

CONTENTS

Foreword by George W. McCarthy

vii

Preface

xi

1 What Makes Infrastructure Special?

1

José A. Gómez-Ibáñez and Zhi Liu

INFRASTRUCTURE, GROWTH, AND POVERTY

2 Infrastructure Stocks and Macroeconomic Performance Across Countries

31

Gregory K. Ingram and Zhi Liu

3 Infrastructure and the Poor

59

Sameh Wahba, Somik Lall, and Hyunji Lee

INFRASTRUCTURE AND CITIES

4 Infrastructure and Urban Form

91

Edward L. Glaeser

5 Infrastructure and the Competitiveness of Cities

120

Daniel J. Graham, Daniel Hörcher, and Roger Vickerman

INVESTMENT APPRAISAL, BIASES, AND POLITICS

6 The Development of Evaluation Methods for Infrastructure Projects

143

Don H. Pickrell

7 How (In)Accurate Is Cost-Benefit Analysis? Data, Explanations, and Suggestions for Reform

174

Bent Flyvbjerg and Dirk W. Bester

8 Infrastructure's Narrow Passage: Between Perverse Excess and Perverse Deficit

197

John D. Donahue

INFRASTRUCTURE FINANCE

- | | | |
|----|---|-----|
| 9 | Infrastructure Finance | 213 |
| | <i>Akash Deep</i> | |
| 10 | Infrastructure Finance Through Land Value Capture | 239 |
| | <i>José A. Gómez-Ibáñez, Yu-Hung Hong, and Du Huynh</i> | |

REGULATION, PRIVATIZATION, AND STATE-OWNED ENTERPRISES

- | | | |
|----|---|-----|
| 11 | Infrastructure "Privatization": When Ideology Meets Evidence | 261 |
| | <i>Antonio Estache</i> | |
| 12 | Price Cap Regulation of Infrastructure | 285 |
| | <i>Sock-Yong Phang</i> | |
| 13 | Evolution of a Regulatory Regime: British Water Industry, 1989–2020 | 309 |
| | <i>Sir Ian Byatt</i> | |
| 14 | The Changing Role of State-Owned Enterprises | 332 |
| | <i>O. P. Agarwal and Rohit Chandra</i> | |

INFRASTRUCTURE PLANS AND REGIONAL INTEGRATION

- | | | |
|----|--|-----|
| 15 | Transport Infrastructure and the Integration of the European Union | 359 |
| | <i>José Manuel Vassallo</i> | |
| 16 | National Infrastructure Policies in Japan: Focusing on Railways | 383 |
| | <i>Fumitoshi Mizutani and Miwa Matsuo</i> | |
| 17 | High-Speed Rail and City Clusters in China | 414 |
| | <i>Zheng Chang</i> | |

COPING WITH RADICAL UNCERTAINTIES

- | | | |
|----|--|-----|
| 18 | Infrastructure and Climate Change | 437 |
| | <i>Henry Lee</i> | |
| 19 | New Technologies in Infrastructure | 461 |
| | <i>Shashi Verma</i> | |
| 20 | Infrastructure and the Sharing Economy | 477 |
| | <i>Andrew Salzberg and O. P. Agarwal</i> | |

<i>Acknowledgments</i>	FOREWORD	495
<i>Index</i>		497
<i>About the Editors and Contributors</i>		523
<i>About the Lincoln Institute of Land Policy</i>		531

It is hard to exaggerate the importance of infrastructure for sustaining human habitation on this planet. Without it, to quote Thomas Hobbes, "there is no place for Industry; because the fruit thereof is uncertain; and consequently no Culture of the Earth; no Navigation, nor use of the commodities that may be imported by Sea; no commodious Building; no Instrument of moving, and removing such things as require much force . . . And the life of man, solitary, poor, nasty, brutish, and short" (*Leviathan* 1651). Infrastructure is the physical manifestation of a social contract that liberates us from Hobbes's natural state. Whether we arrive at this social contract through an authoritarian government or through democratic processes is an important question, and this volume might provide the answer.

The Lincoln Institute is pleased to launch this book. It is one of the very few books about infrastructure published in the last decade. It could not come at a better time. Today, we are on the cusp of historic investments in global infrastructure, and we need this book desperately. The World Bank estimates that we will need more than US\$90 trillion in new infrastructure by 2050 to prepare cities for two billion new inhabitants, primarily in sprawling metropolises in low-income countries. This total investment exceeds the current annual gross domestic product of all the countries on the planet by around 20 percent. In order to formulate new sustainability strategies and policies for cities in Asia and Africa with exploding populations and for OECD countries and Latin America where city structures continue to evolve to adjust to innovations in technology and commerce, we need to understand the relationship between urbanization and infrastructure.

The world also faces new challenges associated with the climate crisis, the falling economy, and the fallout from COVID-19. If we want to prosper over the long term in spite of the climate crisis, the World Bank suggests we add another \$100 billion per year to the global investment noted above. If we are to live in a "new normal" shaped by global pandemics, infrastructure design and usage must be reshaped. It is important to understand the implications of all these challenges and opportunities, and this volume will help us to do just that.

For most of us in developed countries, infrastructure is invisible and is only noticed in its absence, or failure. We are chagrined when the power goes out