were easily found at the sites of construction. According to Mösyö Beriyo, given these measures, it was now possible to construct a small dam between Aya Nikola and Promo and to open a dike from Promo to Lake Ioannina to funnel the water of the marshes between the two lakes into Lake Ioannina. Thus, the concession holders had in fact fulfilled their obligations and taken necessary measures.[101]

In another report, Mösyö Beriyo explained the necessary technical steps that the concession holders needed to take to start draining Lake Lapsista and the marshes between this lake and Lake Ioannina in more detail. According to him, these marshes resulted from both the insufficiency of the mouths of the whirlpools into which waters disappeared because they could not find any way to the sea and from the poor condition and inability of the dikes and ditches that were supposed to enable the flow of water into these whirlpools. As a result of these circumstances, the waters of the two lakes rose and led to marshes during heavy rainfalls.

Therefore, the first step to be taken before draining and reclaiming Lake Lapsista and its marshes was to clean the whirlpools around Lake

101 BOA, T.NF.VRK 1373/34, n.372 and 376-377, 1328.Ca.26.

Ioannina and to open dikes and ditches funneling waters into these whirlpools. Only after these preliminary measures were undertaken would whirlpools absorb the surplus water flowing into the lake and prevent the level of the lake from rising and flooding. The second step was to clean the whirlpools in Radotori and Piri so that they could absorb the waters that flowed into Lake Lapsista and the marshes between it and Lake Ioannina during rains. Mösyö Beriyo thought that these two steps were crucial before starting the work of draining and reclaiming Lake Lapsista and its marshes. In this sense, works done by the concession holders were necessary and important for the project. Now that these works had been completed, it was possible to clean and enlarge the dikes and ditches that went toward the whirlpools in Radotori and Piri and to construct new ones.

Although Mösyö Beriyo emphasized that the work of cleaning, correcting, enlarging, and constructing for reclamation was based on experience and research, their consequences were unpredictable. Thus, he was aware that these works could lead to unintended consequences, though he did not refer to anything specific. This uncertainty was related to both climatic conditions, which could influence the process of construction, and to the limits of hydraulic engineering at the end of the nineteenth century.[102]

In conclusion, following these reports and the technical commission's remarks, the Council of Public Works again evaluated the case in February 1888 and decided that the concession holders had started work within the time period stated in the contract and technical specification. Thus it was not necessary to invalidate the agreement of concession.[103] The Ministry of Trade and Public Works also acknowledged that the concession holders were right and decided on the concession's validity over Ahmed Hıfzı Paşa's objections and insistence that they had not carried out any substantive work in time. The ministry may have been aware that

102 BOA, T.NF.VRK 1373/34, n.368-369, 1328.Ca.26.

103 BOA, T.NF.VRK 1373/34, n.370-371, 1328.Ca.26.

the governor's negative attitude toward the reclamation project in Ioannina was influenced by local landowners who believed the project threatened their own property rights and interests. Whatever the reason, the ministry based its decision on the reports on the state of the work and suggestions of the Technical Commission and the Council of Public Work which was a manifestation of role that technical experts such as engineers played in determining the fate of public works projects. This role provided them with remarkable authority and a reputation in time. They became a determining factor in the decision-making process for public works projects and within the bureaucracy of public works in the Ottoman Empire.

Upon the Ministry of Trade and Public Works' decision, the concession holders continued to work on the project and completed it about one year later. A petition Yorgi Vasiliyadi penned to the ministry on March 15, 1889, suggests that they had managed to reclaim Lake Lapsista and the marshes around it and that the reclaimed land could now be cultivated. The primary crop the concession holder planned to cultivate was Egyptian corn. Yorgi Vasiliyadi thought that the reclaimed land was fertile and that cultivation of Egyptian corn on this land would be in the interest of the state treasury and of the poor population of the region who were always afflicted by the scarcity of agricultural products (kaht-ı mezru'at içinde bulunan biçaregan ahali). However, planting time was coming and if the Ministry of Trade and Public Works did not start the procedure of temporary acceptance (kabul-ü muvakkat mu'amelesi), which would enable him to cultivate the land, as soon as possible, the crops for that year (1889) would be lost, which would also mean a substantial loss for the treasury. According to Article 6 of the contract, as soon as he informed the ministry of the completion of the reclamation, the ministry would send a technical commission to inspect the final situation of the work. Once the commission detected any shortcomings in the work and notified the concession holder of these shortcomings, the ministry would start

the procedure. Thus, the concession holder asked that a technical commission be sent as soon as possible.[104]

The concession holder's insistence became the subject of another bout of correspondence between the Ministry of Trade and Public Works and the governorate of Ioannina. In December 1889, the concession holder again claimed that the project was complete when canals going toward the reclaimed Lake Lapsista were opened. An opening ceremony was even organized with the participation of Governor Ahmed Hıfzı Paşa and local notables on December 13, 1889.[105] However, the ministry intended to make certain whether this was true and asked the province to confirm it. In a memorandum dated December 23, it asked whether the project had really been completed and whether the governor and local notables participated in an opening ceremony.[106] The governor's response on January 16, 1890, confirmed that an opening ceremony was organized with the participation of himself and some persons from among local notables. A commission was assembled by the provincial administration to inspect work on the lake and marshes, and, in accordance with the contract of concession, it had drawn up and certified a map and handed it over to the concession holder. The concession holder had opened extensive canals and large dikes and ditches as well as cleaned and enlarged whirlpools, employing 200-300 and sometimes more workers a day over the previous year. However, the governor thought that whole of the lake and marshes had not been reclaimed and that many other works and constructions were required to reclaim the whole region. That is, according to him, the project of reclaiming Lake Lapsista and its marshes was not complete. He even insisted again on the fact that the concession holder had not started the project in time.[107]

The project of reclaiming Lake Lapsista and its marshes was a large-scale enterprise of turning the wetlands of the region into agricultural land. The enterprise promised the production of Egyptian corn, which

104 BOA, T.NF.VRK 1373/34, n.413, 1328.Ca.26.
105 BOA, T.NF.VRK 1373/34, n.395, 1328.Ca.26.
106 BOA, T.NF.VRK 1373/34, n.397, 1328.Ca.26.
107 BOA, T.NF.VRK 1373/34, n.403, 1328.Ca.26.

was a valuable cash crop for international trade. The concession holder of the project expected to produce great wealth with the cultivation and trade of this crop. Meanwhile, it was also an engineering project that was planned, supervised, and inspected by engineers and technical experts employed by the concession holder and charged by the Ottoman government. Engineers who planned, wrote reports, drew maps, and supervised and inspected the project were heated by the Ottoman government and played a significant role in the project's fate. Disputes and struggles before and during the process of construction led to delays, but the concession holders eventually completed the project and began producing Egyptian corn on their reclaimed lands. However, the engineering project on Lake Lapsista led to lasting disputes and tensions among local fishers, the concession holder, and the tax farmer of the fishing tax because it interfered with the ecology and led to the perishing of fish species.

5.4.3 *Fishing in Lapsista*

This dispute reveals that both infrastructure and public works projects in general and projects of draining and reclaiming marshes and lakes in particular had a great impact on environmental change and dramatically transformed the daily activities of local populations. Certainly, such transformations can produce both positive and negative effects, but the process led to environmental disaster and the extinction of various species in the environment of the drained lakes and marshes in this case. The project, which was planned in accordance with the rules of hydraulic engineering by engineers and technical experts, made the passing of fish species between the two lakes in the region impossible by draining the marshes between them. Thus, it prevented fishing activities which were the most important means of subsistence for the local population.

Therefore, Yorgi Vasiliyadi, the concession holder, was at odds both with the fishermen in villages around Lakes Lapsista and Ioannina and with Diyamandi Lapa, who claimed the right to tax-farm the fishing tax (sayd-ı mahi resmi) for these two lakes. Diyamandi Lapa wrote a petition to the office of the Public Debt Administration on Ioannina in October 12, 1895, pointing out to his dispute with the concession holder. As discussed

in Chapter 4, revenue from the fishing tax was allocated to the Public Debt Administration in accordance with an agreement between the Ottoman government and international creditors in 1881. The Public Debt collected this tax through tax-farming, as was the case of Lakes Lapsista and Ioannina. That was why Diyamandi Lapa, the tax-farmer, submitted his petition to this administration. The provincial administrative council in Ioannina forbade fishing for one and a half months every year as well as the construction of dikes near the watermill of Lake Ioannina for 8-10 years. However, looking after his own interests, Vasiliyadi constructed a dike in front of this mill to catch large fish and eels, leading to the loss of smaller fish. Even then, he was not satisfied and hurled fishers sent by Diyamandi Lapa off the land, seizing the fish they had caught. Lapa claimed that he had lost more than 100 lire because of Vasiliyadi's actions. According to him, Vasiliyadi had reclaimed the lake and the marshes in the region and he only held possession and concession of the land obtained from the reclamation; he did not have any rights or authority over fishing. Thus, he asked the Public Debt Administration to compensate his loss and protect his rights as the tax-farmer. Taking the issue seriously, the office of the Public Debt Administration in Ioannina asked the provincial administration to stop Vasiliyadi the very next day.[108]

Upon the Public Debt's request, the Ioannina province took the testimonies of Diyamandi Lapa and one fisherman from among population of Ada village around Lake Lapsista on October 16, 1895. In his testimony, Lapa repeated that while Vasiliyadi had the right to drain the lake, he was not entitled to fish or to seize fish that fishermen he had sent himself had caught. He asked to bring a suit against him and that his own rights be protected.

To the question of "What is your problem?," the fisherman from Ada village clarified the dispute with Vasiliyadi. His statement reveals the damage the drainage project did to both the environment and the local population's means of existence. The provincial administration had prohibited fishing for forty-five days every year during the spawning period

108 BOA, ŞD 2101/1, 1315.M.22.

of the fish to facilitate their reproduction. However, in 1895, both large and small fish in Lake Lapsista faced the threat of perishing at the bottom of the lake because the lake had largely been drained. Small fish could be evacuated into Lake Ioannina only by opening a ditch between Lakes Lapsista and Ioannina and by funneling water. However, to catch large fish and eels, Vasiliyadi had hindered the passage of small fish by closing the ditch with a dike. The fish were trapped at the bottom of the lake, leading to them perishing. The fisherman found Vasiliyadi's closing of the ditch to be unlawful and unjust and asked that it to be opened right away.

In brief, Vasiliyadi had constructed a dike at the ditch of the watermill in Lake Lapsista to catch large fish and eels, but this dike hindered the passage of small fish, leading to them perishing. However, a large part of the population in villages like Ada village made their living from fishing, especially from catching these small fish. Their destruction meant a loss of the main means of living for these villagers and led to the tax-farmer of the fishing tax in the region to suffer a significant financial loss. For the tax-farmer, this loss was even more than 100 lire. While Vasiliyadi had the right to fish, he did not have the right to hinder the passage of small fish.

Because it was the Public Debt Administration that had demanded an investigation into the issue, the provincial administration took it seriously and asked Vasiliyadi to respond to these claims. Vasiliyadi rejected the claims in a petition sent to the province on October 18, 1895. According to him, it was only small *çime* fish that remained at the bottom of the ditch and perished after the draining and construction of a dike; except for these, no small fish perished. The majority of both large and small fish were already gone. He also rejected the tax-farmer's claim that he had lost more than 100 lire because the value of the fish at the bottom of the lake was not even 200 *kuruş*. He claimed that the right to catch fish in specific region was his alone under the condition that he paid the fishing tax to the Public Debt Administration or the tax-farmer; that is, the people in villages around the lake had no right to fish there. He employed watchmen in the wetland regions to prevent villagers from entering the lake. Another point he emphasized in his petition was that the Public Debt Administration had removed Lake Lapsista from its tax registers six

years earlier because the lake had been reclaimed and drained; thus, the contract between the Public Debt Administration and Diyamandi Lapa to collect the fishing tax only included Lake Ioannina, not Lake Lapsista. This meant that Diyamandi Lapa could only undertake the tax farming of fishing in Lake Ioannina and had no claim to Lake Lapsista.

As for the construction of the dike in front of the ditch of the water-mill, Yorgi Vasiliyadi was insistent that he had not constructed any dike in the region except for the existing one to ensure the necessary flow of water to spin the wheels of the mill. He could mean natural dikes in deep-set, but one was for the mill and the other for the reclamation of thousands of decares. It was impossible to destroy these dikes just because Diyamandi Lapa demanded it. On the other hand, Vasiliyadi admitted that he had constructed a temporary dike at a point in his own possession and paid for it from its own pocket, but this was not at the point the fishermen were talking about and it had constructed to keep a little water at the bottom of the lake. If this dike had not been constructed, the fish there would perish and the smell of carrion would pollute the air as it had six years earlier.[109]

Nevertheless, the population of Ada village was insistent that Vasiliyadi had imposed restrictions on their means of living and that his works at Lake Lapsista, especially the construction of a dike, had led to the loss of fish in the lake. They emphasized in a petition to the provincial administration at the beginning of October that fishing was their only means of subsistence. The fact that Vasiliyadi prevented them from catching fish and constructed dike in front of the ditch eliminated their only source of existence and led to their suffering because it decreased the number of fish in the lake in both the present and the future. And it was contrary to law and order.

On October 20, 1895, at the time Diyamandi Lapa, the tax-farmer of the fishing tax, and the villagers were expressing their claims and complaints, some fishermen associated with the tax-farmer entered Lake Lapsista on twelve boats passing through the wetland area and the ditch

109 BOA, ŞD 2101/1, 1315.M.22.

Vasiliyadi had reclaimed. They destroyed dikes that he had constructed that hindered fish from passing into Lake Ioannina. Vasiliyadi pointed out that the destruction of the dikes led to him losing 50 lire and damaged state treasury revenues by exposing the land to floods once again. Yet these temporary dikes had been constructed to prevent the flow of water to the bottom of the lake. In fact, that is why the fishermen destroyed these dikes: they prevented the flow of water to the bottom of the lake, making it impossible to catch fish with boats. Fishermen sent by Diyamandi Lapa collected eels at the bottom of the lake. Vasiliyadi asked the provincial administration to prevent such acts.

Upon the requests of Lapa, fishermen, the Public Debt Administration, and Vasiliyadi, the provincial administrative council considered the subject and made a decision on October 24, 1895. Acknowledging the rights of Diyamandi Lapa and fishermen, the council concluded that the concession contract signed with Yorgi Vasiliyadi was restricted to the reclamation and draining of Lake Lapsista and its marshes. Accordingly, everyone without exception had the right to fish in the lake so long as they paid the fishing tax, and Yorgi Vasiliyadi, as the concession holder, could not prevent this. According to the council's decision, the right to collect fishing taxes for both lakes belonged to Diyamandi Lapa, the tax-farmer; thus, Vasiliyadi's claim that Lapa was the tax-farmer only for Lake Ioannina was rejected. The tax-farmer could appeal to the courts for the compensation of his loss.

Inevitably, Yorgi Vasiliyadi objected to this decision of the council which he found unlawful. Speaking in the legal parlance of the period, he listed his reasoning for the unlawfulness of the decision in a petition presented to the Council of State at the beginning of November. First, he expected the decision to be changed in his favor. He raised an objection concerning the due process of law, pointing out that the designated authority to which to apply for such a case was not the administrative council but the nizamiye court, just as in cases of conflict over land with çiftlik owners around Lake Lapsista. For him, the administrative council had exceeded its authority by determining that the tax-farming of fishing in

Lake Lapsista belonged to Diyamandi Lapa and that the Public Debt Administration had the right of objection.

Secondly, even if the administrative council had such a right and authority, it should have considered his spending and losses on the project. He recalled that he had suffered great losses because of the land conflict with çiftlik owners and that this conflict resulted from the council's decisions. Therefore, he thought that the right to fish in the wetland area should be granted to him in return for his losses.

Lastly, the contract and specification he made with the Ministry of Trade and Public Works had enjoined anyone from entering the land under his concession and charged the administrative council with the preservation of the reclamation work. However, fishermen had trespassed the reclaimed land and destroyed the dikes because of the council's tolerance, leading to losses for him.[110]

The provincial administration in Ioannina insisted on the rightness of its decision by appealing to Article 19 of the contract signed by Yorgi Vasiliyadi in correspondence sent to the Council of State on February 5, 1897. According to this article, the concession holder had to compensate losses to the owners of fishing weirs devastated because of reclamation. In regions not reclaimed, local fishermen could fish with nets on the condition that they not hinder the current of the water. The provincial administration stated that places convenient for fishing could be put out for tender by the government in accordance with this article, and fishing in Lake Lapsista had been put out to tender together with Lake Ioannina.[111]

§ 5.5 Conclusion

This chapter argues that reclamation projects made possible by modern engineering knowledge in the late Ottoman period not only transformed the physical environment and ecology of Ottoman territories but also led to long-standing disputes and tensions among various social actors by

110 BOA, ŞD 2101/1, 1315.M.22.

111 BOA, ŞD 2101/1, 1315.M.22.

creating losers and winners. The reclamation project in Lapsista, which was carried out as a part of a developmentalist agenda intended to agricultural production in Ioannina and thus enhance the revenues of the treasury, was an enterprise that promised great wealth to the entrepreneurs that held the concession. And in Lapsista, the concession holder sought to grow Egyptian corn on the reclaimed lands in his possession and to sell it in international markets. However, his enterprise and the engineering of the project made fishing in Lakes Lapsista and Ioannina impossible because, as an unintended consequence of the way that the project was planned by engineers and technical experts, the ecology of the region was altered and certain species of fish living in two lakes perished. This transformation led to the resistance of local fishermen and the tax farmer who had lost their means of subsistence. Therefore, projects based on modern hydraulic engineering and technology led to the disappearance of traditional modes of subsistence to advance an agriculture-based conception of development.

6

Making Property of a Marsh: Law, Environment, and Politics in Ioannina

According to John F. Richards, in last six centuries,

> "land, formerly abundant in most parts of the world, has become scarce and valuable as human numbers have increased twelvefold (from 0.5 to 6 billion people). … humans have raised their knowledge, control, and use of the world's lands to an unprecedented level. By the late 1990s, every hectare of the world's land surface was known, recorded, demarcated, mapped, and claimed as part of the territory of a particular nation-state (or of consortium of states, as in Antarctica)."[1]

However, human interventions and the attempts to know, control, and use land especially in last six centuries, not only caused massive changes to the natural environment and transformed the global landscape but also brought about struggles, conflicts, and disputes over how it should be used, who should possess and control it, or which actors should have the right defined property rights. Although Richards sees the modern

1 John F. Richards, "Toward a Global System of Property Rights in Land," in *The Environment and World History*, eds. Edmund Burke III and Kenneth Pomeranz (Berkeley: University of California Press, 2009), 54.

state as the main actor that defines property rights, demarcates the boundaries of landed property, guarantees land ownership, and "takes private property right of eminent domain, usually with compensation, for public purposes such as constructing highways and creating artificial lakes,"[2] the definition of property is a field in which various actors negotiate and compete to control land, especially with the rise of capitalism.

With respect to the property rights on reclaimed land in the late Ottoman period, this chapter has two arguments. First, reclamations of marshes, lakes, and rivers in the late Ottoman period not only transformed the environment and landscape and created social tension between concession holders and other actors such as local fishermen but also led to unending struggles among various actors for control over reclaimed lands, which resulted from the commercialization of agriculture and commodification of land. Second, ambiguities in the legal status of wastelands (mevat arazi) in Ottoman codes on proprietary rights as well as the contested nature of mechanisms related to the definition of property (such as the role of local administrative councils, the processes of surveying and mapping, the demarcation of borders of lands, and the registration of title deeds) enabled claimants to resort to fraudulent actions to support their own claims and to manipulate legal arrangements in line with their own interests. These arguments explain the contested character of property rights with respect to reclaimed land at the local level and to move beyond legalist approaches that focus on legal texts and codes.

The long-standing dispute between Yorgi Vasiliyadi and landowners in Lapsista in Ioannina is a significant example. In conjunction with the commercialization of agriculture, various actors especially in the Balkans saw the drainage and reclamation of wetlands such as marshes, rivers, and lakes and turning them into farmland as a profitable investment. They tried to become involved in the process of securing concessions for reclamation projects. Because, according to the Land Code, the Ottoman civil code, and the contracts for concessions, concession holders received the title deeds for land they reclaimed and turned into agricultural lands

2 Ibid., 55.

within the time of the contract, they could make a great profit. They could cultivate the fertile land that they had reclaimed and cleaned. This encouraged various actors to seek reclamation projects. Especially in fertile areas such as the Serez plain and Ioannina in the Ottoman Balkans, where the crops being cultivated (like cotton and tobacco) were profitable, heated competition among various actors for the concessions for reclamation projects was evident. This competition and the transformation of agricultural land into a profitable investment made reclaimed land much more valuable and caused disputes over such property.

The reclamation project for Lake Lapsista and its marshes provides an insight into how wastelands such as marshes were defined in the Ottoman codes concerning property rights and how their reclamation created struggles and contestations among various actors including entrepreneurial concession holders, landowners, and farmers as well as state institutions and officials such as local administrative councils and their members. This case provides an opportunity to understand how the ownership of reclaimed marshlands were defined at the local level in a context. In Ottoman historiography, a literature has emerged that pays regard to struggles and contestations over land that moves beyond a legalist approach, but this literature has neither elaborated on the status of wastelands, like marshy regions, before and after their reclamation nor on the struggles over reclaimed land. It is necessary to discuss the legal framework and procedures around this issue, and to specify the main actors involved in reclamation projects, and the struggles they waged to control or obtain the property rights to reclaimed lands in a local level.

This chapter discusses the reclamation project in Lapsista within such a context. It firstly addresses the legal framework, consisting of significant codes on property rights in land such as the Land Code and the civil code, which provided a reference point for disputes over the reclaimed land, and to legal and administrative procedures that were necessary for making property out of a marsh. Although these codes and procedures were produced to settle land disputes, they were not the sole determinants of the definition of property for reclaimed land and sometimes became the main source of the dispute. Thus, the chapter secondly

discusses the struggle for the possession of the reclaimed marsh and lake in Ioannina by focusing on main actors like the concession holder, landowners, the local administrative council and its landholding members, the governor of the province, the Council of State, and the Ministry of Public Works which became involved in the struggle. The concession holder, landowners, and state institutions tried to manipulate legal arrangements and texts to move beyond legal boundaries in their own favor. In order to strengthen their claims to the reclaimed region, they resorted to various means such as learning and expressing their rights in the legal framework, influencing concerned authorities (the central state bureaucracy, the local administration and its members, the courts, and surveying commissions), or making forgeries of official documents such as title deeds. The commissions to demarcate borders, their surveys of the reclaimed land, and the mapping process also determined the definition of the property rights to reclaimed land. Thus, the chapter thirdly addresses the process of surveying and mapping the reclamation project and claimants' efforts to influence this process and the commissions for demarcating borders. Maps prepared to settle land disputes became a source of unending conflict.

§ 6.1 The Land Code, the Status of Wastelands, and Making Property of a Marsh

In the late Ottoman period, the Land Code of 1858 – together with contracts and technical specifications signed with concession holders – constituted the focal points of conflicts and disputes concerning the property rights to reclaimed wastelands from marshes, lakes, and rivers.[3] In any dispute over the ownership of reclaimed land, the concerned parties such as concession holders, landowners, local administrators and councils, and central state agencies (especially the Council of State) referred to the

3 For the English translation of the Land Code, see *The Ottoman Land Code*, trans. F. Ongley (London: William Cloves and Sons, 1892). And for its Turkish text, see Orhan Çeker, *Arazi Kanunnamesi* (Istanbul: Ebru Yayınları, 1985).

relevant articles of the Land Code and of the contracts because marshlands were considered wasteland in accordance with the provisions of the Land Code and *Mecelle* (the civil code). In this sense, it is necessary to discuss the Land Code and its role in defining the possession and property rights for wasteland after 1858.

6.1.1 *The Land Code of 1858 and Wastelands*

In Ottoman historiography, the Land Code, which was introduced in 1858 as a part of codification efforts during the Tanzimat period,[4] has been a subject of much research and debate, leading to alternative approaches to the academic study of property relations in the Ottoman Empire.[5] These research studies and debates investigated various aspects of the Land Code and its impact on the transformation of the property relations in the empire, such as the land system before the code, the reasons that made its appearance necessary, its outcomes for the land system and rights of possession, the categories it drew, and social tensions over land to which it led.[6] However, the status of wastelands as a category within the code had been rarely discussed in these studies. The category is ambiguous not only in studies on the Land Code but in the code itself. Although the Land Code included two articles (Articles 6 and 103) on wastelands and the conditions for their reclamation, it was ambiguous and confusing on many points, leading to contestations and conflicts between the

4 Hıfzı Veldet Velidedeoğlu, "Kanunlaştırma Hareketleri ve Tanzimat," in *Tanzimat I* (Istanbul: Maarif Vekaleti, 1940).

5 For a discussion of these approaches, see E. Attila Aytekin, "Hukuk, Tarih ve Tarihyazımı: 1858 Osmanlı Arazi Kanunnamesi'ne Yönelik Yaklaşımlar," *Türkiye Araştırmaları Literatür Dergisi* 3, no. 5 (2005): 723-44.

6 For the application and effects of the Land Code in various parts of the the Ottoman Empire, see Huri İslamoğlu, ed. *Constituting Modernity: Private Property in the East and the West* (London: I.B. Tauris, 2004); Tarif Khalidi, ed. *Land Tenure and Social Transformation in the Middle East* (Beirut: American University of Beirut Press, 1984); Martha Mundy and Richard Saumarez Smith, *Governing Property, Making the Modern State: Law, Administration and Production in Ottoman Syria* (London: I.B. Tauris, 2007); and Roger Owen, ed. *New Perspectives on Property and Land in the Middle East* (Cambridge: Harvard University Press, 2000).

concerned parties and to attempts to manipulate legal arrangements (namely, the provisions of the Land Code) and forge title deeds and maps. In this sense, this section traces the effects of the Land Code on the reclamations of marshes, lakes, and rivers, the property rights to reclaimed lands, and disputes over such lands rather than discussing the Land Code were generally.

Ömer Lütfi Barkan, who wrote one of the earliest studies on the Ottoman Land Code, evaluates the Land Code as the result of a transformation of the Ottoman land system from the sixteenth to nineteenth centuries and establishes a continuity between changes that happened over time and the code itself. According to him, existing codes on the land system underwent so many changes before 1858 that it led to great chaos; it was not possible to deal with this confusion until the introduction of a new code in 1858. The eventual code was new even though it included provisions from older codes.[7]

Barkan predominantly focuses on the rights of possession (tasarruf hakkı) to *miri* lands after the Land Code of 1858 and devotes little attention to other categories in the land system in his study despite briefly mentioning them. In this sense, he does not carry out a detailed discussion of the status of wastelands such as mountains, forests, and marshes in the Land Code. He only states that the code integrates wastelands, which were not under anyone's possession and were thus state property, into *miri* lands, apart from some exceptions. However, he does not specify these nuances. He only quotes the relevant section of Article 103 of the code on wastelands:

> "… this category of land can be opened up newly and created into arable land, with the permission of the official, gratis by the person having need for it, on condition that its servitude shall belong to the Treasury (Beit ul Mal), and all the provisions of the law in

7 Ömer Lütfi Barkan, "Türk Toprak Hukuku Tarihinde Tanzimat ve 1274 (1858) Tarihli Arazi Kanunnamesi," in *Türkiye'de Toprak Meselesi: Toplu Eserler I* (Istanbul: Gözlem Yayınları, 1980).

force concerning other cultivated land are applicable to lands of this category also."[8]

Therefore, although the Land Code of 1858 included some provisions on wastelands in the Ottoman Empire and on their status after being turned into arable land, Barkan does not elaborate on the issue.

Halil Cin, another scholar who wrote on the status of *miri* lands and their transformation into property under the Land Code of 1858, claims that the right of possession with respect to *miri* lands became more similar to the right of private property with the introduction of the Land Code.[9] Halil Cin cites land categories such as private property, *vakıf*, *metruk*, and *mevat* in the code and briefly describes all of them as well as *miri* land. He also specifies the status of wastelands and the conditions of their reclamation more than Barkan. Addressing Articles 6 and 103 of the code, he states that there were four conditions that made land fall within the category of wasteland. Firstly, the land needed to not be under anyone's possession or anyone's property. If it was anyone's property, it would be categorized as private property; if it was under someone's possession, it would be categorized as state property (miri). Secondly, it should not be allocated to the public or assigned to the inhabitants of one or more villages or towns. If it was so assigned, it should be categorized as *metruk* land, like public roads and pasture lands. Thirdly, the land should be far from any village or town. The important reason for this condition was the probability that land near to villages or towns would be allocated for the benefit of the inhabitants of those villages or towns in the future. And lastly, there should be no right of usufruct for this land.[10] Therefore, they should be empty lands such as pastures, holly oak lands, barren lands, stony places, and hills in accordance with these conditions.

8 Ibid., 335-36. For the English translation of this section and Article 103 on wastelands, see *The Ottoman Land Code*, 54-55.

9 Halil Cin, *Mirî Arazi ve Bu Arazinin Mülk Haline Dönüşümü* (Ankara: Ankara Üniversitesi Hukuk Fakültesi Yayınları, 1969).

10 Ibid., 38-39.

Halil Cin also addresses to conditions of reclaiming or reviving (ihya) wastelands in accordance with the Land Code. Having discussed the issue in the context of debates within the Hanafiyyah school of the Islamic jurisprudence, he emphasizes the necessity of obtaining a permission from the sultan for reclamation.[11] Only the person who received such permission could reclaim a wasteland and, thus, obtain its right of possession, as stated in Article 103 of the Land Code.[12] However, the code was ambiguous about which actions in wastelands would be considered reclamation and would make the granting of permission possible. To put it more explicitly, was draining a marsh or lake considered reclamation? Although the relevant articles of the Land Code did not answer to this question precisely, Articles 1275 and 1276 of the *Mecelle-i Ahkâm-ı Adliyye*, the civil code of the Ottoman Empire issued in the Tanzimat period,[13] elaborated on the issue.[14] According to Articles 1275, reclamation "consists of sowing seed, planting trees, ploughing the land, watering it, or opening water-channels or canals, in order to irrigate it," while Articles 1276 says "if any person builds walls round dead land, or with a view to protecting it from flooding, makes a dam round it by raising the sides thereof, such land is considered to have been vivified."[15] According to these provisions, actions such as irrigating lands, opening canals, constructing fountains, taking wells, cultivating grain, planting trees, and constructing buildings in wastelands would be considered reclamation. In this sense, protecting land from flood (in other words, draining a marsh) and turning it into farmland was an acceptable act of reclamation. In fact, it was necessary to make wastelands, like marshes, arable for agricultural production, and

11 Ibid., 39-40.

12 *The Ottoman Land Code*, 54-55.

13 For the place of Mecelle in Ottoman legal history, see Osman Öztürk, *Osmanlı Hukuk Tarihinde Mecelle* (Istanbul: İslâmî İlimler Araştırma Vakfı, 1973).

14 For the Turkish text by Mecelle, see Ali Himmet Berki, ed. *Açıklamalı Mecelle: Mecelle-i Ahkâm-ı Adliyye* (Istanbul: Hikmet Yayınları, 1982). For its English translation, see *Al-Majalla Al-Ahkam Al-Adaliyyah: The Civil Code of the Ottoman Empire*, (CreateSpace Independent Publishing Platform, 2017).

15 Berki, *Açıklamalı Mecelle*, 259; and *Al-Majalla Al-Ahkam Al-Adaliyyah*, Articles 1275 and 76.

such actions were defined as reclamation in *Mecelle*.[16] If anyone was granted permission for the reclamation of a wasteland but could not make the land arable for cultivation within three years, he could lose his right to another candidate.[17]

Meanwhile, according to Article 103 of the Land Code, a person who had reclaimed a wasteland could only obtain the right of possession of that land, not its right to possess the property. After the reclamation, the status of the land as a wasteland was abolished, and it was transformed from a wasteland into a *miri* land; that is, it became the property of the state. And the state gave the right of possession for the reclaimed and henceforth *miri* land to those who had reclaimed it.[18] The right of possession was documented by a title deed (tapu senedi) that was granted to those who had reclaimed the wasteland. In reclamations of marshes and lakes at the end of the nineteenth century, this method was adopted, and the title deed was given to the concession holder that had reclaimed a marsh or lake as a document of their right of possession within the framework of certain procedures explained in the next section. The right of possession was limited to a time span written into the contract of the concession that was signed by the concession holder. Indeed, all contracts for reclamation projects had such a period attached to them, as discussed in the next section.

Both Ömer Lütfi Barkan and Halil Cin conduct general discussion of the Land Code and of wastelands in particular within a legal framework and legal arrangements, and they focus on the idealized judicial pattern in the Ottoman land system. Such a legalistic approach suggests that the Land Code and its provisions were applied the Ottoman territories, but it does not contextualize property in terms of the disputes, contestations, and tensions that the Land Code and the changes to the land system led

16 Hamza Aktan, "İhya," in *İslam Ansiklopedisi* (Istanbul: Türkiye Diyanet Vakfı), 8; and Halil İnalcık, "Land Possession Outside the Miri System," in *An Economic and Social History of the Ottoman Empire,* Volume I: *1300-1600*, eds. Halil İnalcık and Donald Quataert (Cambridge: Cambridge University Press, 1994).

17 Cin, *Mirî Arazi ve Bu Arazinin Mülk Haline Dönüşümü*, 42.

18 Ibid.

to in Ottoman society. In fact, let alone settling disputes, these legal arrangements and procedures led to more disputes and became the source of new tensions. In this sense, an attempt to analyze land property in general and the ownership of wastelands in particular needs to move beyond such a legalistic approach.

In Ottoman historiography, a literature of alternative approaches emerged that pays regard to struggles, contestations, and conflicts for land among various social actors beyond the confines of the legal framework. Although this literature focuses on state-owned and private lands, it provides insight into the contested domain of land ownership and hints at its effect for wastelands in general and marshes in particular. Huri İslamoğlu, in her study of the Land Code that associates the code and the concept of private property to the emergence of the modern state in the nineteenth century, analyzes property as a contested domain, in which social actors negotiated and struggled for land ownership.[19] Nevertheless, Aytekin criticizes İslamoğlu for adopting a statist approach that turned around a contestation between the state and other actors, not among various actors. In other words, her statist approach assumes that the state is an independent, rational actor, making her conception of property as a contested domain among various actors groundless.[20] On the other hand, Yücel Terzibaşoğlu who focuses on the contested nature of land ownership among various actors in Anatolia at the end of the nineteenth century points out that the Land Code and other legal arrangements related to the land radically changed both the content of the

19 Huri İslamoğlu, "Property as a Contested Domain: A Reevaluation of the Ottoman Land Code of 1858," in *New Perspectives on Property and Land in the Middle East*, ed. Roger Owen (Cambridge: Harvard University Press, 2000).

20 Aytekin, "Hukuk, Tarih ve Tarihyazımı," 734. Uğur Bayraktar also shares this criticism: "Therefore, the Land Code albeit its presentation as a contested domain falls back to the argument where the omnipotent state was the principal actor leading to the genesis of private property, and therefore shifting the argument towards the legal and/or formal readings of the state policies." See Uğur Bayraktar, "Yurtluk-Ocaklıks: Land, Politics of Notables and Society in Ottoman Kurdistan, 1820-1890" (PhD diss., Boğaziçi University and École des Hautes Etudes en Sciences Sociales, 2015), 247.

rights of possession and the definition of land ownership.[21] In this sense, he emphasizes struggles for land among various actors such as landlords, refugees, and nomads and the role of these struggles in the redefinition of property in the late Ottoman period.

6.1.2 *Making Property of a Marsh*

An attempt to go beyond a legalist approach requires to discuss the issue of land ownership in reclamation projects within the framework of struggles for reclaimed lands between various concerned actors, these actors' initiatives and actions to manipulate law and legal arrangements in their own interests and the content of concerned codes itself as a whole. However, it is first necessary to address how reclamation projects were carried out and how the reclamation process worked at the end of the nineteenth century. It is necessary because the way that the process and procedures concerning it works, together with the attempts of the government to standardize these procedures, played an important role in defining the ownership of reclaimed regions such as marshes, lakes, and rivers. Therefore, they offer insight into the means of making property of a marsh.

In the late Ottoman period, the government usually contracted the work of reclaiming marshy regions in imperial territory to individual entrepreneurs or companies rather than undertaking them with the budget of the Ministry of the Public Works. It did not have a sufficient budgetary resources to conduct such works, as discussed in Chapter 3. However, especially starting in 1870s, the government tried to create a standard procedure to be applied in all public works projects in the empire in general and reclamation projects in particular. Although the Ministry of Public Works did not have the resources to finance all the reclamation projects and it became inevitable for the government to carry them out using the

21 Yücel Terzibaşoğlu, "Eleni Hatun'un Zeytin Bahçeleri: 19. Yüzyılda Anadolu'da Mülkiyet Hakları Nasıl İnşa Edildi?," *Tarih ve Toplum Yeni Yaklaşımlar*, no. 4 (Fall 2006): 121-47; and "Landlords, Refugees, and Nomads."

method of concession, the government wanted authority over these projects, especially large ones, in both the concession and construction phases as well as respect to disputes concerning property. In the course of time, the government issued many decrees to eliminate uncertainties and standardize procedures and practices with the respect to the workings of the reclamation process. On October 22, 1878, the Council of State emphasized the necessity of drawing a boilerplate contract that could be used and equally applied for all future reclamations of marshes. In other words, the council asked the Ministry of Public Works to prepare a standardized procedure to be applied and to draw a boilerplate contract accordingly. According to the council, when the reclamation project for Lake Pravişte in Drama was on the government's agenda in 1877, the ministry prepared a contract that, along with other contracts for reclamations of marshes carried out in past, could be used as basis for a plate contract, together with relevant articles of the Land Code of 1858.[22]

Such attempts to standardize the procedures of the reclamation process included practices and arrangements concerning the tender for the concession, the candidates for the concession, the place of central and local officials in reclamation projects, state control over the various phases, and property issues. In this sense, the process of making property out of marshes was closely associated to the ways and procedures by which the government and the public works bureaucracy carried out the concessions for reclamation projects. These procedures sought to both settle disputes arising from the possession of wetland regions such as marshes and lakes and to establish the authority of the central government by standardizing all relevant procedures in the hands of the Ottoman public works bureaucracy.

In accordance with such arrangements, reclamation works would be carried out under the supervision of the governors in each province. Accordingly, an ad would be placed in the newspaper about the work of reclaiming or cleaning a marshy region within a given province. After this ad was published, candidates who individually or corporately applied to

22 BOA, ŞD, 502/14, 1295.L.29.

carry out the project would submit their documents to the Council on Public Works. After the first evaluation, the council would transfer these documents to the Ministry of Public Works. Then, after the issue was discussed in the Council of State, the Council of Ministers would decide on which candidate could take the concession.[23] After the decision and the sultan's decree, a contract and technical specification would be signed between the concession holder and the Ministry of Public Works that took the Council of State's thoughts and demands into consideration. The concession holder's project and all reports on the project would be examined and inspected by technical experts and engineers within the Ottoman public works bureaucracy, namely the Ministry of Public Works. The ministry would also be in contact with the local administration of the region that was home to the project as necessary. In this sense, the government maintained its own authority over the project.

A decree sent to provinces in 1881 clarified property issues in reclamation projects, or more specifically, the property status of reclaimed lands.[24] Because marshlands were wastelands according to the Land Code of 1858 and the *Mecelle*, such regions could be transformed into farmland by persons with official permission and under the condition that it remained the property of the treasury, as discussed above.[25] In this sense, the Land Code stipulated that the right of possession granted to the concession holder, while the property of the reclaimed land belong to the treasury. According to the decree in 1881, the draining and reclaiming of marshlands and rivers was based on the relevant Article 103 of the Land Code. If a person or a group transformed a marshland of a few dec-

23 Sevim Erdem, "Sultan II. Abdülhamit Devri (1876-1908) Osmanlı Devleti'nde Bayındırlık Faaliyetleri," 445.

24 The government sent similar decrees to the provinces at different times clarifying the procedures for giving concessions and property rights for reclaimed lands. For example, a 1895 document prepared by the Ministry of Forestry, Mines, and Agriculture indicated that the government had sent a decree concerning the method that was adopted for concessions in the reclamation of marshes and lakes in December 20, 1892. See BOA, BEO, 701/52543, 1313.Ca.22.

25 Çeker, *Arazi Kanunnamesi*, 58.

ares into farmland by cleaning it, and if this project did not require a significant industrial work or construction, the title deed to this land would be granted to them for free by the local administration without central permission. On the other hand, some huge marshlands required the construction of ditches and dikes that could take more than three years. In this case, private corporate or individual candidates conducting such a great project could demand an exemption from the *aşar* for much more time than the Land Code allowed. To do so, such individuals and companies applied to the Ministry of Public Works. The decision was investigated by the Council of Ministers.[26] The Council of State confirmed and clarified these procedures in another memorandum on November 9, 1897.[27]

After the transformation of a marshland into a farmland by an individual or company as owner of the concession, the land was then granted to that person or company. In accordance with the Land Code, the title deed of the land would be given to relevant concession holder only after the completion of the reclamation and drainage project. The concession holder have the right to cultivate the land for the duration of the concession agreement. After one year, the state would begin to subject this reclaimed land to tax; the land would later be subject to *aşar* and other kinds of taxes. Despite this procedure, farmland transformed from marshland led to conflicts and tensions among various actors – among the concession holder, locals, and migrants or between different villages. In some cases, concession holders tried to acquire the unreclaimed land by registering it as reclaimed. This also led to many conflicts.

State officials took some measures to prevent such conflicts. According to the boilerplate arrangement, when a concessioner asked to reclaim a marshy region, an engineer would first be sent to the region for the discovery and investigation of that marshland. Then a map would be drawn up and a report written. If the project needed a significant work and time, a commission would be organized to draw a detailed map; in addition, to

26 *Umur-u Nafia ve Ziraat Mecmuası* (1 Cemaziyelevvel 1315 (28 Eylül 1897)): 134-38.

27 BOA, Y.A.RES, 113/31, 1319.R.01.

prevent manipulation with respect to the boundaries of lakes and marshlands, clear signs were placed along these boundaries. A memorandum written by the Council of State on November 9, 1897 to prevent conflicts concerning reclamation clarified the procedures to be applied in such a case and explained the actions to be taken.[28]

According to the Council of State, the first action to be taken was to create a commission comprised of related persons such as an engineer, officials from the Ministry of Property Records (Defter-i Hakani Nezareti), and a member of local administrative council. This commission would investigate the marsh or lake regions, draw a detailed map, and then have claimants sign the map. Secondly, in order to demarcate the boundaries of disputed regions, lands, marshes, and lakes, clear signs such as stones were to be placed on the boundaries and displayed on the map. Thirdly, if there was any land cultivated by landowners within the boundaries of the marsh or lake to be reclaimed, these lands were to be displayed on the map, and it would be stated that they were not a part of the project. Fourthly, after all of these actions were taken, written statements would be added to the map as necessary and the map would be approved. Fifthly, after the commission fulfilled its duty by drawing the map and by writing a report on the project, the local administrative council would carry out a second investigation and ask the concession holder to make corrections if there was any deficiency or fault in the project. Sixthly, once the concession holder informed the local administration that the reclamation project was complete, a new commission would inspect whether it was carried out in accordance with the contract, the technical specification, and the previously drawn map. If all works were done in line with the requirements, the title deed of the reclaimed land could be granted to the concession holder. And lastly, the concession holder should pay the costs of all engineers and members of the commission who were entrusted with the inspection of the project.[29]

28 BOA, Y.A.RES, 113/31, 1319.R.01.

29 BOA, Y.A.RES, 113/31, 1319.R.01.

At the beginning, the procedures concerning the inspection process were only for projects that would require more than three years to complete. If a reclamation project did not require significant industrial works and construction of more than three years, the central government delegated the authority to grant the concession to the local administration. The local administration could grant such projects to a private companies or carry them out itself with its own sources, engineers, and technical experts. The permission of the central government was not required.[30] On the other hand, those large-scale reclamation projects the construction of which took more than three years were to be carried out and be inspected under the authority of the central government. However, the Council of State issued another memorandum on December 11, 1897, stating that small-scale reclamation projects that did not take three years would also be inspected by the Ministry of Public Works, as was the case for large-scale projects. Which is to say, hereafter, all of these procedures also applied to small-scale reclamation projects.[31]

The Council of State asked the Ministry of Public Works to include these procedures all contracts and technical specifications for reclamation projects. These demands and procedures were not only designed to settle disputes arising from the possession of wetland regions such as marshes and lakes but also established the authority of the central government by standardizing all relevant procedures and putting them in the hands of the Ottoman public works bureaucracy. Subsequent reclamation projects would be carried out in line with these procedures. However, the reclamation process and these procedures were subject to unending disputes concerning the ownership of the reclaimed land. And they sometimes caused disputes rather than settling them.

30 *Mecmua-yı Umur-u Nafia* (N:1, Muharrem 1302 (Ekim-Kasım 1884)): 11-13.

31 BOA, Y.A.RES, 113/31, 1319.R.01.

§ 6.2 The Struggle for the Possession of the Reclaimed Marshes and Lake in Ioannina

The reclamation project on Lake Lapsista and the marshes of Ioannina, as well as the dispute between the concession holder and landowners, offers insight into how reclamation processes worked at the local level in the late Ottoman Empire and how a dispute over a wasteland – that is, a reclaimed marshy region – could last years. In other words, it illustrates how making property of a marsh was a highly-contested issue over which various actors such as the concession holder, landowners, peasants, fishermen, the local administration and administrative council, and the central government agencies competed to control or have authority over the reclaimed land.

As discussed in chapter 4, the commercialization of agriculture in the Ottoman Empire and the increasing significance of Ottoman ports and surrounding countryside for the production of crops for international trade made agricultural land invaluable and turned reclamation projects into profitable investments for entrepreneurs in the Ottoman territories. This was especially true of the Balkan territories of the empire because of their fertile soil. In other words, land itself became a commodity that various actors claimed and over which they struggled. The dispute over the reclaimed region of Lake Lapsista and its marshes is one such example.

As discussed in the previous section, the Land Code was a significant legal precedent for reclamation projects – especially for settling disputes. However, the legal framework and judicial decisions constitute only one side of the story. Although legal texts such as the Land Code, *Mecelle,* concession contracts, and other decrees were a reference point for land disputes in general and disputes over wastelands and reclamation projects in particular, various social actors such as concession holders, landowners, and even state agencies manipulated these legal arrangements and texts to their own ends to get around legal parameters. In some instances, like the reclamation of Lake Lapsista and its marshes narrated in below, claimants to the reclaimed land employed various methods and tactics to

strengthen and support their own claims. They learned their rights as stated in the law and Land Code, tried to influence the relevant authorities (courts or local administrative councils) that considered land disputes, struggled to have maps drawn that would protect their own interests, and even made forgeries of legal documents such as title deeds or other official documents concerning the ownership of given tracts of a land. Even state agencies and officials resorted to the method of administrative decree to reduce the possibility that a land dispute would linger for years in the courts. Therefore, a legalist approach to conflicts over land ignores the possibilities that legal arrangements sometimes lead to unending social tensions and sometimes became a source of problems, let alone a solution to them.

As narrated in Chapter 5, Yorgi Vasiliyadi, together with his partner, Dimitri Atnas, had received the concession to reclaim and drain Lake Lapsista and the marshes between it and Lake Ioannina. They were to drain the whole of the lake and marshes or at least the half. According to the contract, Yorgi Vasiliyadi would receive the title deed of the concerned land after final acceptance of the work was carried out by a technical commission and after the demarcation of property lines by another commission.[32]

According to Article 6 of the contract signed the concession holder Yorgi Vasiliyadi, the ministry was to send a technical commission to inspect situation of the reclamation work as soon as he informed the Ministry of Public Works of its completion. If the commission detected shortcomings in the work and once they notified the concession holder of these, the ministry would start a temporary acceptance procedure (kabul-ü muvakkat mu'amelesi). However, this procedure would not be enough for him to receive the title deed for the land he had reclaimed. One year after this procedure, a second technical commission would inspect the work again to see whether the deficiencies had been corrected. If they were done in conformity with the rules and provisions of the tech-

32 BOA, ŞD 2096/20, 1312.Ş.13.

nical specification, the ministry would start the final acceptance procedure (kabul-ü kat'i mu'amelesi). And only with the completion of this procedure would the concession holder Vasiliyadi receive the title deed of the land and take the right of possession.[33]

The concession holder requested that the Ministry of Public Works start temporary acceptance procedure after completing the work of reclaiming Lake Lapsista in 1889. Upon this request, the ministry sent a technical commission led by engineer Arslan Efendi, the Deputy Manager of Roads and Bridges (Turuk ve Meabir Müdür Muavini) to undertake the inspection. Arslan Efendi, in his report after the inspection, pointed out some shortcomings in the project. The ministry granted one year to the concession holder to correct these deficiencies in accordance with the relevant article of the contract. The deficiencies were related with technical works designed to prevent the reclaimed land from becoming submerged again. Following temporary acceptance of the project, in line with this objective, the concession holder was required to open three canals in specified locations and to construct dikes to enable the flow of water in certain trenches within one year. He did not accomplish the work in time the ministry gave to him, and even after three years had passed, the ministry had still not carry out the final acceptance. For his part, Vasiliyadi believed the construction of a dike in front of Lake Ioannina was necessary, and in accordance with Article 4 of the specification, asked the ministry for permission to undertake this construction. However, neither the ministry nor the provincial administration made a conclusive decision on the issue because it could devastate fishing weirs owned by local population and more importantly, according to some claims, lead to the flooding of Lake Ioannina and many lands around it. Although the ministry did not hold the concession holder accountable for the delay, it asked him to immediately submit a map detailing the work and ensure that the construction would not lead to any damages.[34]

33 For the contract, see BOA, ŞD 2101/1, 1315.M.22.

34 BOA, ŞD 2096/20, 1312.Ş.13.

6.2.1 *Unending Conflict over Land between the Concession Holder and Landowners*

After the concession holder completed the project and strove to receive the title deed of the land he had reclaimed, a dispute emerged between him and owners of land around the lake. Yorgi Vasiliyadi had reclaimed an area of two thousand hectares of lake and marshes and stood to obtain a significant annual income from this reclaimed area. However, the rights to some lands led to a long-standing dispute between him and landowners in the region who claimed that they possessed land in the region that the concession holder was claiming to have reclaimed and for which he was asking for the title deed. Landowners said that Yorgi Vasiliyadi had trespassed on their land in defiance of the contract. On the other hand, Yorgi Vasiliyadi claimed that those with land around the lake were trespassing on and trying to take possession of reclaimed land that should belong to him in accordance with his contract with the Ministry of Trade and Public Works. He submitted a petition complaining that although as concession holder he had cleaned and reclaimed the marshes between Lakes Lapsista and Ioannina under the condition that reclaimed land would be granted to him via a title deed, and although a commission report had already determined the boundaries of this area, some people were making claims to the land. It turned into a longstanding conflict in which various actors ranging from state agencies to landowners to the concession holder were involved, and this conflict is illustrative of struggles over the possession of wastelands and wetlands and the uncertainties which the struggles led.

One of the main instruments to which the government resorted to in such disputes was to create a commission for the demarcation of borders (tahdid-i hudud komisyonu) to survey, determine, and map the boundaries of the land claimed by the parties. It was believed that such a commission would settle the dispute; however, the commission and the map it prepared became sources of dispute in their own right. By September 27, 1889, the commission for the demarcation of borders that was established to settle the conflict had prepared a map, according to which a vast land of approximately 950 hectares had always been under water and did

not belong to any individual. Vasiliyadi said that this land was to be given to him following the reclamation. On the other hand, owners of lands beyond this area claimed that they also had land within it, which was the basis of the conflict. Therefore, the Ministry of Public Works sent another technical commission and commission for the demarcation of borders to the region. These two commissions worked for five to ten days but could not complete their duties because of heavy rainfall.

The harvest season was coming up in a few months, and if the conflict were not settled, the crops would be lost. Vasiliyadi asked the provincial administration to determine the boundaries of the lake and marshes and of the land to which he held the right of concession. Thereupon, the provincial administrative council in Ioannina made a temporary decision on May 16, 1893, to prevent a disagreement in the course of the cultivation of the land and to protect the rights of the two parties. According to this decision, which was made in accordance with both Vasiliyadi's contract and specification and the map drawn in 1889, until the dispute could be conclusively settled, the çiftlik owners would leave vacate the land they were claiming inside of the 950 hectares while the land outside this area would be given for their use. However, this decision satisfied neither the concession holder nor the çiftlik owners, and this administrative decision made by the local council would be an important source of the dispute between the parties for years. The decision not only paved the way for long-term disagreement but also revealed the active role that local administrative councils played in land conflicts and, further, that conflicts of interest among members of councils were an important determinant of such conflicts.[35]

Çiftlik owners expressed their objection to the decision in May 1893. They accepted that the concession holder had the rights of possession of the 950 hectares that he had reclaimed and that the commission for the demarcation of borders had staked out. Their objections were based on the Land Code of 1858 and Articles 14 and 15 of the concession holder's

35 BOA, BEO 543/40722, 1312.B.03.

contract. Article 14 required that those who claimed any land to be reclaimed had to prove their rights of possession (isbat-ı hukuk-u tasarrufiyye) in accordance with the provisions of the Land Code. And according to Article 15 of the contract, those who claimed any piece of land on the region that was permanently or occasionally underwater and where would be reclaimed could have its rights of possession. If they could prove this claim with admissible evidence, they should either pay a cash money per decare for this reclaimed land to the concession holder or grant the half of this land to him.[36]

Thus, in line with these articles and the Land Code, çiftlik owners claimed land inside the boundaries of the region that the commission for the demarcation of borders determined. In addition to the regulations to which they referred, çiftlik owners also claimed that the concession holder could not invoke Article 21 of the Land Code, which stated that cultivated land belonged to those who cultivated it, because the land had been unjustly [fuzûlen] cultivated by him.

Therefore, suggesting that the decision of the administrative council on May 16, 1893, contradicted law and justice, the çiftlik owners appealed to the court to revoke the decision on spesific grounds. The first concerns the due process of law, with which çiftlik owners were familiar. They argued that the provincial administrative council was not authorized to make a decision on an issue under the jurisdiction of the courts and that the decision could only be made by the concerned court. Even if the local council did have authority over such land disputes, the çiftlik owners, as a party to the case, should have been summoned before a decision was made. But they had not been invited and the decision was made in their absence.

Objecting to the May 1893 decision that handed the land over to Vasiliyadi, the çiftlik owners asked the Ministry of Public Works to send a technician (fen memuru) to inspect the work. Given the complaints of the çiftlik owners, the ministry again sent a technician to conduct a survey. According to the contract, the daily cost of this official were to be covered

36 BOA, ŞD 2101/1, 1315.M.22.

by the concession holder, but he did not want to pay; thereupon, the çiftlik holders themselves decided to bear the cost so that the technician could immediately come to Ioannina to conduct the survey and, in their words, put an end to the encroachment of the concession holder. (Their expectation was that he would decide in their favor.) Yet the ministry did not send anyone, which the concession holder used as an opportunity to stop the çiftlik owners from entering and interfering with the land in accordance with the decision of the provincial administrative council in 1893. He even prohibited the livestock of çiftlik owners from entering pastures in the region by force. When the çiftlik owners again snuck their animals into the pastures because they faced starvation, the provincial administration sent its own officials and soldiers to force the animals off the land. The local administrative council interrogated the çiftlik owners about why they had sent their animals to pasture on land that they had been prohibited from entering. They replied that farmers had grazed their livestock in these pastures for ages. Meanwhile, as pointed out, they complained that although the relevant authority for the dispute was the courts, the provincial administrative council had intervened barred the farmers from the land by sending soldiers to arrest them. They reiterated that the provincial administrative council was not authorized to make a decision on an issue for the courts.[37]

The dispute over the Lapsista marshes was not settled in 1894, either. In April 1894, Proto Teşkila, the owner of Demir Farm in Lapsista, and his colleagues again expressed their suffering because the local administration had given land to which they had the title deed to Vasiliyadi. According to them, the concession itself should be invalidated because Vasiliyadi had neither completed the work on time nor fulfilled his commitments in accordance with the contract.[38]

Contradicting the çiftlik owners' claims on the matter, Yorgi Vasiliyadi argued in a petition sent to the Ministry of Public Works in September 1894 that he had completed the work of reclamation before the deadline,

37 BOA, ŞD 2096/20, 1312.Ş.13.

38 BOA, BEO 390/29210, 1311.L.17.

but the government had not granted the title deed to the land he had reclaimed even though the contract and the Land Code of 1858 required it to do so. He accused individuals in the local council in Ioannina of violating the contract and keeping him from receiving the title deed because, according to him, they were landowners in the region and held up the granting of the title deed to further their own interests. This both caused him suffering and was detrimental to the state treasury.[39]

The disagreement was not only over the land itself but the crops cultivated on it. According to the çiftlik owners, crops amounting to more than 3000 *kile*s that had always belong according to their title deed had been handed over to the concession holder by the province without any court decision. Disagreement over the crops on disputed land led to the intervention of the local police in the work of the farmers of the çiftlik owners in September 1895. At the beginning of September, farmers named Lazo Garziko, Todori Nikola Papa, Şozo Apostol, Koço Lambro, and Yano Lambro, who dwelt in the villages of Rapişte-i Bala and Zir near the Lapsista marshes, were detained for questioning on the grounds that they had cut and stolen reeds in a reed field adjacent the Lapsista marshes claimed by the concession holder. After the farmers entered the reed field, Vasiliyadi filed a charge against them, and they were arrested by police. In their statements, the farmers indicated that they had cut the reeds on the land not of their own volition but on the order of their landowners. The farmers complained that they were caught between two fires. One of the farmers, Lazo Garziko, who lived on a nearby farm, said: "We, farmers, are like an egg caught between two stones. If we do not pay attention to what the landowners say, they will fire us; if we do what they ask, Vasiliyadi files charges against us. We do not know if we are coming or going. Landowners send us to the land, and we go and cut the reeds." Todori Nikola Papa, Şozo Apostol, and Koço Lambro complained of same dilemma. Their landowners, Mustafa Efendi and Şefik Efendi, were accusing Vasiliyadi of trying to turn their reed field into his property.[40]

39 BOA, BEO 470/35234, 1312.Ra.05.

40 BOA, ŞD 2101/1, 1315.M.22.

In a petition presented to the Ioannina province on September 8, landowners objected to the arrest of the farmers working in their service. According to them, the work that Yorgi Vasiliyadi was claiming to have accomplished was the reclamation of a ditch that they and the local administration had already constructed for a great sum. Vasiliyadi's subsequent work had changed the directions of existing water channels which had led to some tracts that had never been under water to become submerged during the planting season and thus to a loss of productivity. In spite of this, Vasiliyadi was trying to forecfully take over their lands because he had reclaimed the adjacent ditch. Moreover, a key provision of his contract was to protect the land even during flood (tuğyan-ı miyah) seasons, but he had not performed this task, which was a manifestation of the disorder of the reclamation work he did. Because of this and the fact that years had passed since the end of the concession period fixed by the contract, Vasiliyadi had no rights or authority over the land. Vasiliyadi was obliged to fulfill the requirements expressed in the contract – that is, to complete the work – after which a technical commission would carry out the final acceptance. However, he had not fulfilled these requirements and had no right over the land. On this basis, according to landowners, the provincial administration should abstain from repeatedly detaining farmers and declare that Vasiliyadi had no right to intervene.[41]

6.2.2 *The Administrative Council and Its Part in the Land Conflict*

The active role of the provincial administrative council in settling – or unsettling – the land dispute is worth consideration. The history of local councils dates to 1840 when they were officially established as a part of the Tanzimat reforms. These councils, which were convened in administrative unit, such as province, district, and sub-district were comprised of local officials and inhabitants.[42] The central government's purpose in

41 BOA, ŞD 2101/1, 1315.M.2.

42 For a history of local administrative councils and their roles in provinces in the late Ottoman period, see Jun Akiba, "The Local Councils as the Origin of the Parliamentary System in the Ottoman Empire," in *Development of Parliamentarism in Modern Islamic*

establishing them was "to check the balance of power between the governor and the local notables by appointing a third party that was under the direct control of the center."[43] They had a degree of independence from provincial governors and according to Elizabeth Thompson, the Ottoman government saw local councils as an instrument to contain political opposition at the local level by institutionalizing it in the form of a council. She calls this a "bargaining strategy": "The Ottoman state sought to mold an elite clientele that could be manipulated in the interest of furthering its goals, while local elites sought autonomy and a forum to voice local grievances."[44] Yonca Köksal also emphasizes the negotiated character of the Tanzimat reforms in general and of local councils in particular: "The reforms were not implemented as planned at the center, but changed in the process of application at the local level, with the result depending on negotiations and bargaining between the imperial center and local groups, especially the local elite."[45]

Therefore, there was a constant relationship of conflict and negotiation between central and local elites, and the local council was one of the most important instruments in this relationship. However, conflict and bargaining occured not only between central and local elites but also among local elites themselves who sometimes collaborated and made coalitions with internal and external actors to pursue their own interests.

World, ed. Sato Tsugitaka (Tokyo: The Toyo Bunko, 2009); Stanford J. Shaw, "The Origins of Representative Government in the Ottoman Empire: An Introduction to the Provincial Councils, 1839-1876," in *Near Eastern Round Table, 1967-68*, ed. R. Bayley Winder (New York: Near East Center and the Center for International Studies, 1969); and Alp Yücel Kaya, "The Reorganization of the Ottoman Legal Administration in the Balkans in the Nineteenth Century: The Formation of Local Administrative Councils and the Emergence of New Social Actors," in *Konflikt Und Koexistenz: Die Rechtsordnungen Südosteuropas Im 19. Und 20. Jahrhundert, Band 1: Rumänien, Bulgarien, Griechenland*, ed. Gerd Bender and Jani Kirov (Frankfurt am Main: Vittorio Klostermann, 2015).

43 Akiba, "The Local Councils as the Origin of the Parliamentary System," 182.

44 Elizabeth Thompson, "Ottoman Political Reform in the Provinces: The Damascus Advisory Council in 1844-45," *International Journal of Middle East Studies* 25, no. 3 (August 1993), 464.

45 Yonca Köksal, "Imperial Center and Local Groups: Tanzimat Reforms in the Provinces of Edirne and Ankara," *New Perspectives on Turkey* 27 (Fall 2002), 107.

The elected members of the councils were usually from among local notables, and membership was restricted to the wealthy.[46] The majority were landowners and traders, and they sometimes used their own authority on the councils to defend their interests and increase their wealth.[47] Indeed, the qualities of elected council members were defined as "known among the population of the district as reasonable property holders and men of power," by Article 1 of the regulation on the 1840 election procedure for the councils.[48] Their authority came from the fact that local councils were given great responsibility and authority over local issues, which enabled them to further defend their interests on the local level.

Local councils were charged with local responsibilities such as the supervision of taxation, the maintenance of public order, conscription, land surveys, waqf administration, and public works. They had judicial as well as administrative authority, served as the court of appeals at the local level, and were engaged in settling local disputes. In this sense, they had a significant authority over local issues and were a stalwart actor in local politics. One of the most important fields over which they had an authority was land disputes.

Local administrative councils were "active in the judgement of property disputes in the Ottoman provinces in the nineteenth century when the interests of local notables consisting of property holders became strongly articulated and the interests of the simple population consisting of small and property-less peasantry became loosely articulated in the transforming local administration."[49] In this sense, although they were

46 Akiba, "The Local Councils as the Origin of the Parliamentary System," 193.

47 For the example of Damascus, see Thompson, "Ottoman Political Reform in the Provinces." In 1844-1845, all twelve members of the provincial council in Damascus were Muslim and wealthy; most were landowners and traders. And "seven members of the council, plus the clerk, owned 46.4 percent of the tax farms (iltizam) and farms (muqata'at) in the Damascus region." Ibid., 462.

48 "… ahali-i kazanın söz anlar ve ashab-ı emlak ve erbab-ı iktidar addolunanları…" See Kaya, "The Reorganization of the Ottoman Legal Administration," 68.

49 Ibid., 62.

intended to settle land disputes at the local level, their members were often party to these highly conflictual disputes.

The authority of local councils dates back to the introduction of the Land Title Regulation in 1847. According to this regulation, although it was "the central cadastral office (*defterhane-i amire*) that would centrally organize the registration of property in the case of grant (*tefviz*), auction (*ihale*), transfer (*ferağ*) and inheritance (*intikal*) [,] … provincial and country councils would continue to certify property (by registration of the name of property holder, province/district/village of the property, the borders of the property and the preparation of an official report on the transaction in question) at the local level."[50] A new regulation on title deeds in 1859 reinforced the authority of local councils to certify property in the case of grants, auctions, sales, and inheritance. Although the Provincial Regulation (Vilayet Nizamnamesi) of 1864 distinguished the executive power of the local councils from their judicial power and forbade their intervention in judicial matters and the judgements of courts, the local councils had still a significant role in property issues. The registration of property was yet the responsibility of the cadastral office and was carried out under the supervision of local councils.[51] The authority to certify property enabled local councils and their landholding members to play a significant role in the definition and demarcation of property. Councils made administrative decisions in the interest of their members to circumvent unending court procedures. However, land disputes and the administrative decisions of the councils regarding these disputes often resulted in jurisdictional conflicts between the courts and local councils. The parties to land disputes tried to exploit these conflicts to further their own interests and strove to appeal to the authority that would back up their claims.

Therefore, the support of the local administrative council in Ioannina was critical for both landowners and the concession holder to defend

50 Ibid., 71.

51 Ibid., 76-78.

their claims. As the dispute between them suggests, the local administrative council played a significant role in the dispute and its members engaged in self-interested relationships with local landowners. During the dispute, both parties complained that the council's decisions were unjust. While landowners claimed that the provincial administrative council was not even authorized to make a decision on the issue, the concession holder thought that the council and some of its members were taking sides with the landowners. The fact that both parties complained about the same decisions taken by the council was probably due to differences of opinion and competition among the members of the council itself. Landowners looked to the courts to defend their claims, while the concession holder tended to appeal to the central government to avoid an unending judicial process and undercut his rivals on the council.

A letter the Province of Ioannina from the Ministry of the Interior in September 1901 reveals that the conflict had not yet been settled even at this late date.[52] Indeed, Yorgi Vasiliyadi was most dissatisfied with the deadlock because he had experienced great financial losses. In a petition sent to the Ministry of the Interior on 16 June, 1902, he not only expressed his dissatisfaction but also clearly explained his opinion on why the dispute was not settled. For him, the reason was that some members of the administrative council also possessed land around the reclaimed region or were partners with other landowners. Vasiliyadi's statement discloses the nature of the struggle for power and interest among various actors involved in land conflicts, especially in the framework of public works projects and reclamations.

According to Vasiliyadi, a technical commission had conducted a survey and carried out the process of temporary accepting work twelve years earlier, in 1890. The government then gave the order to the Ministry of Property Records and the Province of Ioannina on November 10, 1890, that the title deed to the land granted to him. However, despite all his efforts, he had still not received the title deed after twelve years. Vasiliyadi

52 BOA, DH.MKT 2538/61, 1319.C.17.

held both the local administrative council in Ioannina and, implicitly, Ahmed Hıfzı Paşa, the governor of Ioannina, responsible for the delay. Some members of the council, particularly Esad Efendi, the first secretary of the council, possessed land and fields around the reclaimed land or were kin to even partners of other çiftlik owners in the region.[53]

Vasiliyadi mentioned Esad Efendi in another petition sent to the Council of State on January 8, 1903. He again accused Esad Efendi of fraud and plotting to keep him from receiving the title deed in spite of the great sum of money and time Vasiliyadi had spent. He claimed that Esad Efendi had formed illegitimate partnerships with some members of the government (but did not mention who) and that even a Reformation Commission sent to Ioannina in 1896 investigated his deeds and decided to dismiss him, but he nevertheless maintained his position. Vasiliyadi implied that Esad Efendi's significant effective power over the administration of Ioannina was because of relationships with some influential persons and even members of the government in Istanbul. Esad Efendi's power in the administration gave Vasiliyadi pause, which was why he had not explicitly mentioned Esad Efendi by name before. Vasiliyadi resided in Ioannina and was concerned for his life because of Esad Efendi's power. That is, he feared Esad Efendi.[54]

According to Vasiliyadi, Esad Efendi's intrigues had hindered the province from giving him the title deed to the reclaimed land, violated the provisions of the contract and technical specification, caused his complaints to be ignored, and prevented him from implementing reports of engineers. Moreover, Esad Efendi had manipulated the late Hıfzı Paşa, the previous governor of the province. The subsequent governor, Osman Paşa, who was appointed in 1897, was aware of Esad Efendi's plots and fraud as well as Vasiliyadi's suffering, but he was unable to do anything because of Esad Efendi's influence. Osman Paşa had told Vasiliyadi that he could do nothing to protect his rights to the land unless the Ministry of Public Works sent a technically knowledgeable official. The Ministry of

53 BOA, DH.MKT 551/12, 1320.R.24.

54 BOA, ŞD 3018/56, 1320.Za.28.

Public Works then appointed a commission, led by a different Esad Efendi, consisting of an auditor, a major from the General Staff, a tax assessor, and the chief engineer of the province. The commission determined boundaries of the reclaimed land and prepared a map dividing it into three. Just as this map and report were to be confirmed by the administrative council and the Council of Public Works and put into practice, çiftlik owners appealed to the Mülkiye Dairesi of the Council of State and claimed that Vasiliyadi also intervened in land to which they possessed the title deeds that was outside the boundaries of the reclaimed land. Following this assertion, Osman Paşa, the governor of Ioannina, called Vasiliyadi and said: "I cannot help you anymore and you can appeal to the courts."[55] During this period, the çiftlik owners seized the crops cultivated on the land and expelled Vasiliyadi. Vasiliyadi then asked the Ministry of the Interior to take due measures and enforce the provisions of the contract and specification so that he could reclaim both the land that was formerly under water and the crops seized by the çiftlik owners.

§ 6.3 Mapping and Surveying the Wasteland

The case of Lake Lapsista further reveals the extent to which cadastral surveys in general and the surveying and mapping of wasteland in particular played a great role in land conflicts and in delineating property boundaries.[56] Importantly, the maps, or *hududname*s, prepared by state officials to settle land conflicts often became a source of an unending dispute themselves. Because disputes over land were widespread in the

55 BOA, DH.MKT 551/12, 1320.R.24.

56 For information on land surveying in the classical period of the Ottoman Empire, see İnalcık, "Land Surveying." And for cadastral mapping and surveying in the late Ottoman period, see Alp Yücel Kaya and Yücel Terzibaşoğlu, "Tahrir'den Kadastro'ya: 1874 İstanbul Emlak Tahriri ve Vergisi: "Kadastro Tabir Olunur Tahrir-i Emlak,"" *Tarih ve Toplum Yeni Yaklaşımlar*, no. 9 (Fall 2009): 7-56; and Yücel Terzibaşoğlu, ""A Very Important Requirement of Social Life": Privatisation of Land, Criminalisation of Custom, and Land Disputes in Nineteenth-Century Anatolia," in *Les Acteurs Des Transformations Foncières Autour De La Méditerranée Au Xıxe Siècle*, eds. Vanessa Guéno and Didier Guignard (Paris: Éditions Karthala, 2013).

nineteenth century, the relevant authorities sought evidence when making their ultimate decision. Maps, which determined the exact boundaries of any piece of land, were one of the most important forms of proof. The courts and other concerned state agencies such as the Council of State and provincial administrative councils had resort to such maps to ascertain the exact boundaries of fields and to make a final decision. The maps were prepared by commissions called the commission of the demarcation of borders (tahdid-i hudud komisyonu) which "went on horseback through the land and saw the boundaries first hand or usually through the oral accounts of the village headmen and village councils."[57]

Land surveying and cadastral maps were been used to define property rights with respect to reclaimed land – especially marshes and fens – starting in the late sixteenth and early seventeenth centuries.[58] Cadastral maps for land reclamation were "used to interest potential shareholders, to allot newly formed land plots, and then to serve as visual displays for those who had invested in the new land."[59] The scope of such surveys was limited because the aim was only to reveal possessors and beneficiaries.[60] However, surveying land was a highly contested activity that included "political power fields where negotiations and struggles of different groups left their imprint on the nature of property relations on land."[61]

Because of their contested nature in the absence of modern land surveying techniques, such maps themselves led to problems and new conflicts because the boundaries on a given map and the claims of parties to the land sometimes did not overlap. Which is to say, many parties tried

57 Terzibaşoğlu, ""A Very Important Requirement of Social Life,"" 37.

58 For the uses of cadastral maps in Europe, see Roger J.P. Kain and Elizabeth Baigent, *The Cadastral Map in the Service of the State: A History of Property Mapping* (Chicago: The University of Chicago Press, 1992).

59 Ibid., 332.

60 Bayraktar, "Yurtluk-Ocaklıks," 294.

61 Huri İslamoğlu, "Politics of Administering Property: Law and Statistics in the Nineteenth-Century Ottoman Empire," in *Constituting Modernity: Private Property in the East and the West*, ed. Huri İslamoğlu (London: I.B. Tauris, 2004), 279.

to extend the boundaries of their own land. Such intrigues made it impossible to determine the exact boundaries of any given tract of land and destroyed the credibility of such maps.[62] In this sense, the mapping of land was not only a means of delineating the boundaries of a property but also a fraudulent means of setting the boundaries in line with the interests of certain parties. Parties forged official documents such as property certificates or manipulated the surveying commissions in support of their own claims to land, as in the case of Lake Lapsista and its marshes.

In this case, maps and surveying commissions, rather than settling the land dispute, were an integral part of the conflict from the beginning. The first map, which was prepared by the commission of the demarcation of borders on September 27, 1889, subsequently became a reference point for the parties throughout the endless dispute. It was vital for Vasiliyadi to start the procedure for the final acceptance of the project and receive the title deed to the land. However, the map led to a dispute among the çiftlik owners, the concession holder Vasiliyadi, and central and provincial officials. While the çiftlik holders claimed that the map was not credible, Vasiliyadi argued that a final decision should be based on the contract and this map, which was valid and definite. According to the çiftlik owners, the map had not been fully confirmed by the commission when it was drawn, and there were conflicts between the locations, where officials had driven stakes to mark the boundaries and the locations indicated in their report. They complained that while the Ministry of Public Works had not accepted it and had decided to send a new commission of the demarcation of borders and a new technical commission, the provincial administrative council had accepted the accuracy of the map. They were correct in saying that the ministry had not found the map suitable. The Department of Affairs of Trade and Public Works expressed in its affidavit that the ministry indeed agreed with them on this issue. In accordance with Article 12 of the technical specification, the map needed to display regions that were both permanently and temporarily under water as

62 Terzibaşoğlu, ""A Very Important Requirement of Social Life,"" 37.

well as what land had been reclaimed. But the map submitted by the commission of the demarcation of borders in September 1889 had displayed only regions that had been permanently under water and ones that the concession holder declared he had reclaimed. This map was not considered reliable by the ministry, and thus a new map needed to be drawn up by another commission.

For his part, Vasiliyadi thought that land that had been permanently under water and that had been reclaimed by his proved project belonged to him; therefore, the çiftlik owners could not claim that land. They could only lay claim to land that had been temporarily under water or land outside the region displayed on the map. However, the main subject of the conflict was which land had been under water permanently and temporarily. Therefore, let alone settling the dispute, the map used created new and unrelenting conflicts.[63]

6.3.1 *Demand for a Surveying Commission*

Sending a new surveying commission to the region to carry out a mapping process to settle the dispute was a demand of all the parties. In September, the çiftlik owners complained that a person close to the concession holder had drawn up a map that the commission had somehow confirmed. This map favored the concession holder by reducing the area of their properties by changing boundaries of the flood area. By accepting this new map, the local administration handed over the land that the çiftlik owners were claiming to the concession holder without final acceptance of the project. They objected to this action by the local government on the grounds that it was contrary to law, and they asked the Council of State to postpone its implementation until documents concerning the issue in the Technical Consultancy (Fen Müşavirliği) of the Ministry of Public Works were reviewed. They further demanded that the ministry send an official for inspection.[64]

63 BOA, ŞD 2096/20, 1312.Ş.13.

64 BOA, ŞD 2096/20, 1312.Ş.13.

In light of the objections, claims, and correspondence, the Department of Affairs of Trade and Public Works (Daire-i Umur-ı Ticaret ve Nafia) prepared a report summarizing the dispute and articulating four suggestions for a resolution.

First, it was necessary to resurvey the land that had been reclaimed from the water and draw up a new map with the participation of the çiftlik owners in accordance with Article 12 of the technical specification which the concession holder had agreed. It was critical to indicate reclaimed land that was under water permanently as well as fields that were under water for some periods of the year.

Second, this map should comprehensively enumerate and indicate the boundaries of lands belonging to individuals; moreover, the claims of individuals needed to be indicated in the margins of the map.

Third, whether deficiencies specified and stipulated during the temporary acceptance procedure had been remedied should be investigated. And lastly, it was vital to determine whether dikes that the concession holder had asked to construct would damage productive land, as was supposed.

Given the circumstances and the suggestions of the Department of the Affairs of Trade and Public Works, the Ministry of Public Works considered it necessary to send a technically knowledgeable official to the region. This official would objectively survey the state of the work, the previously drawn map, and documents submitted as evidence by the çiftlik owners and then write a report on the issue. The ministry thought that to make a final decision to settle the dispute, such a report was necessary. The Ministry of Public Works decided to send Major Fahri Bey, a member of the Council of Public Works from the General Staff, on this mission to the province of Ioannina in November 1893. He was to be accompanied by the chief engineer of the province and another individual familiar with the terrain and the consigned work.[65]

However, correspondence among state agencies dated 1894 indicated that in spite of repeated requests by the Ministry of Public Works to the

65 BOA, ŞD 2096/20, 1312.Ş.13.

Council of State, nobody was sent to the region. This was a significant grievance for the ministry. Even Hüseyin Tevfik Paşa himself, the Minister of Public Works, complained in December 1894 that neither Major Fahri Bey nor the Assistant Director of Railways, Margosyan Efendi, had been sent despite six dispatches he had sent in 1893 and 1894 emphasizing the urgency of the issue.[66] The ministry complained about this delay again in 1895. In April 1895, the provincial administration also pointed out the necessity of a technically knowledgeable official to settle the dispute in accordance with the concession contract and specification.[67]

Vasiliyadi expected that a commission would be sent to conclusively resolve the conflict, a fiasco considered. The Ministry of Public Works could not manage to send a commission. Actually, the ministry decided to send a new commission to Ioannina in August 1902 under the chairmanship of Hasan Efendi, a member of the Mülkiye Dairesi of the Council of State.[68] He was to be accompanied by Brigadier Osman Refet Paşa, a member of the Commission of Military Inspection, Sadreddin Bey, the investigating magistrate of the Dersaadet Court of First Instance and Major Ali Bey. The main duty of the commission was to investigate the Lapsista marshes, but this case was not its only task. However, in the end, the commission did not manage to go to Ioannina.[69]

Despite the ministry's failure to send a commission, Vasiliyadi looked for one even in 1904. He pointed out in a petition to the Grand Vizierate on October 12, 1904, that if a commission did not come to the region within 3-4 days, the çiftlik owners would again seize the crops cultivated on the reclaimed land. It was harvest season, and the Province of Ioannina was

66 BOA, ŞD 2096/20, 1312.Ş.13.

67 BOA, ŞD 2097/17, 1312.Z.25.

68 BOA, ŞD 2721/13, 1320.C.19; BOA, ŞD 2721/5, 1320.Ca.21; and BOA, BEO 1933/144944, 1320.B.10.

69 The commission was also charged with making inquiries into other issues. A conflict between Osman Paşa, then governor of Yanya, and Esad Paşa, then gendarme commander of Yanya, had led to dissatisfaction in Babıali, and the commission was also to investigate this conflict. See BOA, ŞD 3195/19, 1320.C.15.

refusing to help him, declaring instead that the majority of the crops belonged to the çiftlik owners, as before. The pretext was that the commission would eventually come to the region. Thus, Vasiliyadi pleaded, a commission should be sent as soon as possible.[70] Heeding Vasiliyadi's call, the Grand Vizierate asked the Ministry of War (Seraskerlik), the Ministry of the Interior, and the Ministry of Property Records to send those members of the commission from the army as soon as possible.[71] However, a disagreement emerged between the Ministry of Finance and the Ministry of the Interior about how their salaries would be paid, and their arrival was delayed for a few months.[72]

The investigation commission led by Refik Efendi finally arrived in Ioannina in February 1905. After completing its investigation, the commission prepared a report including its observations and opinions which it sent to the Ministry of the Interior on February 27, 1905. The commission had conducted an in-depth inspection of all the documents concerning the conflict, namely the petitions and objections of the two parties, the title deeds in the hands of the çiftlik owners who were claiming the land, official documents prepared by state agencies, and the maps drawn up and reports composed by relevant officials and the offices of the Ministry of Public Works. The report prepared by the commission expressed its opinion in favor of Yorgi Vasiliyadi. It stressed the benefits that the reclamation of the lake and marshes would provide for the state treasury and the country and opined that Vasiliyadi should be promoted on account of the project's financial potential. Meanwhile, to emphasize its importance, it explained that the treasury had never before obtained a tithe or any other taxes from the land, but since its reclamation, the amount of the tax

70 BOA, BEO 2431/182302, 1322.Ş.09.

71 BOA, BEO 2431/182302, 1322.Ş.09.

72 In fact, the travel allowance and salary increase of Refik Efendi, an assistant in the Ministry of Property Records who was appointed chief of the commission, was confirmed, and he traveled to Yanya. Nevertheless, other members of the commission, namely those from the army, had not yet travelled there because their allowances and salary increases had not yet been discussed or confirmed. See BOA, BEO 2433/182470, 1322.Ş.13 and BOA, BEO 2501/187557, 1322.Z.02.

being obtained from the land was increasing every year. Indeed, the annual tax revenue from the land had reached eighty thousand kuruş in 1905.[73]

Therefore, the commission thought that it was the government's duty to honor the provisions of the contract and Vasiliyadi's rights vis-à-vis the "seizures and rapes by the çiftlik owners who did not have any standing" ("hiçbir esasa müstenid olmayarak gasb ve tecavüz"). That is, the government needed to prioritize the interests of the state and the country. The commission had inspected the official documents presented by the çiftlik owners making claims on the reclaimed land. This important step determined the boundaries of property and the parties' rights. These documents were the basis of a final decision in accordance with Articles of 14 and 15 of the contract on the rights of possession (isbat-ı hukuk-u tasarrufiyye) and the Land Code. Both Vasiliyadi's contract and the Land Code stated that any claim made on a tract of land should be backed by admissible evidence, especially title deeds. However, after conducting its survey, the commission concluded that documents presented by the çiftlik owners were not admissible; the documents were certificates and title deeds that had been prepared only after the concession contract for the reclamation of Lake Lapsista and its marshes have been signed with Yorgi Vasiliyadi.

Meanwhile, the commission was of the opinion that there were forgeries among these documents. For example, Alaaddin Bey, one of the çiftlik owners, had presented a title deed that had been defaced; that is, some writing on it had been erased and the inscription "Lake Lapsista" had been added in its place. Thus, the çiftlik owners were trying to expand and overstate the land they owned. They had sought to tie the boundary of their own land the retreating shoreline of Lake Lapsista. They had based their claims on a principle in the Land Code that "the reference point for land is not its area but its boundaries." Employing this principle, they took the lakeshore as the boundary and seized the land up to the lake as it dried up and shrank because of the reclamation work.

73 BOA, ŞD 2107/18, 1323.S.06.

Indeed, this principle of the Land Code was often exploited by landowners to extend the boundaries (tevsi-i hudud) and enlarge their landholdings.[74]

There is an opinion that land registry commissions accepted the statements of landowners as truth and registered them, thus resulting in unjust title deeds.[75] However, this is only one piece of the story. The process of land registration and issuing title deeds was a subject of struggle among various actors, and the parties' positions in power relations often determined who received the title deed or a given land. It is true of state-owned and private lands. However, wastelands and especially wetland areas are a more distinct example of this struggle because of the ambiguity of the Land Code and local conditions. One of the main uncertainties was how the principle of "the reference point for land is not its area but its boundaries" in the Land Code would be enforced. Putting this principle into practice was technically more difficult because determining the boundaries of wetland areas such as marshes was vexing. According to this principle, it was necessary to mark the boundaries of private lands and display them on a map, yet doing this in wetlands was problematic. While it was possible to put signs along the boundaries, just as in fields, and to drive stakes to make the boundaries certain, waters shrinking due to drainage led to disputes about where the boundary was and made fraud possible. Therefore, the mapping of especially wastelands became a fraudulent means of establishing boundaries in line with the interests of certain parties.

Once the report prepared by the commission found in Yorgi Vasiliyadi's favor, the provincial administration in Ioannina also sided with him and accepted the commission's report. Meanwhile, the province was inconvenienced by the çiftlik owners' applications to the court and the reception of their appeal by the Ministry of Justice. The conflict had not yet gone to the court although it had lasted years. According to the provincial administration, if the çiftlik owners appealed to the courts, the judicial

74 BOA, ŞD 2107/18, 1323.S.06.

75 Oğuz Işık and M. Melih Pınarcıoğlu, *Nöbetleşe Yoksulluk: Sultanbeyli Örneği* (Istanbul: İletişim Yayınları, 2001), 223-24.

process would continue for years; they would abuse the process to keep Vasiliyadi busy in vain for another 5-10 years and continue to seize the crops cultivated on the reclaimed land. Even worse, this case would set a precedent for ambitious landowners illegally trying to enlarge their own properties; thus, such land conflicts would end up in limbo. State agencies were also dissatisfied with the prospect that the conflict would continue as well as with its possible adverse outcomes.[76]

The Ministry of the Interior, agreeing with the province on the judicial process, argued that the accusations and tricks (isnadat *ve* tesvilat) of the çiftlik owners should not be considered. Like the province, it pointed out that the treasury had obtained eighty thousand kuruş every year once the lake and marshes had been turned into arable lands (kâbil-i zer' ve istifâde hale ifrâğ) on account of the reclamation. Therefore, in accordance with the contract signed with the concession holder, the title deed of the reclaimed land should be granted to him right away.[77]

However, in spite of the consensus of the inspection commission, the provincial administration, and the Ministry of the Interior in favor of Yorgi Vasiliyadi, the conflict was still not settled in 1909 because of the objections of the çiftlik owners. Ultimately, twenty-two years after the start of the project, the Council of State had the last word on the conflict by issuing a mandate (mazbata) in July 1909. The Council of State regarded the report of the surveying commission that went to the region in 1905 in its final decision and emphasized benefits that the reclamation of the land provided for the state treasury and the country.

The Council of State pointed out another issue, as well. Any decision not in Vasiliyadi's favor would not only lead to losses to him and the treasury but also set a precedent that would discourage potential entrepreneurs from undertaking new enterprises. This was a great obstacle for Ottoman governments since the mid-nineteenth century which had attached importance to public works and reclamation and drainage projects. Thus, it was necessary to meet the requirements of the contract and

76 BOA, ŞD 2107/18, 1323.S.06.

77 BOA, ŞD 2107/18, 1323.S.06.

issue the title deed of the reclaimed land to Yorgi Vasiliyadi.[78] Thus, the Ministry of Public Works, the Council of State, and the provincial administration finally agreed to support the concession holder Yorgi Vasiliyadi for the sake of the sustainability of reclamation projects in particular and public works projects in general.

Many state agencies involved in the process tried to keep the dispute from being brought to court – and to settle it administratively rather than juridically – on the grounds that the court would drag the project out. In fact, the Council of State expressed an opinion that eliminated legal procedures. In this sense state agencies wentside out of the judicial framework and made administrative decisions for the sake of more important targets such as development of the country, the prosperity of the population, and the interest of the state treasury. Consequently, although legal arrangements and discourses were important factors in determining the framework of property, they were not necessarily the determinative factors, as the decision of the Council of State and the opinions of the provincial administration and the Ministry of the Interior indicate.

The Council of State took the suffering of Yorgi Vasiliyadi – who had gone to great expense to drain marshes around Lake Lapsista, which polluted the air and led to various damages, and turn them into arable lands – as a point of reference. He had been barred from entering his own land because of seizures and rape by the çiftlik owners; he could not even enter the land to repair the dikes and channels he had constructed. Moreover, according to the report of the 1905 survey commission, the çiftlik owners had defaced their own documents certifying their property rights. Therefore, the Council of State thought that Vasiliyadi should not be convenience to any further and made significant decisions on the issue:

1. The yellow-lined area on the map had always been under water and was never anyone's property. This land of approximately 4.750 decares belonged to the concession holder in accordance with the edict. Thus, the title deed to the land would be granted to him right away.

78 BOA, DH.MKT 2873/98, 1327.C.24.

2. The green-lined region between red lines on the map had belonged to other owners. In accordance with Article 16 of the contract, the title deed for half of these tracts would be granted to the concession holder.
3. The concession holder would not be restrained from entering the land to repair ditches and channels.
4. The concession holder would pay twenty lire every year to compensate for the fishing weir in Lake Lapsista that had belonged to the foundation of the Mehmed Ağa Mosque.
5. To ensure that the decisions made were applied, Süleyman Efendi, the engineer of the province, was appointed as inspector.[79]

§ 6.4 Conclusion

The property rights of reclaimed lands and the way that such land was defined was a vexing issue in which various actors became involved and struggled to control. In fact, as this chapter first argues, reclamation projects led to unending struggles among various actors for control over reclaimed land because the commercialization of agriculture had turned agricultural land into a commodity that promised great profit to those who possessed it. Secondly, the struggle waged over control of agricultural land manifest itself in the attempts of both central and local actors to circumvent legal boundaries or manipulate legal regulation and codes at the local level. Not only ambiguities in the legal status of wastelands in Ottoman codes concerning proprietary rights but also the contested natures of the composition of local administrative councils, the process of surveying and mapping, the demarcation of property boundaries, and the registration of title deeds led claimants to manipulate legal arrangements in their own interests or even to resort to fraudulent actions to support their claims. Thus, the process of surveying and mapping carried out by special commissions and the maps prepared to settle land disputes, themselves, became sources of unending conflict, let alone resolving them. Thirdly, in order to create and promote public works projects as an

79 BOA, DH.MKT 2873/98, 1327.C.24.

area of investment for entrepreneurs, the central government also tried to circumvent legal boundaries and prevent land disputes from lingering in the courts. After all, it saw reclamation projects as sources of revenue for the state treasury. The reclamation project in Lapsista exemplifies the contested nature of the definition of ownership of reclaimed lands at the local level, sublimating the legalist approach that focuses on legal texts and codes.

7

Conclusion

This dissertation discusses the late Ottoman history in terms of environmental change and the tensions and struggles to which it led in Ottoman society, politics, and economics. It focused on reclamation projects of primarily marshes but also wetland regions such as lakes and rivers in Ottoman territories in the second half of the nineteenth and the beginning of the twentieth century. These projects, which sought to turn uncultivated wetlands into agricultural land, were part of the efforts of Ottoman governments to establish authority over the empire's population, resources, economy, land, and environment within its territories by means of large-scale reforms in the nineteenth century. In this sense, reclamation projects had two functions for the Ottoman Empire. First, by means of these projects, central and local elites sought to establish their authority by increasing the welfare of the Ottoman population. Accordingly, an increase in agricultural production and commercial activity as a result of public works projects in cities and countryside provided the development of the country, leading to the prosperity and welfare of the population. Such projects reinforced the authority of political regime and ruling elites that comprised of Ottoman bureaucrats and statesmen, including a public works bureaucracy that employed technical experts, engineers, and officials. Government thus intervened in local politics and

power relations by controlling the execution of reclamation projects. Secondly, reclamation projects enabled Ottoman government to deal with the financial problems of the empire in the last quarter of the nineteenth century by turning the environment and natural resources such as uncultivated land into elements of a productive national economy that was based on the development of the empire. Therefore, reclamations of marshes, lakes, and rivers became an integral part of development and public works programs devised by Ottoman statesmen. However, reclamation projects were contested, as were all other public works projects in this period. They not only transformed and altered the environment and ecology in Ottoman territories but also created tensions and contestations among various social actors. Focusing on the encounters among these actors makes it possible to explain the late Ottoman period in the nineteenth century in an environmental context.

This dissertation proposes an environmental history that approaches the environment, society, politics, and the economy in a single level rather than focusing autonomously on the environment and non-human actors, on one hand, and society and human actors, on the other. This approach problematizes the environment as a point of everyday encounter in which various actors interacted, struggled, and negotiated. It makes it possible to discuss the relationship of various actors such as Ottoman ruling elites, foreign and local entrepreneurs, landowners, fishers, and peasants with the environment of the empire at the local level.

In this context, the dissertation addresses different aspects of reclamation projects in different parts of the Ottoman Empire at the end of the nineteenth and beginning of the twentieth century. The reclamation of marshes was closely related to development and public works programs in the late Ottoman period. In fact, the issue of reclamation was part of a new discourse of development based on the expansion of agricultural production and the prosperity of the population. The main purpose was to increase agricultural production and commercial activity through public works and infrastructure projects such as the construction of railways, highways, bridges, ports, buildings, and irrigation systems as well as the

drainage and reclamation of wetland regions like marshes, lakes, and rivers. These affairs both reinforced the authority of ruling elites by enhancing the prosperity of the Ottoman population and solved the financial problems of the empire in a national economy. In other words, for many Ottoman statesmen, the development of the country, prosperity of population, and even survival of the empire were dependent on public works, among which were reclamation projects. However, as was the case for all public works projects, reclamation projects were highly contested.

Because of the financial difficulties of the government, reclamation projects were handed over to private companies; the projects were usually private enterprises carried out by international and domestic entrepreneurs. The commercialization of agriculture in Ottoman territories and the increasing importance of the Ottoman ports in the Mediterranean in international trade turned reclamation projects into highly profitable enterprises. From the mid-nineteenth century onwards, as ports in the Balkans and Western Anatolia were increasingly integrated into international trade and became important commercial centers in the Eastern Mediterranean, fertile lands in the hinterlands of these ports attracted the attention of investors, entrepreneurs, landowners, and central and local officials as a source of wealth. Uncultivated lands such as wetlands were seen as potential agricultural land with the introduction of reclamation projects. Thus, such projects, which were seen as integral to the development of the country, and the wetlands, marshes, lakes, and rivers where they were implemented, became arenas of competition and contestation among various actors such as local landowners, local and foreign merchants and entrepreneurs, state institutions and officials, the Public Debts Administration, and local fishermen. In this arena, in which the environment itself became subject to contestation, it is possible to observe the encounters among all of these actors. Lake Tahyanos and marshes around Karasu River in Serez comprised one such arena in which the reclamation project, which was to be granted to a private company through the method of concession, failed because of clashing interests.

Reclamation projects were ultimately engineering works carried out with the application of modern engineering knowledge, having their impacts on the environment, ecology and society. In the late Ottoman period, this knowledge was the result of employing foreign engineers and technical experts in Ottoman territories, and the introduction of modern engineering education in newly-founded schools as well as the use of local knowledge. The increasing importance of public works in general and reclamation projects in particular led to the emergence of a public works bureaucracy that employed many technical experts, engineers, and officials charged with planning, carrying out, and supervising the projects. They wrote reports, drew maps, and inspected the construction processes in accordance with the rules of modern engineering. However, these modern engineering projects not only transformed the environment and ecology but also brought about unintended consequences such as the disappearance of various species through the destruction of their habitats. Because of such consequences, local population groups such as fishermen lost their means of subsistence for the sake of creating new agricultural land. For this reason, some reclamation projects resulted in social tension and contestation as well as the resistance of the "losers" these projects created. The case of Lapsista demonstrates that such tensions triggered encounters and even physical conflicts between concession holders and fishermen.

Reclamation projects created tension and contestation not only between concession holders and local population groups that lost their means of subsistence but also between concession holders and landowners. In fact, the ownership of reclaiming or reclaimed lands was a vexing issue in reclamation projects. Reclamation projects and reclaimed land were profitable enterprises as a result of the commercialization of agriculture and commodification of land, which made the control and possession of wastelands and wetlands such as marshes the object of stiff competition and struggle. Then, reclamation projects raised the issue of the definition of property and thus the ownership of reclaimed lands. Ambiguities in the legal status of wastelands in the Ottoman codes and the contested nature of the process related to the definition of property led to

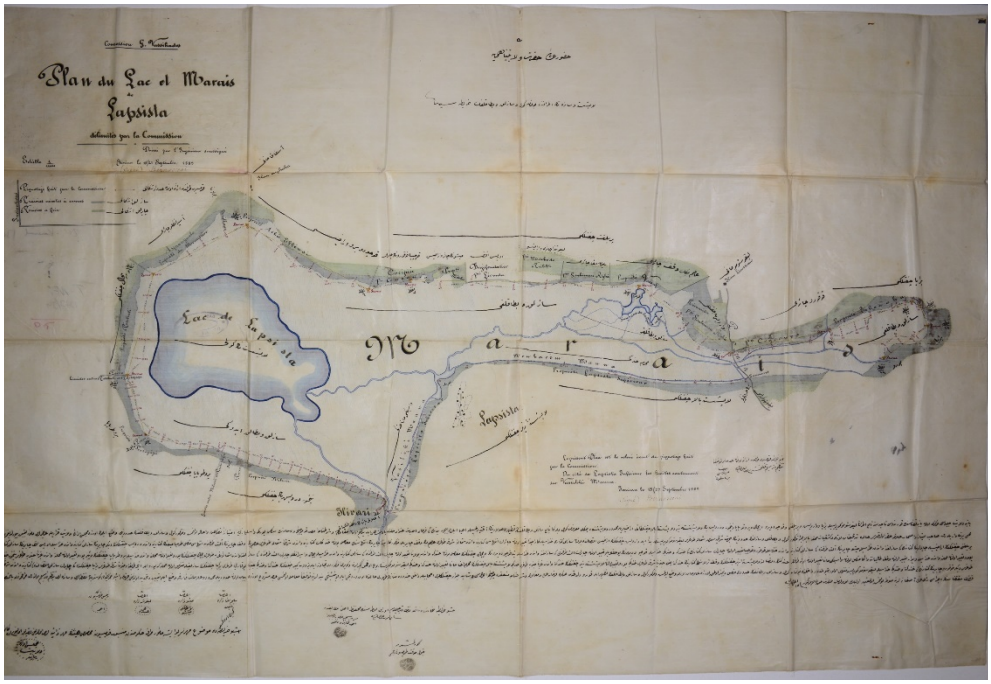
unending disputes about the ownership of such lands among concession holders, local landowners, and other claimants. All such claimants sought to manipulate legal arrangements and mechanisms – such as local administrative councils, the process of surveying and mapping, the demarcation of property boundaries, and the registration of title deeds – in favor of their own interests to support their claims. As was the case for Lapsista, they even resorted to fraudulent actions such as forgeries of official documents like title deeds. Although the possession of state-owned land and private property is a much-debated issue in Ottoman historiography, the legal status of wastelands such as marshes and of land reclaimed from such wastelands has been neglected. The Lapsista case gives clues about the ownership of marshy regions and reclaimed lands.

In conclusion, this dissertation discusses different aspects of reclamation projects in the Ottoman Empire in an environmental perspective. It does not separate the environment from the state, society and economy and make absolute distinctions among them; instead, it evaluates them interconnectedly. Meanwhile, it focuses on the actions of various social actors and clarifies their encounters in the late Ottoman period. This perspective of environmental history makes it possible to discuss the contestations, struggles, and negotiations of these actors with respect to the environment in general and marshes, lakes, and rivers in particular at the local level. Therefore, it enables us to understand how in the nineteenth century international and domestic capital in general and the commercialization of agriculture in particular affected the daily living practices of local population; how both central and local ruling elites of the Hamidian regime sought to reinforce their authority at the local level; and how local population found ways to deal with these new conditions. In other words, the perspective of environmental history paves the way for reevaluating the late Ottoman history by focusing on various social actors and their encounters at the local level.

Appendix A Map of Lake Lapsista and Marshes I

SOURCE: BOA, T.NF.VRK 1373/34

Appendix B Map of Lake Lapsista and Marshes II



SOURCE: BOA, T.NF.VRK 1373/34

Bibliography

ARCHIVAL SOURCES

BOA (Başbakanlık Osmanlı Arşivi)

- A A.DVN.MKL: 26/5
- A.MKT.MHM: 495/57
- A.MTZ.(04): 101/22, 102/30
- BEO: 311/23311, 357/26771, 390/29210, 470/35234, 543/40722, 817/61244, 884/66256, 886/66417, 923/69216, 1807/135522, 1933/144944, 2433/182470, 2501/187557, 2559/191855, 2976/223136, 4048/303549
- DH.MKT: 551/12, 1016/26, 1478/56, 1502/108, 1511/10, 1562/99, 1809/21, 1825/103, 2538/61, 2873/98
- DH.HMŞ: 14/75, 29/121
- İ.DH: 1295-5/102317
- İ.MMS: 78/3419, 108/4643
- MV: 41/52, 82/119
- MVL: 664/27, 666/6, 669/74, 672/4
- ŞD: 502/14, 1197/21, 1209/02, 2003/16, 2096/20, 2097/17, 2101/1, 2107/18, 2431/182302, 2721/5, 2721/13, 2968/27, 3018/56, 3195/19
- T.NF.VRK: 1373/34
- Y.A.RES: 20/2, 93/91, 97/26, 103/9, 113/31
- Y.MTV, 247/124, 248/15

BOOKS AND ARTICLES

Acar, Şinasi, Atilla Bir, and Mustafa Kaçar. "Osmanlı'da Sivil Mühendis Yetiştirmek Üzere Açılan Hendese-i Mülkiye Mektebi." *Osmanlı Bilimi Araştırmaları* 17, no. 2 (2016): 1-26.

Adaman, Fikret, and Murat Arsel. Introduction to *Environmentalism in Turkey: Between Democracy and Development?* edited by Fikret Adaman and Murat Arsel, 1-11. London: Routledge, 2016.

Adaman, Fikret, Murat Arsel, and Bengi Akbulut. "Neoliberal Developmentalism, Authoritarian Populism, and Extractivism in the Countryside: The Soma Mining Disaster in Turkey." *The Journal of Peasant Studies* 46, no. 3 (2019): 514-36.

Ahmet Şerif. *Anadolu'da Tanîn*. Ankara: Türk Tarih Kurumu Yayınları, 1999.

Akiba, Jun. "The Local Councils as the Origin of the Parliamentary System in the Ottoman Empire." In *Development of Parliamentarism in Modern Islamic World*, edited by Sato Tsugitaka, 176-204. Tokyo: Toyo Bunko, 2009.

Akpınar, Özkan. "Geographical Imagination in School Geography During the Late Ottoman Period, 1876-1908." Master's Thesis, Boğaziçi University, 2010.

Aktan, Hamza. "İhya." In *İslam Ansiklopedisi*, 7-9. Istanbul: Türkiye Diyanet Vakfı.

Akyıldız, Ali. *Tanzimat Dönemi Osmanlı Merkez Teşkilatında Reform*. Istanbul: Eren Yayıncılık, 1993.

Al-Majalla Al-Ahkam Al-Adaliyyah: The Civil Code of the Ottoman Empire. CreateSpace Independent Publishing Platform, 2017.

Alandağlı, Murat. "Osmanlı İmparatorluğu'nda Göl ve Bataklık Sahaların Islahına Dair Bir Örnek: Lapşiste Göl ve Bataklığının Islahı." In *Osmanlı Devleti'nde Nehirler ve Göller 2*, edited by Şakir Batmaz and Özen Tok, 654-66. Kayseri: Not Yayınları, 2015.

Anastassiadou, Meropi. *Selanik, 1830-1912*. Istanbul: Tarih Vakfı Yurt Yayınları, 2001.

Arslan, İsmail. "İngiliz Konsolosluk Raporları Işığında 19. Yüzyıl Ortalarında Drama Sancağı'nda Tütün Yetiştiriciliği ve Ticareti." *Turkish Studies* 4, no. 3 (Spring 2009): 154-78.

Atam, Şenay. "Osmanlı Devleti'nde Nafia Nezareti." PhD diss., Niğde Üniversitesi, 2015.

Atayman, Mustafa Şevki. *Bir İnşaat Mühendisinin Anıları*. Istanbul: İstanbul Teknik Üniversitesi İnşaat Fakültesi Matbaası, 1984.

Aytekin, E. Attila. "Hukuk, Tarih ve Tarihyazımı: 1858 Osmanlı Arazi Kanunnamesi'ne Yönelik Yaklaşımlar." *Türkiye Araştırmaları Literatür Dergisi* 3, no. 5 (2005): 723-44.

Badem, Candan. *The Ottoman Crimean War (1853-1856)*. Leiden: Brill, 2010.

Barkan, Ömer Lütfi. "Bir İskân ve Kolonizasyon Metodu Olarak Sürgünler." *İktisat Fakültesi Mecmuası* 11-15 (1949-1954).

———. "Türk Toprak Hukuku Tarihinde Tanzimat ve 1274 (1858) Tarihli Arazi Kanunnamesi." In *Türkiye'de Toprak Meselesi: Toplu Eserler I*, 291-375. Istanbul: Gözlem Yayınları, 1980.

Bayraktar, Uğur. "Yurtluk-Ocaklıks: Land, Politics of Notables and Society in Ottoman Kurdistan, 1820-1890." PhD diss., Boğaziçi University and the École des Hautes Etudes en Sciences Sociales, 2015.

Berki, Ali Himmet, ed. *Açıklamalı Mecelle: Mecelle-i Ahkâm-ı Adliyye*. Istanbul: Hikmet Yayınları, 1982.

Beydilli, Kemal. *Mühendishâne ve Üsküdar Matbaalarında Basılan Kitapların Listesi ve Bir Katalog*. Istanbul: Eren Yayıncılık, 1997.

———. *Türk Bilim ve Matbaacılık Tarihinde Mühendishâne, Mühendishâne Matbaası ve Kütüphânesi, 1776-1826*. Istanbul: Eren Yayınları, 1995.

Birdal, Murat. *The Political Economy of Ottoman Public Debt: Insolvency and European Financial Control in the Late Nineteenth Century*. New York: I.B. Tauris, 2010.

Blackbourn, David. *The Conquest of Nature: Water, Landscape and the Making of Modern Germany*. New York: W.W. Norton, 2007.

Blumi, Isa. *Ottoman Refugees, 1878-1939: Migration in a Post-Imperial World*. London: Bloomsbury Academic, 2013.

Bostan, İdris. "Muhammed Hilâl Efendi'nin Yemen'e Dair İki Lâyihası." *Osmanlı Araştırmaları*, no. 3 (1982): 301-26.

————. "Zor Sancağı'nın İmâr ve Islâhı ile Âlakalı Üç Lâyiha." *Osmanlı Araştırmaları*, no. 6 (1986): 163-220.

Braudel, Fernand. *The Mediterranean and the Mediterranean World in the Age of Philip II*, Volume I. Berkeley: University of California Press, 1995.

Burke III, Edmund. "The Transformation of the Middle Eastern Environment, 1500 B.C.E.-2000 C.E." In *The Environment and World History*, edited by Edmund Burke III and Kenneth Pomeranz, 81-117. Berkeley: University of California Press, 2009.

Cezar, Yavuz. *Osmanlı Maliyesinde Bunalım ve Değişim Dönemi: 18. Yüzyıldan Tanzimat'a Mali Tarih*. Istanbul: Alan Yayıncılık, 1986.

Cin, Halil. *Mirî Arazi ve Bu Arazinin Mülk Haline Dönüşümü*. Ankara: Ankara Üniversitesi Hukuk Fakültesi Yayınları, 1969.

Crosby, Alfred W. "The Past and Present of Environmental History." *American Historical Review* 100, no. 4 (October 1995): 1177-89.

Cruyningen, Piet van. "Dealing with Drainage: State Regulation of Drainage Projects in the Dutch Republic, France, and England During the Sixteenth and Seventeenth Centuries." *The Economic History Review* 68, no. 2 (May 2015): 420-40.

Cuthell, David Cameron. "The Muhacirin Komisyonu: An Agent in the Transformation of Ottoman Anatolia, 1860-1866." PhD diss., Columbia University, 2005.

Çadırcı, Musa. "Mithat Paşa'nın Suriye Layihası." *Türk Kültürü Araştırmaları: Prof. Dr. İsmail Ercüment Kuran'a Armağan 27*, no. 1-2 (1989): 29-40.

————. *Tanzimat Döneminde Anadolu Kentlerinin Sosyal ve Ekonomik Yapısı*. Ankara: Türk Tarih Kurumu Yayınları, 1997.

————. *Tanzimat Sürecinde Türkiye: Ülke Yönetimi*. Ankara: İmge Kitabevi Yayınları, 2007.

Çağlıkeçecigil, Hatice Aslan. "18.-19. Yüzyıllarda Meriç Nehri Üzerindeki Köprüler." In *Osmanlı Devleti'nde Nehirler ve Göller I*, edited by Şakir Batmaz and Özen Tok, 529-44. Kayseri: Not Yayınları, 2015.

Çeçen, Kazım. *İstanbul Teknik Üniversitesi'nin Kısa Tarihçesi*. Istanbul: İstanbul Teknik Üniversitesi Bilim ve Teknoloji Tarihi Araştırma Merkezi, 1990.

Çeker, Orhan. *Arazi Kanunnamesi*. Istanbul: Ebru Yayınları, 1985.

Çetin, Emrah, and Özgür Tilbe. "20. Yüzyılın Başlarında Bartın Nehri'nin Islahı ve Ulaşıma Açılması İçin Yürütülen Çalışmalar." In *Osmanlı Devleti'nde Nehirler ve Göller 2*, edited by Şakir Batmaz and Özen Tok, 644-51. Kayseri: Not Yayınları, 2015.

Çoruh, Haydar. "Osmanlı Devleti'nde Nehir Islahı ve Taşkın Organizasyonu (Meriç/Enez Limanı, Savreyn, Seyhan/Ceyhan, Sakarya/Mudurnu)." *Osmanlı Mirası Araştırmaları Dergisi* 5, no. 12 (July 2018): 167-85.

Deringil, Selim. "Legitimacy Structures in the Ottoman State: The Reign of Abdulhamid II (1876-1909)." *International Journal of Middle East Studies* 23, no. 3 (August 1991): 345-59.

————. *The Well-Protected Domains: Ideology and the Legitimation of Power in the Ottoman Empire, 1876-1909*. London: I.B. Tauris, 1999.

Dinçer, Celal. "Osmanlı Vezirlerinden Hasan Fehmi Paşa'nın Anadolu'da Bayındırlık İşlerine Dair Hazırladığı Layiha." *Belgeler-Türk Tarih Belgeleri Dergisi* 5-8, no. 9-12 (1968-1971): 153-233.

Doğan, Aylin. "İki Büyük İmparatorluk Başkenti İstanbul'da Balık, Balıkçılık ve Balık Tüketimi." In *Balık Kitabı*, edited by Emine Gürsoy Naskali, 205-35. Istanbul: Kitabevi Yayınları, 2015.

———. "Rumelifeneri'nde Balıkçılık." In *Balık Kitabı*, edited by Emine Gürsoy Naskali, 153-204. Istanbul: Kitabevi Yayınları, 2015.

Doğan, Faruk. "Osmanlı'da Boğaziçi'nde Balıkçılık (18. Yüzyıl-20. Yüzyıl)." *Tarih Okulu*, no. 10 (May-August 2011): 39-57.

Dosay, Melek. "Mecmûa-i Ulûm-ı Riyâziye." In *Osmanlılarda Bilim ve Teknoloji: Makaleler*, edited by Yavuz Unat, 221-45. Ankara: Nobel Yayın Dağıtım, 2010.

Dursun, Selçuk. "Çevresel (Ekolojik) Tarih Lensinden Osmanlı Tarihine Yeniden Bakmak." In *New Trends in Ottoman Studies: Papers Presented at the Ciepo Symposium, Rethymno, 27 June-1 July 2012*, edited by Marinos Sarıyannis, 56-69. Rethymno: University of Crete, 2014.

———. "Çevresel Bağlantılar: Tarihi Yeniden Düşünmek." In *Çevresel Tarih Nedir*, edited by J. Donald Hughes. Istanbul: Tarih Vakfı Yurt Yayınları, 2019.

———. "Forest and the State: History of Forestry and Forest Administration in the Ottoman Empire." PhD diss., Sabancı University, 2007.

———. "The History of Environmental Movements and the Development of Environmental Thought in Turkey, 1850-1980." In *Environmentalism in Central and Southeastern Europe: Historical Perspectives*, edited by Hrvoje Petrić and Ivana Žebec Šilj, 111-31. Lanham, Boulder: Lexington Books, 2017.

Duymaz, Şevki. "II. Abdülhamid Dönemi İmar Sistemi: Teşkilat ve Nizamnameler." In *Sultan II. Abdülhamid Sempozyumu: 20-21 Şubat 2014, Selanik*, edited by Metin Hülagü, 79-98. Ankara: Türk Tarih Kurumu Yayınları, 2014.

Efe, Ayla. "İmar Meclisi Raporlarına Göre Niş Bölgesi." In *Uluslararası Osmanlı ve Cumhuriyet Dönemi Türk-Bulgar İlişkileri Sempozyumu, 11-13 Mayıs 2005*, 261-67. Eskişehir: Odunpazarı Belediyesi Yayınları, 2005.

————. "İmar Meclisi Raporlarının Kaynak Niteliği Üzerine Bir Değerlendirme: Tekfurdağı Örneği." *Belleten* 75, no. 273 (August 2011): 471-505.

————. "Tanzimat Devleti, İmar-ı Mülk ve Tebaa Politikaları ve Bir Sancak." *SDÜ Fen Edebiyat Fakültesi Sosyal Bilimler Dergisi*, no. 38 (August 2016): 1-13.

Erdem, Sevim. "Sultan II. Abdülhamit Devri (1876-1908) Osmanlı Devleti'nde Bayındırlık Faaliyetleri." PhD diss., Fırat Üniversitesi, 2010.

Erler, Mehmet Yavuz. *Osmanlı Devleti'nde Kuraklık ve Kıtlık Olayları (1800-1880)*. Istanbul: Libra Yayıncılık, 2010.

Ertem, Özge. "Eating the Last Seed: Famine, Empire, Survival and Order in Ottoman Anatolia in the Late 19th Century." PhD diss., European University Institute, 2012.

Ertuğ, Nejdet. *Osmanlı Döneminde İstanbul Balıkçıları*. Istanbul: Kitabevi Yayınları, 2015.

Evered, Kyle T., and Emine Ö. Evered. "State, Peasant, Mosquito: The Biopolitics of Public Health Education and Malaria in Early Republican Turkey." *Political Geography* 31 (June 2012): 311-23.

Farah, Caesar E. "Awakening Interest in Western Science and Technology in Ottoman Syria." In *Transfer of Modern Science and Technology to the Muslim World*, edited by Ekmeleddin İhsanoğlu, 405-24. Istanbul: IRCICA, 1992.

Faroqhi, Suraiya. "A Natural Disaster as an Indicator of Agricultural Change: Flooding in the Edirne Area, 1100/1688-89." In *Natural Disasters in the Ottoman Empire*, edited by Elizabeth Zachariadou, 251-63. Rethymnon: Crete University Press, 1999.

Gounaris, Basil C. "Selanik." In *Doğu Akdeniz'de Liman Kentleri (1800-1914)*, edited by Çağlar Keyder, Y. Eyüp Özveren and Donald Quataert, 103-20. Istanbul: Tarih Vakfı Yurt Yayınları, 1993.

———. *Steam over Macedonia, 1870-1912: Socio-Economic Change and the Railway Factor*. New York: Columbia University Press, 1993.

Gökdoğan, Melek Dosay, and Mutlu Kılıç. "Hoca İshak Efendi ve Eseri Mecm'ua-i 'Ulûm-u Riyâziyye." In *Osmanlılarda Bilim ve Teknoloji: Makaleler*, edited by Yavuz Unat, 367-400. Ankara: Nobel Yayın Dağıtım, 2010.

Gönüllü, Ali Rıza. "Osmanlı Devletinin Son Döneminde Meydana Gelen Sel Baskınları (1857-1913)." *Türkiyat Araştırmaları Dergisi*, no. 28 (2010): 351-73.

Göyünç, Nejat. "Trablusgarb'a Ait Bir Lâyiha." *Osmanlı Araştırmaları*, no. 1 (1980): 235-56.

Gratien, Chris. "Ottoman Environmental History: A New Area of Middle East Studies." *Arab Studies Journal* 20, no. 1 (Spring 2012): 246-54.

———. "Pilavdan Dönen İmparatorluk: Meclis-i Mebusan'da Sıtma ve Çeltik Tartışmaları." Translated by Burcu Kurt. In *Osmanlı'dan Cumhuriyet'e Salgın Hastalıklar ve Kamu Sağlığı*, edited by Burcu Kurt and İsmail Yaşayanlar, 97-117. Istanbul: Tarih Vakfı Yurt Yayınları, 2017.

———. "The Ottoman Quagmire: Malaria, Swamps, and Settlement in the Late Ottoman Mediterranean." *International Journal of Middle Eastern Studies* 49, no. 4 (November 2017): 583-604.

Griswold, William. "Climatic Change: A Possible Factor in the Social Unrest of Seventeenth Century Anatolia." In *Humanist and Scholar: Essays in Honor of Andreas Tietze*, edited by Heath W. Lowry and Donald Quataert, 37-57. Istanbul: Isis Press, 1993.

Gritt, Andrew. "Making Good Land from Bad: The Drainage of West Lancashire, C. 1650-1850." *Rural History* 19, no. 1 (April 2008): 1-27.

Gudermann, Rita. "Conviction and Constraint: Hydraulic Engineers and Agricultural Amelioration Projects in Nineteenth-Century Prussia." In *Germany's Nature: Cultural Landscapes and Environmental History*, edited by Thomas Lekan and Thomas Zeller. New Brunswick: Rutgers University Press, 2005.

Gümüşsoy, Emine. "19. Yüzyıl Osmanlı Belgelerinde Meriç." In *Osmanlı Devleti'nde Nehirler ve Göller I*, edited by Şakir Batmaz and Özen Tok, 631-50. Kayseri: Not Yayınları, 2015.

Güran, Tevfik. "Tanzimat Döneminde Tarım Politikası (1839-1876)." In *Türkiye'nin Sosyal ve Ekonomik Tarihi (1071-1920)*, edited by Osman Okyar and Halil İnalcık. Ankara: Meteksan Limited Şirketi, 1980.

————. "Zirai Politika ve Ziraatte Gelişmeler, 1839-1876." In *150. Yılında Tanzimat*, edited by Hakkı Dursun Yıldız, 219-33. Ankara: Türk Tarih Kurumu Yayınları, 1992.

————. *19. Yüzyıl Osmanlı Tarımı Üzerine Araştırmalar*. Istanbul: Eren Yayıncılık, 1998.

Gürbüz, Adnan. "19. Yüzyılın Sonlarında Menderes Nehri'nin Islahı ve Ulaşıma Açılması Tasarısı." In *Osmanlı Devleti'nde Nehirler ve Göller 2*, edited by Şakir Batmaz and Özen Tok, 503-10. Kayseri: Not Yayınları, 2015.

Hacısalihoğlu, Neriman Ersoy. "19. Yüzyıl Ticaretinde Meriç Nehri'nin Rolü." In *Osmanlı Devleti'nde Nehirler ve Göller I*, edited by Şakir Batmaz and Özen Tok, 281-90. Kayseri: Not Yayınları, 2015.

Halaçoğlu, Yusuf. "Midhat Paşa'nın Necid ve Havalisi İle İlgil Birkaç Lâyihası." *İstanbul Üniversitesi Edebiyat Fakültesi Tarih Enstitüsü Dergisi*, no. 3 (October 1972): 149-76.

Hanilçe, Murat. "Osmanlı Devleti'nin Bataklık Kurutma Uygulamalarına Bir Bakış: Tokat Kaz Gölü Örneği (1870-1892)." *Türk Dünyası Araştırmaları* 119, no. 235 (July-August 2018): 49-88.

Headrick, Daniel R. *Technology: A World History*. New York: Oxford University Press, 2009.

Hills, Richard L. *Power from Wind: A History of Windmill Technology*. New York: Cambridge University Press, 1994.

Hughes, J. Donald. "Global Dimensions of Environmental History." *Pacific Historical Review* 70, no. 1 (February 2001): 91-101.

———. *The Mediterranean: An Environmental History*. Santa Barbara: ABC-CLIO, 2005.

———. *What Is Environmental History?* Cambridge: Polity Press, 2016.

Husain, Faisal H. "Changes in the Euphrates River: Ecology and Politics in a Rural Ottoman Periphery, 1687-1702." *Journal of Interdisciplinary History* 47, no. 1 (Summer 2016): 1-25.

———. "In the Bellies of the Marshes: Water and Power in the Countryside of Ottoman Baghdad." *Environmental History* 19, no. 4 (October 2014): 638-64.

Hutteroth, Wolf-Dieter. "Ecology of the Ottoman Lands." In *The Cambridge History of Turkey, Volume 3: The Later Ottoman Empire, 1603–1839*, edited by Suraiya N. Faroqhi, 18-43. Cambridge: Cambridge University Press, 2006.

Işık, Oğuz, and M. Melih Pınarcıoğlu. *Nöbetleşe Yoksulluk: Sultanbeyli Örneği*. Istanbul: İletişim Yayınları, 2001.

İhsanoğlu, Ekmeleddin, ed. *Transfer of Modern Science and Technology to the Muslim World*. Istanbul: IRCICA, 1992.

————. "Dârülfünûn." In *İslam Ansiklopedisi*, 521-25. Istanbul: Türkiye Diyanet Vakfı.

————. "Mühendishâne-i Berrî-i Hümâyûn Başhocası İshak Efendi: Hayatı ve Çalışmaları Hakkında Arşiv Belgelerine Dayalı Bir Değerlendirme Denemesi." *Belleten* 53, no. 207-208 (August-December 1989): 735-65.

————. "Osmanlı İmparatorluğu'nda Bilim, Teknoloji ve Sanayide Modernleşme Gayretleri." In *Osmanlı Bilimi Araştırmaları II*, edited by Feza Günergun, 1-22. Istanbul: İstanbul Üniversitesi Edebiyat Fakültesi Yayınları, 1998.

————. "Osmanlıların Batı'da Gelişen Bazı Teknolojik Yeniliklerden Etkilenmeleri." In *Osmanlılar ve Batı Teknolojisi: Yeni Araştırmalar ve Yeni Görüşler*, edited by Ekmeleddin İhsanoğlu, 121-39. Istanbul: İstanbul Üniversitesi Edebiyat Fakültesi Yayınları, 1992.

————. *Başhoca İshak Efendi: Türkiye'de Modern Bilimin Öncüsü*. Ankara: Kültür Bakanlığı Yayınları, 1989.

İnal, Onur, and Yavuz Köse. "Introduction: The Ottoman Environments Revisited." In *Seeds of Power: Explorations in Ottoman Environmental History*, edited by Onur İnal and Yavuz Köse, 1-14. Cambridge: White Horse Press, 2019.

İnal, Onur. "Environmental History as an Emerging Field in Ottoman Studies: An Historiographical Overview." *Osmanlı Araştırmaları/The Journal of Ottoman Studies* 38 (2011): 1-25.

————. "Ottoman and Turkish Environmental History: An Overview of the Field." *Environment and History* 24, no. 2 (2018): 297-99.

İnalcık, Halil. "Land Possession Outside the Miri System." In *An Economic and Social History of the Ottoman Empire, Volume I: 1300-1600*, edited by Halil İnalcık and Donald Quataert, 120-31. Cambridge: Cambridge University Press, 1994.

————. "Land Surveying." In *An Economic and Social History of the Ottoman Empire, Volume I: 1300-1600*, edited by Halil İnalcık and Donald Quataert, 132-42. Cambridge: Cambridge University Press, 1994.

İpek, Nedim. *Rumeli'den Anadolu'ya Türk Göçleri*. Ankara: Türk Tarih Kurumu Yayınları, 1999.

İslamoğlu, Huri, ed. *Constituting Modernity: Private Property in the East and the West*. London: I.B. Tauris, 2004.

————. "Politics of Administering Property: Law and Statistics in the Nineteenth-Century Ottoman Empire." In *Constituting Modernity: Private Property in the East and the West*, edited by Huri İslamoğlu, 276-319. London: I.B. Tauris, 2004.

————. "Property as a Contested Domain: A Reevaluation of the Ottoman Land Code of 1858." In *New Perspectives on Property and Land in the Middle East*, edited by Roger Owen, 3-61. Cambridge: Harvard University Press, 2000.

İsmail. Asım. "Türkiye'deki Sıtma Mücadelesi Noktai Nazardan Arazi Islahatı." In *Beşinci Milli Türk Tıp Kongresi, 20-22 Birinciteşrin 1933*, 335-340. Istanbul: Kader Matbaası, 1934.

Jennings, Ronald C. *Studies on Ottoman Social History in the Sixteenth and Seventeenth Centuries: Women, Zimmis and Sharia Courts in Kayseri, Cyprus and Trabzon*. Istanbul: Isis Press, 1999.

Kaçar, Mustafa. "Osmanlı İmparatorluğu'nda Askerî Teknik Eğitimde Modernleşme Çalışmaları ve Mühendishanelerin Kuruluşu (1808'e Kadar)." In *Osmanlı Bilimi Araştırmaları II*, edited by Feza Günergun, 69-137. Istanbul: İstanbul Üniversitesi Edebiyat Fakültesi Yayınları, 1998.

————. "Osmanlı İmparatorluğunda Askerî Sahada Yenileşme Döneminin Başlangıcı." In *Osmanlı Bilimi Araştırmaları*, edited by Feza Günergun, 209-25. Istanbul: İstanbul Üniversitesi Edebiyat Fakültesi Yayınları, 1995.

Kain, Roger J.P., and Elizabeth Baigent. *The Cadastral Map in the Service of the State: A History of Property Mapping*. Chicago: The University of Chicago Press, 1992.

Kamus-ül Alâm. Reprint. ed. 6 vols. Ankara: Kaşgar Neşriyat, 1996.

Kapanşahin, Muhittin. "Osmanlı Belgelerine Göre Meriç Nehri Taşkınları." In *Osmanlı Devleti'nde Nehirler ve Göller 2*, edited by Şakir Batmaz and Özen Tok, 546-60. Kayseri: Not Yayınları, 2015.

Karpat, Kemal. *Ottoman Population, 1830-1914: Demographic and Social Characteristics*. Madison, Wisconsin: The University of Wisconsin Press, 1985.

Kasaba, Reşat. *A Moveable Empire: Ottoman Nomads, Migrants, and Refugees*. Seattle: University of Washington Press, 2009.

———. *The Ottoman Empire and the World Economy: The Nineteenth Century*. Albany: State University of New York Press, 1988.

Kaya, Alp Yücel, and Yücel Terzibaşoğlu. "Tahrir'den Kadastro'ya: 1874 İstanbul Emlak Tahriri ve Vergisi: 'Kadastro Tabir Olunur Tahrir-i Emlak'." *Tarih ve Toplum Yeni Yaklaşımlar*, no. 9 (Fall 2009): 7-56.

———. "The Reorganization of the Ottoman Legal Administration in the Balkans in the Nineteenth Century: The Formation of Local Administrative Councils and the Emergence of New Social Actors." In *Konflikt Und Koexistenz: Die Rechtsordnungen Südosteuropas Im 19. Und 20. Jahrhundert, Band 1: Rumänien, Bulgarien, Griechenland*, edited by Gerd Bender and Jani Kirov, 61-101. Frankfurt am Main: Vittorio Klostermann, 2015.

Kazancıgil, Aykut. *Osmanlılarda Bilim ve Teknoloji*. Istanbul: Gazeteciler ve Yazarlar Vakfı Yayınları, 1999.

Kazgan, Haydar. "Düyun-ı Umumiye." In *Tanzimat'tan Cumhuriyet'e Türkiye Ansiklopedisi,* edited by Murat Belge, 691-716. Istanbul: İletişim Yayınları, 1985.

Keyder, Çağlar, and Faruk Tabak, eds. *Landholding and Commercial Agriculture in the Middle East*. Albany: State University of New York Press, 1991.

Khalidi, Tarif, ed. *Land Tenure and Social Transformation in the Middle East*. Beirut: American University of Beirut Press, 1984.

Kirby, Richard Shelton, Sidney Withington, Arthur Burr Darling, and Frederick Gridley Kilgour. *Engineering in History*. New York: Dover Publications, 1990.

Knudsen, Stale. *Fishers and Scientists in Modern Turkey: The Management of Natural Resources, Knowledge and Identity on the Eastern Black Sea Coast*. New York: Berghahn Books, 2009.

Kocaman, Meltem, and Darina Martykánová. "A Land of Opportunities: Foreign Engineers in the Ottoman Empire." In *Philosophy of Globalization*, edited by Daniel Brauer, Johannes Rohbeck and Concha Roldán. Berlin: De Gruyter, 2018.

Koç, Bekir. "Tanzimat Sonrası Hukuk Metinlerinde Çevre Bilincinin Arka-Planı Olarak 'Av Yasak ve Sınırlılıkları' Üzerine Bazı Düşünceler." *Ankara Üniversitesi Osmanlı Tarihi Araştırma ve Uygulama Merkezi Dergisi (OTAM)* 19 (March 2006): 271-81.

Koraltürk, Murat. "Bir Fransız Vapur Kumpanyası: Messageries Maritimes ve Kartpostalları." *Toplumsal Tarih*, no. 285 (Eylül 2017): 38-43.

Köksal, Yonca. "Imperial Center and Local Groups: Tanzimat Reforms in the Provinces of Edirne and Ankara." *New Perspectives on Turkey* 27 (Fall 2002): 107-38.

Köse, Metin Ziya. "Bir Zirai Girişim Olarak Karasu (Struma) Nehri'nin Islahı (1857-1867)." In *Osmanlı Devleti'nde Nehirler ve Göller 2*, edited by Şakir Batmaz and Özen Tok, 533-43. Kayseri: Not Yayınları, 2015.

Krohn-Hansen, Christian, and Knut G. Nustad, eds. *State Formation: Anthropological Perspectives*. London: Pluto Press, 2005.

Kupferschmidt, Uri M. *European Department Stores and Middle Eastern Consumers: The Orosdi-Back Saga*. Istanbul: Ottoman Bank Archive and Research Center, 2007.

Kurt, Burcu. "II. Abdülhamid Dönemi Nafia Çalışmalarına Bir Örnek: Nilüfer Nehri'nin Islahı ve Bursa Ovası Bataklıklarının Kurutulması Projesi." In *Odryses'ten Nilüfer'e Uluslararası Nilüfer Sempozyumu, 13-15 Kasım 2015, Nilüfer*, edited by Mustafa Şahin, Sezai Sevim and Doğan Yavaş. Bursa: Nilüfer Belediyesi, 2015.

Küçük, Levent. "Tanzimat Döneminde Osmanlı Devletinin Nehirler ve Göller ile İlgili Yaptığı Bazı Düzenlemeler." *Karadeniz Uluslararası Bilimsel Dergi*, no. 26 (2015): 38-53.

Küçükceran, Zeynep. "Seller, Bataklıklar ve Dönüşen Tarım Bilgisi: Bursa ve Mihaliç." *Kebikeç*, no. 45 (2018): 239-61.

Leake, William Martin. *Travels in Northern Greece*. 4 vols. Vol. 4, Amsterdam: Adolf M. Hakkert, 1967 (Reprint of the edition London 1835).

Lekan, Thomas, and Thomas Zeller, eds. *Germany's Nature: Cultural Landscapes and Environmental History*. New Brunswick: Rutgers University Press, 2005.

Lennep, Henry J. Van. *Travels in Little-Known Parts of Asia Minor,* Vol. I. London: John Murray, 1870.

————. *Travels in Little-Known Parts of Asia Minor, Volume II.* London: John Murray, 1870.

Martykánová, Darina. *Reconstructing Ottoman Engineers: Archaeology of a Profession (1789-1914)*. Pisa: Edizioni Plus-Pisa University Press, 2010.

McNeill, J.R. "Observations on the Nature and Culture of Environmental History." *History and Theory* 42 (December 2003): 5-43.

————. *The Mountains of the Mediterranean World: An Environmental History*. Cambridge: Cambridge University Press, 1992.

Mecmua-yı Umur-u Nafia (N:1, Muharrem 1302 (Ekim-Kasım 1884)): 11-13.

Menchinger, Ethan L. *The First of the Modern Ottomans: The Intellectual History of Ahmed Vasıf*. Cambridge: Cambridge University Press, 2017.

Merchant, Carolyn. "Hydraulic Technologies and the Agricultural Transformation of the English Fens." *Environmental Review* 7, no. 2 (Summer 1983): 165-78.

Mikhail, Alan. "Global Implications of the Middle Eastern Environment." *History Compass* 9, no. 12 (December 2011): 952-70.

———. "The Nature of Plague in Late Eighteenth-Century Egypt." *Bulletin of the History of Medicine* 82, no. 2 (Summer 2008): 249-75.

———. *Nature and Empire in Ottoman Egypt: An Environmental History*. New York: Cambridge University Press, 2011.

———. *The Animal in Ottoman Egypt*. New York: Oxford University Press, 2014.

———. *Under Osman's Tree: The Ottoman Empire, Egypt, and Environmental History*. Chicago: The University of Chicago Press, 2017.

———. *Water on Sand: Environmental Histories of the Middle East and North Africa*. New York: Oxford University Press, 2012.

Mitcham, Carl. *Thinking through Technology: The Path between Engineering and Philosophy*. Chicago: The University of Chicago Press, 1994.

Mitchell, Timothy. *Rule of Experts: Egypt, Techno-Politics, Modernity.* Berkeley: University of California Press, 2002.

———. "Afterword: Are Environmental Imaginaries Culturally Constructed?". In *Environmental Imaginaries of the Middle East and North Africa*, edited by Diana K. Davis and Edmund Burke III, 265-73. Ohio: Ohio University Press, 2011.

————. "Society, Economy, and the State Effect." In *State/Culture: State Formation after the Cultural Turn*, edited by George Steinmetz, 76-97. Ithaca: Cornell University Press, 1999.

Morera, Raphaël. "Environmental Change and Globalization in Seventeenth-Century France: Dutch Traders and the Draining of French Wetlands (Arles, Petit Poitou)." *Internationaal Instituut voor Sociale Geschiedenis* 55 (2010): 79-101.

Mundy, Martha, and Richard Saumarez Smith. *Governing Property, Making the Modern State: Law, Administration and Production in Ottoman Syria*. London: I.B. Tauris, 2007.

Murphey, Rhoads. "Osmanlıların Batı Teknolojisini Benimsemedeki Tutumları: Efrenci Teknisyenlerin Sivil ve Askerî Uygulamalardaki Rolü." In *Osmanlılar ve Batı Teknolojisi*, edited by Ekmeleddin İhsanoğlu, 7-19. Istanbul: İstanbul Üniversitesi Edebiyat Fakültesi Yayınları, 1992.

Mutlu, N. Yücel. *Bayındırlık Bakanlığı Tarihi, 1920-1988 (Nafia Vekaleti, Bayındırlık Bakanlığı, Bayındırlık ve İskan Bakanlığı)*. Ankara: Bayındırlık ve İskan Bakanlığı Matbaası, 1989.

Mutluçağ, Hayri. "Yakın Tarihimizde İlk Kalkınma Planı (Sosyal-İktisadi ve Teknik)." *Belgelerle Türk Tarihi Dergisi: Dün, Bugün, Yarın*, no. 49 (2001): 17-25.

————. "Yakın Tarihimizde İlk Sosyal, İktisadi ve Teknik Kalkınma Planı II." *Belgelerle Türk Tarihi Dergisi: Dün, Bugün, Yarın*, no. 50 (2001): 71-77.

————. "Yakın Tarihimizde İlk Sosyal, İktisadi ve Teknik Kalkınma Planı III." *Belgelerle Türk Tarihi Dergisi: Dün, Bugün, Yarın*, no. 51 (2001): 32-38.

————. "Yakın Tarihimizde İlk Sosyal, İktisadi ve Teknik Kalkınma Planı IV." *Belgelerle Türk Tarihi Dergisi: Dün, Bugün, Yarın*, no. 52 (2001): 45-49.

————. "Yakın Tarihimizde İlk Sosyal, İktisadi ve Teknik Kalkınma Planı V." *Belgelerle Türk Tarihi Dergisi: Dün, Bugün, Yarın*, no. 54 (2001): 38-48.

Nafia Vekaleti. *Cumhuriyet Nafiası*. Ankara: Nafia Vekaleti, 1938.

Nash, Roderick. "American Environmental History: A New Teaching Frontier." *Pacific Historical Review* 41, no. 3 (August 1972): 362-72.

Oğuz, Mustafa. "II. Abdülhamid'e Sunulan Lâyihalar." PhD diss., Ankara Üniversitesi, 2007.

Orhonlu, Cengiz. *Osmanlı İmparatorluğu'nda Şehircilik ve Ulaşım Üzerine Araştırmalar*. Izmir: Ege Üniversitesi Edebiyat Fakültesi Yayınları, 1984.

————. *Osmanlı İmparatorluğunda Derbend Teşkilatı*. Istanbul: Eren Yayıncılık, 1990.

Ortaylı, İlber. *Tanzimat Devrinde Osmanlı Mahallî İdareleri (1840-1880)*. Ankara: Türk Tarih Kurumu Yayınları, 2000.

Owen, Roger, ed. *New Perspectives on Property and Land in the Middle East*. Cambridge: Harvard University Press, 2000.

Önsoy, Rifat. *Tanzimat Dönemi Osmanlı Sanayii ve Sanayileşme Politikası*. Istanbul: Türkiye İş Bankası Kültür Yayınları, 1988.

Özbek, Nadir. "Abdülhamid Rejimi, Vergi Tahsildarlığı ve Siyaset, 1876-1908." *Doğu Batı* 52 (February-March-April 2010): 159-97.

————. "Osmanlı'dan Günümüze Sosyal Devlet." *Toplum ve Bilim* 92 (Spring 2002): 7-33.

————. "Tax Farming in the Nineteenth-Century Ottoman Empire: Institutional Backwardness or the Emergence of Modern Public Finance?" *Journal of Interdisciplinary History* 49, no. 2 (Autumn 2018): 219-45.

————. "The Politics of Taxation and the "Armenian Question" During the Late Ottoman Empire, 1876–1908." *Comparative Studies in Society and History* 54, no. 4 (October 2012): 770-97.

————. *İmparatorluğun Bedeli: Osmanlı'da Vergi, Siyaset ve Toplumsal Adalet (1839-1908)*. Istanbul: Boğaziçi Üniversitesi Yayınevi, 2015.

————. *Osmanlı İmparatorluğu'nda Sosyal Devlet: Siyaset, İktidar ve Meşruiyet, 1876-1914*. Istanbul: İletişim Yayınları, 2002.

Özel, Oktay. "Migration and Power Politics: The Settlement of Georgian Immigrants in Turkey, 1878-1908." *Middle Eastern Studies 46*, no. 4 (August 2010): 477-96.

————. "Muhacirler, Yerliler ve Gayrimüslimler: Osmanlı'nın Son Devrinde Orta Karadeniz'de Toplumsal Uyumun Sınırları Üzerine Bazı Gözlemler." *Tarih ve Toplum Yeni Yaklaşımlar*, no. 5 (Spring 2007): 93-112.

Özgün, Cihan. "Osmanlılarda Çevre Temizliği Kapsamında Bataklıkları Kurutma Çalışmaları." In *Temizlik Kitabı*, edited by Emine Gürsoy-Naskali and Salih Mehmet Arçın, 131-58. Istanbul: Kitabevi Yayınları, 2009.

Özkan, Fulya. "A Road in Rebellion, A History on the Move: The Social History of the Trabzon-Bayezid Road and the Formation of the Modern State in the Late Ottoman World." PhD diss., Binghamton University, 2012.

Özkan, Hande. "Cultivating the Nation in Nature: Forestry and Nation-Building in Turkey." PhD diss., Yale University, 2013.

Öztürk, Osman. "Osmanlılarda Sivil Mühendislik Fakülteleri." In *I. Uluslararası Türk-İslam Bilim ve Teknoloji Tarihi Kongresi*, 121-26. Istanbul: İ.T.Ü. Mimarlık Fakültesi Baskı Atölyesi, 1981.

————. *Osmanlı Hukuk Tarihinde Mecelle*. Istanbul: İslâmî İlimler Araştırma Vakfı, 1973.

Öztürk, Said. "19. Yüzyıldan 20. Yüzyıla İmar-ı Mülk Hedefinde Yeni Adımlar: Göl, Nehir ve Bataklıkların Islahı." Paper presented at the Birinci İktisat Tarihi Kongresi Tebliğleri-2, Istanbul, 2010.

Özveren, Eyüp. *Akdeniz'de Bir Doğu*. Ankara: Dost Kitabevi Yayınları, 2000.

Pamuk, Şevket. "The Evolution of Financial Institutions in the Ottoman Empire, 1600-1914." *Financial History Review* 11, no. 1 (April 2004): 7-32.

————. "The Ottoman Empire in the "Great Depression" of 1873-1896." *The Journal of Economic History* 44, no. 1 (March 1984): 107-18.

————. *Osmanlı-Türkiye İktisadî Tarihi 1500-1914*. Istanbul: İletişim Yayınları, 2005.

————. *Türkiye'nin 200 Yıllık İktisadi Tarihi*. Istanbul: Türkiye İş Bankası Kültür Yayınları, 2014.

Quataert, Donald. "The Age of Reforms, 1812-1914." In *An Economic and Social History of the Ottoman Empire II*, edited by Halil İnalcık and Donald Quataert, 759-943. Cambridge: Cambridge University Press, 1994.

————. *Anadolu'da Osmanlı Reformu ve Tarım, 1876-1908*. Istanbul: Türkiye İş Bankası Kültür Yayınları, 2008.

————. *The Ottoman Empire, 1700-1922*. Cambridge: Cambridge University Press, 2000.

Richards, John F. "Toward a Global System of Property Rights in Land." In *The Environment and World History*, edited by Edmund Burke III and Kenneth Pomeranz, 54-78. Berkeley and Los Angeles: University of California Press, 2009.

Sarı, Mustafa, and Bahadır Ünal. "Adapazarı'nda Gökçeören Bataklığını Kurutma Çalışmaları ve Muhacirlerle Yaşanan Sorunlar (1890-1908)." *Akademik İncelemeler Dergisi (Journal of Academic Inquiries)* 9, no. 2 (2014): 137-58.

Sarıköse, Selma Turhan. "XIX. Yüzyılda Çukurova'da Doğal Afetler ve Salgın Hastalıklar." PhD diss., Selçuk Üniversitesi, 2013.

Satılmış, Selahattin. "1891 Kışında Büyük Menderes, Gediz, Küçük Menderes, Bakırçay Nehirleri'nde Yaşanan Taşkınlar ve Afet Yönetimi." In *Osmanlı Devleti'nde Nehirler ve Göller 2*, edited by Şakir Batmaz and Özen Tok, 628-41. Kayseri: Not Yayınları, 2015.

Saydam, Abdullah. *Kırım ve Kafkas Göçleri (1856-1876)*. Ankara: Türk Tarih Kurumu Yayınları, 1997.

Seyitdanlıoğlu, Mehmet. "Tanzimat Dönemi İmar Meclisleri." *Ankara Üniversitesi Osmanlı Tarihi Araştırma ve Uygulama Merkezi Dergisi (OTAM)*, no. 3 (January 1992): 323-30.

Sezgin, İbrahim. "Meriç Nehri'nde Taşımacılık, 17.-18. Asırlar." In *Osmanlı Devleti'nde Nehirler ve Göller 1*, edited by Şakir Batmaz and Özen Tok, 577-82. Kayseri: Not Yayınları, 2015.

Shaw, Stanford J. "The Origins of Representative Government in the Ottoman Empire: An Introduction to the Provincial Councils, 1839-1876." In *Near Eastern Round Table, 1967-68*, edited by R. Bayley Winder, 53-142. New York: Near East Center and the Center for International Studies, 1969.

Shefer-Mossensohn, Miri. *Science among the Ottomans: The Cultural Creation and Exchange of Knowledge*. Austin: University of Texas Press, 2016.

Smith, Norman. *Man and Water: A History of Hydro-Technology*. London: Peter Davies, 1976.

Şener, Abdüllatif. *Tanzimat Dönemi Osmanlı Vergi Sistemi*. Istanbul: İşaret Yayınları, 1990.

Şerafeddin Mağmumi. *Bir Osmanlı Doktoru'nun Anıları: Yüzyıl Önce Anadolu ve Suriye*. Istanbul: Büke Yayınları, 2001.

Tabak, Faruk. *The Waning of the Mediterranean, 1550–1870: A Geohistorical Approach*. Baltimore: Johns Hopkins University Press, 2008.

T.C. Bayındırlık Bakanlığı, *Bayındırlıkta 50 Yıl*. Ankara: T.C. Bayındırlık Bakanlığı, 1973.

T.C. Bayındırlık ve İskan Bakanlığı. *Cumhuriyetin 70. Yılında Bayındırlık ve İskan Bakanlığı*. Ankara: T.C. Bayındırlık ve İskan Bakanlığı, 1993.

T.C. Çevre ve Şehircilik Bakanlığı. *Nâfiâ Nezareti'nden Çevre ve Şehircilik Bakanlığı'na (1848- 2015)*. Ankara: T.C. Çevre ve Şehircilik Bakanlığı, 2015.

TeBrake, William H. "Taming the Waterwolf: Hydraulic Engineering and Water Management in the Netherlands During the Middle Ages." *Technology and Culture* 43, no. 3 (July 2002): 475-99.

Tekdemir, Aziz. "19. Yüzyılın İkinci Yarısında Meriç Nehri'nde Vapur İşletme İmtiyazı." In *Osmanlı Devleti'nde Nehirler ve Göller 1*, edited by Şakir Batmaz and Özen Tok, 643-60. Kayseri: Not Yayınları, 2015.

———. "Tanzimat Dönemi Nafia Nezareti." *Trakya Üniversitesi Edebiyat Fakültesi Dergisi* 1, no. 1 (2011): 109-32.

Tekeli, İlhan, and Selim İlkin. "1908 Tarihli "Umur-u Nâfia Programı"nın Anlamı Üzerine." In *Cumhuriyetin Harcı: Modernitenin Altyapısı Oluşurken*, edited by İlhan Tekeli and Selim İlkin, 175-215. Istanbul: İstanbul Bilgi Üniversitesi Yayınları, 2010.

———. "Mustafa Celâleddin Bey'in "Bir Eyaletin Islah ve İmarı Hakkında Mükâleme" Adlı Risâlesi ve 19. Yüzyılda Osmanlı İmparatorluğu'nda İmar Kavramının Gelişimi Üzerine Düşünceler." In *Cumhuriyetin Harcı: Modernitenin Altyapısı Oluşurken*, edited by İlhan Tekeli and Selim İlkin, 1-26. Istanbul: İstanbul Bilgi Üniversitesi Yayınları, 2010.

Tekeli, İlhan. "Türkiye Çevre Tarihçiliğine Açılırken." In *Türkiye'de Çevrenin ve Çevre Korumanın Tarihi Sempozyumu: 7-8 Nisan 2000 İstanbu Teknik Üniversitesi Maçka Sosyal Tesisleri*, edited by Zeynep Boratav, 1-13. Istanbul: Türkiye Ekonomik ve Toplumsal Tarih Vakfı, 2000.

Terzibaşoğlu, Yücel. ""A Very Important Requirement of Social Life": Privatisation of Land, Criminalisation of Custom, and Land Disputes in Nineteenth-Century Anatolia." In *Les Acteurs Des Transformations Foncières Autour De La Méditerranée Au Xıxe Siècle*, edited by Vanessa Guéno and Didier Guignard, 25-47. Paris: Éditions Karthala, 2013.

————. "Eleni Hatun'un Zeytin Bahçeleri: 19. Yüzyılda Anadolu'da Mülkiyet Hakları Nasıl İnş Edildi?". *Tarih ve Toplum Yeni Yaklaşımlar*, no. 4 (Fall 2006): 121-47.

————. "Landlords, Refugees, and Nomads: Struggles for Land around Late-Nineteenth-Century Ayvalık." *New Perspectives on Turkey*, no. 24 (Spring 2001): 51-82.

The Ottoman Land Code. Translated by F. Ongley. London: William Cloves and Sons, 1892.

Thompson, Elizabeth. "Ottoman Political Reform in the Provinces: The Damascus Advisory Council in 1844-45." *International Journal of Middle East Studies* 25, no. 3 (August 1993): 457-75.

TRT-Anadolu Üniversitesi. *Nafia: Türkiye'nin İnşa Tarihi*. Edited by Gökhan Arslan. Ankara: TRT-Anadolu Üniversitesi, 2015.

Tuğluoğlu, Fatih. "Türkiye'de Sıtma Mücadelesi (1924-1950)." *Türkiye Parazitoloji Dergisi* 32, no. 4 (December 2008): 351-59.

Uluçay, Çağatay, and Enver Kartekin. *Yüksek Mühendis Okulu: Yüksek Mühendis ve Yüksek Mimar Yetiştiren Müesseselerin Tarihi*. Istanbul: İstanbul Teknik Üniversitesi, 1958.

Umur-u Nafia ve Ziraat Mecmuası (1 Cemaziyelevvel 1315 (28 Eylül 1897)): 134-38.

Unat, Faik Reşit. "Başhoca İshak Efendi." *Belleten* 28, no. 109 (January 1964): 89-115.

Ursinus, Michael. "Natural Disasters and Tevzi: Local Tax Systems of the Post-Classical Era in Response to Flooding, Hail and Thunder." In *Natural Disasters in the Ottoman Empire*, edited by Elizabeth Zachariadou, 265-72. Rethymnon: Crete University Press, 1999.

Uygun, Süleyman. "Bir Fransız Buharlı Deniz Nakliyat Kumpanyası Etrafında Osmanlı-Fransız-Ermeni İlişkiler." *Akademik Bakış* 8, no. 16 (Summer 2015): 121-46.

———. "Mesajeri Maritim Kumpanyası ve Osmanlı Devleti'nde Fransız Sömürgeciliği (1851-1914)." PhD diss., Sakarya Üniversitesi, 2013.

———. *Osmanlı Sularında Rekabet: Mesajeri Maritim Vapur Kumpanyası (1851-1914)*. Istanbul: Kitap Yayınevi, 2015.

Ülker, Necmi. "İzmir Yenikale Bataklığının Kurutulması Çalışmalarına Dair Belgeler." *Tarih İncelemeleri Dergisi* 7, no. 1 (1992): 17-64.

Ünver, Metin. "Tanzimat Taşrasının İstanbul Buluşması: İmar Meclislerinin Kurulması Süreci." In *Eski Çağ'dan Günümüze Yönetim Anlayışı ve Kurumlar*, edited by Feridun M. Emecen, 118-60. Istanbul: Kitabevi Yayınları, 2009.

Velidedeoğlu, Hıfzı Veldet. "Kanunlaştırma Hareketleri ve Tanzimat." In *Tanzimat I*, 139-209. Istanbul: Maarif Vekaleti, 1940.

Victoria, José Luis Escalona. "Anthropology of Power: Beyond State-Centric Politics." *Anthropological Theory* 16, no. 2-3 (September 2016): 249-62.

Vlahakis, George N., Isabel Maria Malaquias, Nathan M. Brooks, François Regourd, Feza Gunergun, and David Wright. *Imperialism and Science: Social Impact and Interaction*. California: ABC-Clio, 2006.

Weber, Stefan. *Damascus: Ottoman Modernity and Urban Transformation, 1808-1918*. Vol. 1, Aarhus: Aarhus University Press, 2009.

White, Richard. "Environmental History: The Development of a New Historical Field." *Pacific Historical Review* 54, no. 3 (August 1985): 297-335.

White, Sam. "Middle East Environmental History: Ideas from an Emerging Field." *World History Connected* 8, no. 2 (June 2011).

————. *The Climate of Rebellion in the Early Modern Ottoman Empire*. New York: Cambridge University Press, 2011.

Willcocks, William. *The Irrigation of Mesopotamia*. London: E.&F.N. Spon, 1911.

Worster, Donald. "History as Natural History: An Essay on Theory and Method." *Pacific Historical Review* 53, no. 1 (February 1984): 1-19.

Yarcı, Güler. "19. Yüzyıl Sonlarında Cebel-i Lübnan'da İbrahim Nehri'nin Islahı ve 'Nehr-i İbrahim Anonim Su Şirketi'." In *Osmanlı Devleti'nde Nehirler ve Göller 2*, edited by Şakir Batmaz and Özen Tok, 562-88. Kayseri: Not Yayınları, 2015.

————. "Evliya Çelebi Seyahatnâmesi'nde Balıkçılık." In *Balık Kitabı*, edited by Emine Gürsoy Naskali, 5-152. Istanbul: Kitabevi Yayınları, 2015.

————. "Ondokuzuncu Yüzyılın İkinci Yarısında Vardar Nehri'nin Temizlik ve Islahı." In *Temizlik Kitabı*, edited by Emine Gürsoy-Naskali and Salih Mehmet Arçın, 91-130. Istanbul: Kitabevi Yayınları, 2009.

Yıldız, Özlem. "20. Yüzyıl Başlarında Selanik Limanında Deniz Ticareti." *Çağdaş Türkiye Tarihi Araştırmaları Dergisi* 12, no. 24 (Spring 2012): 27-46.

Yılmazçelik, İbrahim, and Sevim Erdem. "II. Abdülhamid Döneminde Yeni İskân Alanları Oluşturulması ve Nehir-Göl-Bataklıkların Temizlenerek Zirai Ekonomiye Kazandırılması Çalışmaları." In *Osmanlı Devleti'nde Nehirler ve Göller* 2, edited by Şakir Batmaz and Özen Tok, 511-32. Kayseri: Not Yayınları, 2015.

Yılmazçelik, İbrahim. "II. Abdülhamid Döneminde Osmanlı Devletinin Balkanlarda Yürüttüğü Bataklık Alanlarının Kurutulması ve Yeni İskan Alanlarının Oluşturulması Çalışmaları." In *Sultan II. Abdülhamid Sempozyumu: 20-21 Şubat 2014, Selanik*, edited by Metin Hülagü, 125-48. Ankara: Türk Tarih Kurumu Yayınları, 2014.

Zachariadou, Elizabeth, ed. *Natural Disasters in the Ottoman Empire*. Rethymnon: Crete University Press, 1999.

Zeyrek, Suat, and Halil Akman. "Adana Ovası'nın Islahı, Seyhan ve Ceyhan Nehirleri Mecralarının Tanzim Edilmesi İle İlgili Çalışmalar ve Engeller." In *Osmanlı Devleti'nde Nehirler ve Göller 2*, edited by Şakir Batmaz and Özen Tok, 617-26. Kayseri: Not Yayınları, 2015.