

Yangzi Waters

China Studies

PUBLISHED FOR THE INSTITUTE FOR CHINESE
STUDIES, UNIVERSITY OF OXFORD

Series Editor

Rana Mitter, *University of Oxford*

VOLUME 44

The titles published in this series are listed at brill.com/chs

Yangzi Waters

*Transforming the Water Regime of the
Jiangnan Plain in Late Imperial China*

By

Yan GAO



BRILL

LEIDEN | BOSTON

Cover illustration: Hubei sheng Changjiang, Hanshui di gong tu 湖北省長江、漢水堤工圖 [The embankment map of the Yangtze River and the Han River in Hubei Province] (1821–1850). The map is adjusted to fit the cover. The orientation of the map is south at the top, and north at the bottom. Library of Congress, Geography and Map Division, Washington D.C., gm71005075, <http://hdl.loc.gov/loc.gmd/g7822y.cto03422>.

Library of Congress Cataloging-in-Publication Data

Names: Gao, Yan, author.

Title: Yangzi waters : transforming the water regime of the Jiangnan Plain in late imperial China / by Yan Gao.

Description: Leiden ; Boston : Brill, [2022] | Series: China studies, 1570-1344 ; volume 44 | Includes bibliographical references and index.

Identifiers: LCCN 2021046466 (print) | LCCN 2021046467 (ebook) | ISBN 9789004505278 (hardback) | ISBN 9789004505285 (ebook)

Subjects: LCSH: Water resources development—China—Jiangnan Region—History. | Water-supply—Political aspects—China—Jiangnan Region—History. | Human ecology—China—Jiangnan Region—History. | Yangtze River (China)—Environmental conditions. | Jiangnan Region (China)—Environmental conditions. | Jiangnan Region (China)—Politics and government. | China—Politics and government—1644-1912. | China—History—Qing dynasty, 1644-1912.

Classification: LCC HD1698.C52 .G36 2022 (print) | LCC HD1698.C52 (ebook) | DDC 333.91009512/1—dc23/eng/20211014

LC record available at <https://lccn.loc.gov/2021046466>

LC ebook record available at <https://lccn.loc.gov/2021046467>

Typeface for the Latin, Greek, and Cyrillic scripts: “Brill.” See and download: brill.com/brill-typeface.

ISSN 1570-1344

ISBN 978-90-04-50527-8 (hardback)

ISBN 978-90-04-50528-5 (e-book)

Copyright 2022 by Koninklijke Brill nv, Leiden, The Netherlands.

Koninklijke Brill nv incorporates the imprints Brill, Brill Nijhoff, Brill Hotei, Brill Schöningh, Brill Fink, Brill mentis, Vandenhoeck & Ruprecht, Böhlau Verlag and V&R Unipress.

All rights reserved. No part of this publication may be reproduced, translated, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior written permission from the publisher. Requests for re-use and/or translations must be addressed to Koninklijke Brill nv via brill.com or copyright.com.

This book is printed on acid-free paper and produced in a sustainable manner.

*In memory of my mother, Zhu Jinlian (1948–2018),
and my aunt, Gao Ziyun (1935–2020)*



Contents

Acknowledgments XI
List of Figures and Tables XIV

Introduction

Water, Society and Politics 1

1 Theorizing Water and Politics 3

2 Revisiting the Relationship between Water and Society 11

3 The *Yuan* 15

3.1 *What Are Yuan?* 15

3.2 *A Long-term View of the Yuan* 19

4 The Jiangnan Plain 22

1 Water-based Disasters and a Cultured Nature 28

1 The Amphibious Nature of the Jiangnan Plain 28

1.1 *A Flood-prone Environment* 29

1.2 *Wet-rice Cultivation and Its Significance* 33

1.3 *Amphibious Living* 36

2 Networks, Lineages, and the Creation of *Yuan* 38

3 Temple-*Yuan* Relations: Seeing a Cultured Nature 48

4 Conclusion 62

2 Disordering Nature

Wetlands and Empire Reconstruction (1600s–Early 1700s) 64

1 The Early History of the Wetlands in the Jiangnan Plain 64

2 Crisis and Restoration 67

3 Migration and Opening the Plain 69

4 Fluidity of the Jiangnan Lifestyle 72

5 Complexities in Administration 76

6 The Early Qing State and Its Laissez-faire Policy in Central China 79

7 Hydraulic Communities: Official and People's *Yuan* 87

8 Enforcement on Collaboration: The Formation of *Yuan* Zones 92

9 Customs in Common: Various Solutions for Collaboration 96

10 Turn Sea to Land: Population Growth and Dike Proliferation 97

11 Conclusion 102

- 3 The Retreat of the Horse**
The Manchus, Pasturelands, and Water Management on the Jiangnan Plain (ca. 1700s–mid-1800s) 104
- 1 Manchus and Horses 106
 - 2 The Jingzhou Garrison 111
 - 3 Population Growth and Land Reclamation in the Eighteenth-century Jiangnan Plain 116
 - 4 The Debate over Land versus Water 118
 - 5 The Dilemma for Statecraft Officials 124
 - 6 The Manchus and the Local Ecology of Central China 127
 - 7 Efforts to Reinforce Manchu Cultural Identity 130
 - 8 The Retreat of Horses in the Jiangnan Plain in the Eighteenth and Nineteenth Centuries 132
 - 9 Conclusion 137
- 4 Militarizing Water**
Forts, Polders, and Landscape in an Era of Crisis (1796–1860s) 140
- 1 The Rebels and the Jiangnan Plain 140
 - 2 *Jianbi Qingye*: The Qing State's Counterinsurgency Agenda 143
 - 3 Fort Building in the Hubei Highlands 144
 - 4 Local Militarization and the Lowland Communities 152
 - 5 *Yuan and Tuanlian*: Qianjiang County as a Case Study 154
 - 6 Disruptions in the Hydraulic System with Local Militarization 156
 - 7 The Rural Famine in the Jiangnan Plain from the Late 1850s to the 1860s 160
 - 8 Conclusion 169
- 5 Coping with Environmental Crisis in the Post-Taiping Era** 171
- 1 Post-Taiping Social Distress and Environmental Crisis 173
 - 2 Managing the Waters 174
 - 2.1 *Flood Control: Restoring, Diking, or Diverting* 175
 - 2.2 *Sedimentation: Ban the Reclamation on Mountains* 178
 - 2.3 *Sacrificing the South for the North* 180
 - 3 The Changing Nature of Conflicts over Water 184
 - 3.1 *First, Greater Frequency and on a Larger Scale* 184
 - 3.2 *Second, Diversifying Stakeholders* 187
 - 3.3 *Third, a "Plebeian Culture" in Popular Action* 187
 - 3.4 *Case Study: The Conflicts over the Big and Small Zekou Outlets from the 1840s to the 1910s* 188
 - 4 Changes in Hydrotopography of the Jiangnan Plain 194
 - 5 Conclusion 195

6 Centering the Plain	199
1 The Jinshui Reclamation Project	200
2 The Social, Economic, and Hydraulic Conditions of the Plain	202
3 Reorganizing the <i>Yuan</i> System in the Early Republic	207
4 The Nationalist Government's Scheme of Unifying Watersheds	215
5 A Divided Central Yangzi Watershed	217
6 Hydropower: Centering the Yangzi	222
7 Conclusion	229
Conclusion	232
1 An Autonomous Water Regime	233
2 An Amphibious Water Regime	234
3 The Role of the State	235
4 Environmental Changes in the <i>Longue Durée</i>	237
4.1 <i>Hydrogeographic Changes</i>	238
4.2 <i>Loss of Biodiversity</i>	239
5 Hopes and Challenges in the Jiangnan Plain	241
Appendix: Glossary of Chinese Measurement Terms	243
Works Cited	244
Index	266

Acknowledgments

This book represents a journey of more than ten years. During the gestation of this project, I received help from many people, to whom I owe my thanks. First, I am grateful to my doctoral adviser, Professor Emeritus Donald S. Sutton at Carnegie Mellon, who mentored, helped, and supported me throughout the journey. Without his constant encouragement and support, I would have accomplished much less. I owe him a lifetime of gratitude. Professors Joel Tarr and John Soluri have always been there for me and they deserve my deepest appreciation.

My postdoctoral supervisor, Professor Prasenjit Duara at Duke University, granted me the freedom to work on the manuscript. In addition, he offered opportunities for me to present my ideas on various occasions and to network with scholars in related fields. I also owe tremendous thanks to Dr. Giovanni Zanalda, the director of the John Hope Franklin Center, for support and advice on moving forward. I was also fortunate to have great colleagues at the center who encouraged, comforted, and helped me whenever possible.

This book started as a small project with Professor Steven Schlossman at his research seminar at Carnegie Mellon University. In my first year of research and writing, his confidence in the project steeled me through the initial stage of exploration. During the subsequent period of field work and writing, Professor Lu Xiqi at Wuhan University gave me unreserved support and granted me generous access to sources in his own collection—which became the basis of this book. Luo Dufang at the Chinese University of Hong Kong and Professor Xu Bin at Wuhan University accompanied me on field work around Dongting Lake and on the Jiangnan Plain. I owe them great thanks for their scholarly insights and fun company!

The turning point of this project came at the Rachel Carson Center (RCC) in Munich, Germany, a truly intellectually inspiring place. I thank Professor Christof Mauch, who not only reviewed the outline of the book and met with me to discuss the theme but also coined the title of the book, *Yangzi Waters*, which I find poetic and inspiring. I greatly appreciate his open-mindedness and positivity. I enjoyed the interaction with fellow scholars at the RCC, who offered me great intellectual stimulus and made my time at the RCC invaluable and memorable: Amanda Boetzkes, Cao Mu, Pey-Yi Chu, Saskia Beudel, Han Zhaoqing, Chihyung Jeon, Alan MacEachern, Ruth Odenziel, Paul Sutter, Robert Wilson, and Wang Zhen. Special thanks are due to Paul, Ruth, Alan, and Zhaoqing for reading parts of the manuscript and giving me insightful advice on how to advance the project.

I also thank Dr. Dagmar Schäfer, who gave me the opportunity to do research on digitized local gazetteers at the Max Planck Institute for the History of Science (MPIWG) in Berlin. Shih-Pei Chen and Che Qun provided wonderful support and guidance on my research at the institute. Some of my favorite experiences there were discussions at the institute colloquiums. I thank Masato Hasegawa, Fan Fa-ti, and Christian de Pee for enlightening conversations on research, writing, and life.

Over the many years spent developing this book, I received assistance from many scholars in the field. They helped me stay focused and redirected me, when necessary, in one way or another. I am deeply indebted to David Pietz, Peter C. Perdue, Robert Marks, John McNeill, Micah Muscolino, Bao Maohong, Han Zhaoqing, Hou Shen, Brian Lander, Peter Lavelle, Xiaofei Kang, Jianhua Xu, Li Li, Zhang Lianwei, Jeff Nicolaisen, Liu Jiacheng and John Weigel. I owe particular thanks to David Bello, Ling Zhang, Pey-Yi Chu, and Christian de Pee for sharing their writing experience with me and encouraging me to address problems. Two anonymous reviewers also offered critical advice about improving the manuscript. Any remaining errors are solely mine.

My friends and colleagues have greatly supported my work. Peter Brand not only reviewed my text at the proposal stage, but also offered me advice on writing and revisions. Jim Blyth and Sheila Martin encouraged me, not least by serving delicious meals and reading a draft of my writing. Lan Zhang graciously accommodated my teaching and has always been a helpful source. Thanks to Elaine Shi and Hubert Chan, who are always there for me.

Several libraries offered me travel funds for research. Harvard Yenching Library and the East Asian Library at the University of Michigan generously granted me days of on-site research that greatly helped me access sources. I also appreciated the AAS Small Research Grants co-funded by the Chiang Ching-kuo Foundation, which enabled a month of research in China in the summer of 2015.

This book would not have been possible without the understanding of the Brill editors Qin Higley, Dove Morissette and Elizabeth You. I thank them for their confidence in me and for their patience as I completed the manuscript. I also thank my copyeditors Debra Soled, Wendy Smyer Yu, Jeremy Hall, Brenda Black, and Barbara Werden, who each tirelessly read at least one chapter, correcting and polishing every detail. Working with them has been a great joy.

My family has been firmly behind me for the entire journey, and I owe them the most. My father Gao Yunhua has always been a strong supporter of my writing. My aunt Gao Ziyun was often concerned about me when I was away from Wuhan but lost her life in early 2020—I dearly miss her. I owe a million thanks to my daughter, Eva—I had to be away from time to time for work, and she endured many periods of separation from me. She is the light

of my life. My husband, Raj, has extended the most unreserved support to me throughout the process. He put up with my complaints, frustration, sweat, and tears and persuaded me to keep going whenever I thought about giving up. His devotion to the family deserves a lifetime of gratitude from me. This book is dedicated to all four of them.

Memphis, TN

May 2021

Figures and Tables

Figures

- 1 Five modes of state control in water management. Source: Perdue, *Exhausting the Earth*, 171. 7
- 2 A *weitian* 圍田. Source: [Yuan] *Wang Zhen nongshu* 王禎農書 [*The Treatises of Agriculture by Wang Zhen*] 11: *Nongqi tupu* 1: *Weitian* 農器圖譜 1: 圍田. 18
- 3 Changes in the frequency of *yuan* mentions in local gazetteers. Source: LoGaRT, Local Gazetteer Research Tools, Max Planck Institute for the History of Science, Berlin, February 2017. 20
- 4 Location of Hubei, China, 1820. Source: China Historical Geographic Information System, version 3.0 (Cambridge: Harvard Yenching Institute, April 2005), <http://www.fas.harvard.edu/~chgis>. 23
- 5 Human and water boundaries in Hubei, 1820. Source: China Historical Geographic Information System, version 4.0 (Cambridge: Harvard Yenching Institute, April 2007), <http://www.fas.harvard.edu/~chgis/>. 24
- 6 The Nanmu Temple in the Zibeiyan area. Photo by the author in 2007. 61
- 7 The Miaohui—the Moon Festival—in the Zibeiyan area (the border area between Jianli and Honghu). Photo by the author in 2007. 62
- 8 Jiaopai 茭簰 in Mianyang Prefecture in the eighteenth century. Source: *Hubei anxiang yundao shuili ji'an* 湖北安襄鄖道水利集案 [*Leading Cases of Anxiangyun Dao in Hubei*], compiled by Wang Gai and Zhang Zhiyun, 10B–11A, in *Zhonghua shanshui zhi congkan* 中華山水志叢刊 [*A Collection of Gazetteers of Mountains and Waters of China*], ed. Shi Guangming, Dong Guanghe and Yang Guanghui (Beijing: Xianzhuang shuju, 2004), 17: 473–474. 74
- 9 Yongzheng emperor's decree on agricultural production, 1727. Courtesy of First Historical Archives of China. 87
- 10 The official *yuan* and people's *yuan* in Hanchuan County. Source: Adapted from “*Yuan* in Hanchuan County,” in Yu Changlie, *Chubei shuili difang jiyao* 楚北水利堤防紀要 [*Dike Management in Hubei*] (Hubei: Hubei fanshu keben, 1865), 1: 51–52. 90
- 11 Hydraulic hierarchy in Bailü *yuan* in Jiangling County in Ming-Qing times. Source: “Jiangling Bailü *yuan* *yuan* *shou* *zong* *ying* *ce*,” cited in Peng and Zhang, *Mingqing changjiang liuyu nongyeshuili yanjiu*, 207. The source is not clear about the precise period of the data, but it is likely from the late Ming and early Qing (around 1600s). 92
- 12 Portrait of the Qianlong emperor in ceremonial armor on horseback, 1739 or 1758, by Giuseppe Castiglione. Source: Pamela Kyle Crossley, *A Translucent*

- Mirror: History and Identity in Qing Imperial Ideology* (University of California Press, 1999), 272–276, https://upload.wikimedia.org/wikipedia/commons/d/d4/The_Qianlong_Emperor_in_Ceremonial_Armour_on_Horseback.jpg 108
- 13 Ayusi on Horseback (in the eighteenth century) 阿玉錫持矛蕩寇圖 (detail), by Giuseppe Castiglione. Source: http://commons.wikimedia.org/wiki/File:Langshiming_mao.jpg. 109
- 14 One Hundred Horses 百駿圖 (detail), dated to 1728, by Giuseppe Castiglione. Source: Metropolitan Museum of Art (<http://www.metmuseum.org/art/collection/search/44632>). 110
- 15 Jingzhou garrison and its horse pasturelands. Source: 1820 historical data, “CHGIS, Version 3.0” (Cambridge: Harvard Yenching Institute, April 2007), <http://www.fas.harvard.edu/~chgis/>. 112
- 16 Jingzhou garrison. Source: *Jingzhou fuzhi* (1880), Figure 2. 114
- 17 The eight Banner horse pasturelands of the Jingzhou garrison. Source: Drawn by author based on Table 12. 116
- 18 The administration of Hubei during the Taiping Rebellion. Source: Modified from Hua Qiang, *Taiping tianguo dili zhi* 太平天國地理志 [*A Geographical catalog of the Taiping Rebellion*] (Nanning: Guangxi renmin chubanshe, 1991), 68. 142
- 19 Forts in Zhushan County 竹山縣寨堡全圖 (Jiaqing reign). Source: *Zhushan xianzhi* 竹山縣志 [*Gazetteer of Zhushan County*] (1807), 1: 58. 149
- 20 Historical watermarks from the 1870 Yangzi flood on the two poles in the Huangling Temple. Photo by the author in 2015. 175
- 21 The Wancheng dike during the Qing. Source: Ni, *Jingzhou wancheng dizhi*, 1: 42–43. 183
- 22 The small Zekou, the big Zekou, and the Han River in Qianjiang County during the Daoguang reign (1820–1850). Source: Modified from Yu, *Chubei shuili difang jiyao* 1: 40–41. 190
- 23 Wanshou Pagoda in Jingzhou, Hubei, on the bank of the Yangzi River. Photo by the author in 2015. 196
- 24 Wangshou Pagoda in Jingzhou (the lower part). Photo by the author in 2015. 197
- 25 The Jinshui sluice stele. Photo by the author in 2018. 203
- 26 Illustration of dredging tools. Source: Yu, *Chubei shuili difang jiyao* 2: 38. 208
- 27 *Jianghan gandiyilan* 江漢幹堤一覽 [The dikes along the Yangzi and the Han Rivers] (1947). Source: Xingzhengyuan xinwen ju 行政院新聞局, *Yangzi jiang, luanhe, baihe ganzhiliu dukou fudi gongcheng* 揚子江、灤河、白河幹支流堵口復堤工程 [*The Projects of Sealing and Restoring Dikes of the Main and Branch Rivers of the Yangzi, Luanhe, and Baihe*] (1947), 8–9. 209
- 28 The formation of the Nanding yuan 南鼎埧. Source: Nanxianzhi bianweihui, *Nanxian zhi* 南縣志 [*The Gazetteer of Nanxian*] (Changsha: Hunan renmin chubanshe, 1988), 194. 213

Tables

- 1 Flood frequency in Hubei from the Eastern Han to the Republican period. Source: Huang Limin and Liu Chengwu, “Hubeisheng jindai honglao zaihai de tedian jiqi chengyin fenxi 湖北省近代洪澇災害的特點及其成因分析 [The Characteristics and Reasons of Floods in Modern Hubei],” *Huazhong shifan daxue xuebao* 40, no. 1 (2006): 115. Huang and Liu calculated the frequency based on data from *Hubei sheng ziran zaihai lishi ziliao* 湖北省自然災害歷史資料 (*Historical Records of Natural Disasters in Hubei Province*), compiled by Hubeisheng wenshi yanjiu guan (Wuhan: Hubeisheng wenshi yanjiu guan, 1955), 5: 5. 32
- 2 Temples in the *yuan* of Qianjiang County during the Ming-Qing period. Source: *Qianjiang xianzhi xu* (1879), 7: 1–9, in *Zhongguo difangzhi jicheng*, 46: 411–415. 51
- 3 Temples in Mianyang Prefecture during the Ming dynasty. Source: *Mianyang zhouzhi* 沔陽州志 [*Gazetteer of Mianyang Prefecture*] (1530), 10: 1–6, in *Zhongguo fangzhi congshu*, 338: 221–232. 52
- 4 Temples in Jingzhou during and before the reign of the Qianlong emperor (1736–1796) Source: *Jingzhou fuzhi* (1757), 81–86. According to these records, in total there were around 140 temples and monasteries in Jingzhou, either extant or destroyed, built mostly during Ming times. 53
- 5 Temples in Qianjiang County before and during the reign of the Kangxi emperor (1660–1722). Source: *Qianjiang xianzhi* (1694), 6: 12–33, in *Zhongguo difangzhi jicheng*, 46: 101–111. 55
- 6 Locations of tombs in Qianjiang County before and during the reign of the Kangxi emperor (1660–1722). Source: *Qianjiang xianzhi* (1694), 8: 7–16, in *Zhongguo difangzhi jicheng*, 46: 129–134. 56
- 7 Deities and associated temples in Qianjiang County in late Qing. Source: This table is modified from Lu, “Tai, yuan, and dadi”; *Qianjiang xianzhi* (1694), 6: 1–34, in *Zhongguo difangzhi jicheng*, 46: 95–112; *Qianjiang xianzhi xu* (1879), 7: 1–9, in *Zhongguo difangzhi jicheng*, 46: 411–415; *Peishi zupu* 裴氏族譜 [*The Genealogy of Pei Lineage*] (n.d., n.p.), 178–180. 58
- 8 Comparison of disaster years and related disaster relief during the Qing dynasty. Source: Adapted from Zhang Guoxiong, “Jianghan pingyuan de hanlao zaihai yu yuantian shengchan 江漢平原的旱澇災害與垸田生產 [The Droughts and Floods of the Jianghan Plain and the Agricultural Production in the Yuan],” *Zhongguo nongshi* 1 (1990), chart 7. I modified the data from Zhang’s original chart, particularly that of the Kangxi and Yongzheng reigns, based on sources of disasters in *Hubei jin wubai nian lai lishi qihou ziliao*. 84

- 9 Yuan zones in Qianjiang in the early Qing dynasty. Source: *Qianjiang xianzhi* (1694), 10: 60. 95
- 10 Population growth from the reign of the Kangxi emperor to the reign of the Jiaqing emperor. Source: Adapted from Zhang Jianmin, “Qingdai jianghan-dongting huqu diyuan nongtian de fazhan jiqi zonghe kaocha 清代江漢—洞庭湖區堤垸農田的發展及其綜合考察 [The Development of Jianghan-Dongting Lake Yuan Fields of the Qing Dynasty],” *Zhongguo nongshi* 2 (1987), table 4. 100
- 11 The number of yuan in counties/prefectures during the Ming-Qing periods. Source: *Jianli xianzhi* (1872), 11: 18, 20; *Qianjiang xianzhi* (1694), 10: 60; *Qianjiang xianzhi xu* (1879), 3: 11–30; *Mianyang zhoushi* (1530), 8: 4, in *Zhongguo fangzhi congshu*, 338: 188; *Mianyang zhoushi* (1894), 3: 34–35; *Jingzhou fuzhi* (1757), 12: 1–14; *Jingzhou fuzhi* (1880), 20: 2–21; *Tianmen xianzhi* (1765), 6: 6–13, *Hanchuan xianzhi* (1873), 9: 7, 34. 101
- 12 The horse pasturelands of the Jingzhou garrison. Source: *Daqing shili huidian* (1818), 647: 113. 115
- 13 Forts in Hubei counties in the early nineteenth century. Source: Modified from Yang Guo’an, “Shehui dongdang yu qingdai hubei xiangcun zhong de zhaibao 社會動盪與清代湖北鄉村中的寨堡 [Social Turmoil and zhai/bao in Rural Hubei of Qing],” *Wuhan daxue xuebao* 54, no. 5 (2001): 576. 149
- 14 Areas of flood and drought in 1856 and 1858 mentioned in Hu Linyi’s memorials. Source: Hu Linyi, “Kanming gezhouxianwei beiyan qingxing qi fenbie huanzheng shu 堪明各州縣衛被淹情形乞分別徵疏 [A Memorial of Floods and Relief in Prefectures and Counties],” December 15, 1856, in *Hu wenzhonggong yiji* 胡文忠公遺集 [A Compilation of Hu Linyi’s Writings] (1864), 26: 3–5; Hu Linyi, “Kanming gezhouxian yanhan qingxing fenbie huanzheng shu 堪明各州縣淹旱情形分別緩徵疏 [A Pledge for Flood Relief],” December 18, 1858, in *Hu wenzhonggong yiji*, 33: 1–3. 163
- 15 The condition of community granaries on the Jiangnan Plain during the reign of Jiaqing (r. 1796–1820), Daoguang (r. 1820–1850), and Xianfeng (r. 1851–1861). Source: *Hubei tongzhi* 湖北通志 [A General Gazetteer of Hubei] (Republic of China), 48: 6. 167
- 16 Comparative potential hydropower in major watersheds (May 1949). Source: “Zhongyuan gongye bu: qian quanguo shuili fadian gongcheng gaikuang ji huazhong kancechu gongzuo jihua baogao 中原工業部：前全國水力發電工程概況及華中勘測處工作計劃報告 [Central China Department of Industry: Previous National Hydropower Projects and Central China Survey Department Work Plan Report],” May 1949, Hubei Provincial Archives, gm 9–1-84. 225

- 17 Comparative hydropower resources in Central-South China (1945). Source: “Huazhong nanqu shuili fadian ziyuan tonji biao 華中南區水力發電資源統計表 [The Statistics of Central-South China Hydroelectricity Resources],” Hubei Provincial Archives, gm 9-1-000007-002-0004, gm 9-1-000007-002-0005, and gm 9-1-000007-002-0006. 226
- 18 Estimated gains from the proposed Sanxia project (US dollars per year). Source: Song, *Changjiang tongkao*, 234. 228