Infrastructure Planning and Finance: A Smart and Sustainable Guide for Local Practitioners

By Vicki Elmer and Adam Leigland, with contributions by Peter Hendee Brown, Peter Hall, Jeff Loux, and Jeffery Vincent

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Reviewed by Hannah Clark

Over the past decade, local, state, federal, and international entities have stressed the deteriorating state of infrastructure in the United States. While funding has often been named as the culprit, in *Infrastructure Planning and Finance: A Smart and Sustainable Guide for Local Practitioners*, Elmer and Leigland argue that the current failures in US infrastructure can also be attributed to a lack of coordination at the local, regional, and national scales to ensure that infrastructure investments reflect the dynamic and interconnected nature of today's society. This textbook provides a historical and current analysis of infrastructure in the United States, clearly identifying the array of challenges and proposing an integrated vision to shift thinking on traditional infrastructure paradigms. Elmer and Leigland look at infrastructure systems, challenges facing them, and potential solutions exclusively from the perspective of the local practitioner, by which the authors mean anyone from a city planner to a director of public works to a mayor. The authors do not assume a baseline understanding of infrastructure planning and finance. Rather, they use an approachable format to provide a basic understanding of policy, regulation, and the range of systems that build the base for infrastructure in the United States.

While the authors go to great lengths to cover the basics of infrastructure planning in the context of local practitioners, they also propose a paradigm shift in thinking on infrastructure provision. The authors describe this view as an interdisciplinary approach that analyzes infrastructure from a systems point of view. They write, "Just as smart growth has emphasized the conscious use of land, so smart and sustainable infrastructure emphasizes the conscious look at synergies between systems to develop infrastructure that respects the metabolism of the city (xvii)." This vision suggests that their description and analysis of infrastructure systems would extend beyond the basics of efficient and effective provision of infrastructure and provide the local practitioner with feasible pathways to establish this new infrastructure paradigm.

While the authors provide a comprehensive look at the state of infrastructure in the United States and the mechanisms governing its

development, financing, and implementation at the local level, they do not present an organized framework for realizing their bold vision. Specific examples of more sustainable and integrated infrastructure systems are provided throughout the text, but they are not woven together in a manner that highlights a pathway forward for local practitioners to fully engage and implement this type of systems thinking. The text reads as a step-by-step guide to properly developing, financing, and implementing a local infrastructure plan within the current regulations. While there is an emphasis on a shift to a new paradigm that promotes sustainable and ecologically sensitive infrastructure planning, these recommendations often come as afterthought rather than a theme throughout the entire text.

The textbook is organized into seven parts, meant to fully develop one's understanding of infrastructure planning at the local level and better understand the key actors and regulations at the local, state, and federal levels that guide these decisions. The first three parts of the book provide a history of infrastructure in the United States and then drill down into the nuts and bolts of developing, financing, and implementing an infrastructure plan. The remainder of the book is devoted to outlining the major infrastructure systems, identified by the authors as: environmental systems (water, wastewater, storm water, and solid waste), transportation (streets and streetscapes, autos and transit, airports, and ports), community facilities (public and quasi-public buildings, public schools, and parks), and energy and telecommunications. For each system the authors describe the historical and present-day context, the major elements influencing the system, financing options, the regulatory environment under which the system functions, and, finally, potential "innovations." This method of introducing each system is comprehensive for any newcomer to infrastructure planning. However, with respect to the authors' goals of setting forth a new paradigm for infrastructure planning, there is not always a clear jump from the business-as-usual approach to the integrated approach they emphasize as an essential shift to achieve sustainable and smart infrastructure systems.

To shift the infrastructure paradigm, Elmer and Leigland propose creating infrastructure programs that maximize the integrated and interdisciplinary synergies between infrastructure systems to respect the "metabolism of the city." The authors see the issue of climate change as the driving force behind this paradigm shift, and they are fairly consistent in making the linkages between the infrastructure systems and potential climate impacts. However, it may be difficult for the reader to translate certain systemic infrastructure issues into actionable change. While case studies and real-world examples help to illustrate certain recommendations, they do not reach the point of meeting Elmer and Leigland's vision of showcasing this new integrated, systems-thinking approach.

Infrastructure Planning and Finance: A Smart and Sustainable Guide for Local Practitioners is an essential handbook for understanding the basics of planning, developing, and executing local infrastructure programs. The clarity of the text makes it accessible to a range of local practitioners, and highlights the importance of breaking down silos between departments to develop comprehensive, integrated infrastructure systems. The book ambitiously looks to set forth a detailed approach to the basics of infrastructure regulation, finance, and planning, and it communicates a new paradigm for creating these infrastructure systems. While Elmer and Leigland are successful in the first aspect, there seems to exist a struggle to fully connect their vision for a new infrastructure paradigm to the examples put forth in the text. This book will likely be used across disciplines to understand the basics of infrastructure planning and finance. However, it will need to be supplemented by the works of their colleagues in the field of integrated infrastructure systems to gain a full understanding of this new, exciting vision for twenty-first-century infrastructure in the United States.

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