

Public Infrastructure Asset Management Second Edition

Public Budgeting Systems, Tenth Edition is the most comprehensive and balanced treatment of the current state of budgeting throughout all levels of the United States government. Current and prospective public managers, accordingly, often succeed or fail in their careers based in large part on whether they are intelligent consumers of financial data and have an adequate understanding of the budget process. By providing a detailed overview of all budgeting and financial management, the book enables students to gain an appropriate understanding of a complex topic.

This document contains guidance on a common framework for the discussion, development and implementation of highway infrastructure asset valuation by local highway authorities in the UK, in line with financial reporting and asset management requirements. Specific guidance is given for roads, segregated footpaths and cycle routes, and the document covers all fixed assets that form an essential part of the highway network, including earthworks and drainage, pavements and verges, fencing, lighting, street furniture, traffic management and

communication assets. It sets out a step by step procedure covering asset clarification, data requirements, calculation of Gross Replacement Cost, calculation of depreciation and impairment, reporting and monitoring of asset value; and examples are given in the appendices to illustrate methodology application.

TRB's National Cooperative Highway Research Program (NCHRP) Report 608: GASB 34 Methods for Condition Assessment and Preservation examines methodologies that integrate infrastructure inventory, condition assessments, minimum acceptable condition levels, and funding decisions with Governmental Accounting Standards Board (GASB) Statement No. 34 reporting requirements. The report also examines the operational and financial impacts of reporting under GASB 34. NCHRP Report 608 updates the findings contained in NCHRP Report 522: A Review of DOT Compliance with GASB 34 Requirements.

In many public sector organisations, there has been little or no adoption of a proactive asset management strategy. Where an extensive property portfolio exists, this can result in poor overall utilisation of the portfolio, exemplified by excessive vacant property or properties not being put to best use. In such situations there is a risk that the building stock deteriorates more rapidly than expected, leading to expensive maintenance and repair charges. Lack of a

proactive asset management strategy will impact on the services delivered by such organisations. Public Sector Property Asset Management covers all aspects of asset management in the public sector, including the overall concept, the development of asset management strategies and the implementation of asset management practices. It evaluates asset management strategies, processes and practices to show how effective management of property assets support business activities or service delivery functions. The reader will understand the importance of improving decision-making through the recognition of all costs of owning and operating those assets throughout their lifecycle, leading to improved business process activities or service delivery functions which greatly assist in meeting the social and economic objectives of such organisations. Written for all practitioners currently involved in asset management, the book will also be useful in the university environment, to those teaching, researching or learning about asset management in the public sector.

Asset valuation is an essential component of effective asset management. It is an important method to demonstrate proper management of public assets and effective utilization of government's budgets. Several government regulatory bodies mandate agencies to report their Tangible Capital Assets' (TCA) values within their annual statement. For example, the Canadian Public Sector

Accounting Board (PSAB), the Governmental Accounting Standard Board (GASB) and the New Zealand International Financial Reporting Standards (NZ IFRS), to name a few. Although some limited research has been conducted on incorporating asset value into asset management systems, there is no comprehensive work done to date to incorporate asset valuation in asset management. An integration method is imperative to manage assets in the most optimized cost-effective ways while maintaining or enhancing the value of these assets. Integrating asset value in asset management strengthens the asset management framework by integrating financial and engineering reporting. In addition, agencies have traditionally made investment decisions for individual assets separately. Independent management systems have traditionally been developed to manage assets, in particular pavements and bridges, the two main transportation assets. The lack of integration between management systems may be due to restrictions associated with funding and/or limitations to the agency's ability to compare data objectively across asset types. Deciding how to best allocate limited resources across these various asset classes to provide acceptable performance poses a persistent and difficult challenge for agencies. Asset value holds a great promise to be incorporated in asset management as a performance measure that translates infrastructure condition in monetary terms

that can be easily communicated and understood by the stakeholders (agency, policy makers, users, etc.). Therefore, asset value can be viewed as a common performance measure for integration mechanism between competing asset management systems. vi The objective of this research is to develop a methodology that integrates asset value as a performance measure in asset management decision making. This thesis introduces an asset management methodology that aims to arrive at an optimum value-based asset management plan of maintaining infrastructure assets taking into account budgetary and performance constraints. To achieve this objective, an Asset Value Index (AVI) that integrates asset value and value-driver performance measures and associated thresholds and Level of Service (LOS) requirements is proposed. The Multi-Attribute Utility Theory (MAUT) is used to develop the proposed AVI. In order to incorporate asset value in asset management and develop the AVI, a comprehensive and analytical analysis of various asset valuation methods is conducted. Based on the analysis, challenges of incorporating asset management are identified and addressed by the proposed Asset Value Loss ratio (AVL) as an integration means. To demonstrate the proposed methodology, a case study from the Ministry of Transportation of Ontario (MTO) second generation Pavement Management System (PMS2) is presented. An overview of

MTO road assets network is presented and analyzed. In addition, the various components of the proposed methodology are demonstrated through the case study. Furthermore, the outcome of the implementation of the proposed AVI is compared to optimization output, Do-Nothing output as well as needs assessment output. Furthermore, building on the proposed methodology presented, a value-based cross asset management methodology is presented using the AVI as a common integration measure. A case study of pavements and bridges based on data obtained from the 7th International Conference of Managing Pavement Assets (ICMPA 7) is used to illustrate the proposed methodology.

Samoa has suffered severe social and economic shocks. The outlook is challenging and subject to considerable uncertainty. Because of the tsunami's potentially severe impact on tourism, real GDP is likely to contract this financial year. The fiscal strategy to shoulder the rebuilding costs, minimize capacity risks, and ensure fiscal sustainability is appropriate. Prudent management of monetary policy and the basket peg will be critical. The Samoan economy will have to rely on the private sector for growth. Executive Directors welcome the commitment to structural reform.

This report analyses the issues, sets out the evidence, and makes

recommendations for moving forward rapidly to strengthen Greek public governance.

A number of dramatic changes are currently reshaping infrastructure, a sector that investors and asset managers have traditionally considered to be a safe harbor in the field of alternative investments. Understanding the future of infrastructure is indispensable to guaranteeing a sustainable future for our planet and the welfare of the world's population, and enhancing our knowledge of this asset class is one important step we can take toward reaching this crucial goal. This book collects a series of contributions by a group of Bocconi University researchers under the Antin IP Associate Professorship in Infrastructure Finance, which cover the key megatrends that are expected to reshape the way we think about infrastructure, and the implications for infrastructure investors and asset managers. Its goal is to improve and disseminate the culture of infrastructure among academics, professionals and policymakers. The main focus is on Europe and the European Union, and specifically on three key sectors: power and energy, transportation infrastructure, and telecoms / ICT.

Comprehensive and practical, Pavement Asset Management provides an essential resource for educators, students and those in public agencies and consultancies who are directly responsible for managing road and airport pavements. The book is comprehensive in the integration of activities that go into having safe and cost-effective pavements using the best technologies and management processes available. This is accomplished in seven major parts, and 42 component chapters, ranging from the evolution of pavement management to date requirements to determining needs and priority programming of rehabilitation and

maintenance, followed by structural design and economic analysis, implementation of pavement management systems, basic features of working systems and finally by a part on looking ahead. The most current methodologies and practical applications of managing pavements are described in this one-of-a-kind book. Real world up-to-date examples are provided, as well as an extensive list of references for each part.

Value Management is a philosophy, set of principles and a structured management methodology for improving organisational decision-making and value-for-money. The second edition builds on the success of the first edition by extending the integrated value philosophy, methodology and tool kit to describe the application of Value Management to the areas of service delivery, asset management, and, Programmes, in addition to Projects, products and processes. Value Management is a well-established methodology in the international construction industry, and in the UK has been endorsed as good practice in a range of government sponsored reports. In this book the authors have addressed the practical opportunities and difficulties of Value Management by synthesising the background, international developments, benchmarking and their own extensive consultancy and action research experience in Value Management to provide a comprehensive package of theory and practice. The second edition retains the structure of the first edition, covering methods and practices, frameworks of value and the future of value management. It has been thoroughly updated, and a number of new chapters added to encapsulate further extensions to current theory and practice. In particular, the new edition responds to: A range of recent UK industry and government publications; and most notably BS EN 16271:2012 - Value management: Functional expression of the need and functional performance specification; the imminent

update of BS EN 12973:2000 Value Management; BS EN 1325 Value Management – Vocabulary, Terms and definitions; the changes to "Value for Europe" governing the training and certification of Value Management in European Union countries; the UK Government's Management of Value (MoV) initiative, together with other leading reports, international guidance and standards on Value Management. Research in Value Management undertaken since publication of the first edition. Changes in Value Management practice particularly in Programmes and Projects. Developments in the theory of value, principally value for money measures, whole life value option appraisal, and benefits realisation. Initiatives in asset management initiatives covering the management of physical infrastructure, for example the recent launch of a suite of three standards under the generic title of BS ISO 55000: 2014 Asset Management, and its predecessor BSI PAS55 2008 "Asset Management: Specification For The Optimized Management Of Physical Assets" The second edition contains a dedicated chapter of exemplar case studies drawn from the authors' experience, selected to demonstrate the new areas of theory and practice. An Appendix includes an extensive set of tools and techniques of use in Value Management practice. Construction clients, including those in both the public and private sectors, and professionals such as construction cost consultants, quantity surveyors, architects, asset managers, construction engineers, and construction managers will all find Value Management of Construction Projects to be essential reading. It will also be of interest to researchers and students on construction related courses in Higher Education – particularly those at final year undergraduate and at Masters level. Worldwide there is a growing interest in efficient planning and the design, construction and maintenance of transportation facilities and infrastructure assets. The 3rd International

Conference on Transportation Infrastructure ICTI 2014 (Pisa, April 22-25, 2014) contains contributions on sustainable development and preservation of transportation infrastructure assets, with a focus on eco-efficient and cost-effective measures. Sustainability, Eco-efficiency and Conservation in Transportation Infrastructure Asset Management includes a selection of peer reviewed papers on a wide variety of topics: • Advanced modeling tools (LCA, LCC, BCA, performance prediction, design tools and systems) • Data management (monitoring and evaluation) • Emerging technologies and equipments • Innovative strategies and practices • Environmental sustainability issues • Eco-friendly design and materials • Re-use or recycling of resources • Pavements, tracks, and structures • Case studies Sustainability, Eco-efficiency and Conservation in Transportation Infrastructure Asset Management will be particularly of interest to academics, researchers, and practitioners involved in sustainable development and maintenance of transportation infrastructure assets.

This book gathers selected peer-reviewed papers from the 14th World Congress on Engineering Asset Management (WCEAM), which was held in Singapore on 28-31 July 2019, as well as papers presented during the 1st WCEAMOnline event which focused on the ramifications of Covid-19 on infrastructure systems. This book covers a wide range of topics in engineering asset management, including: asset management services provisioning; servitization; decision-making; asset management systems; industrial Internet of things; and vulnerability and resilience of infrastructure systems. The breadth and depth of these state-of-the-art, comprehensive proceedings make them an excellent resource for asset management practitioners, researchers and academics, as well as undergraduate and postgraduate students.

Urban water services are building blocks for healthy cities, and they require complex and expensive infrastructure systems. Most of the infrastructure is out of sight and tends to be taken for granted, but an infrastructure financing crisis looms in the United States because the systems are aging and falling behind on maintenance. A road map for public works and utility professionals, *Water, Wastewater, and Stormwater Infrastructure Management, Second Edition* provides clear and practical guidance for life-cycle management of water infrastructure systems. Grounded in solid engineering and business principles, the book explains how to plan, budget, design, construct, and manage the physical infrastructure of urban water systems. It blends knowledge from management fields such as facilities, finance, and maintenance with information about the unique technical attributes of water, wastewater, and stormwater systems. Addresses how to make a business case for infrastructure funding Demonstrates how to apply up-to-date methods for capital improvement planning and budgeting Outlines the latest developments in infrastructure asset management Identifies cutting-edge developments in information technology applied to infrastructure management Presents a realistic view of how risk management is applied to urban water infrastructure settings Explains the latest maintenance and operations methods for water, wastewater, and stormwater systems The author describes current thinking on best management practices and topics such as asset management, vulnerability assessment, and total quality management of infrastructure systems. Expanded and updated throughout, this second edition reflects the considerable advances that have occurred in infrastructure management over the past ten years. Useful as a reference and a professional development guide, this unique book offers tools to help you lower costs and mitigate the rate shocks associated with managing

infrastructure for growth, deterioration, and regulatory requirements. What's New in This Edition The latest infrastructure management and maintenance technologies Information on the inventories of systems and the configuration of infrastructure New design and construction methods such as building information modeling (BIM) New approaches to rate setting, accounting methods, and cost accounting to help you assess the full cost of infrastructure Advances in SCADA systems Expanded coverage of risk management and disaster preparedness Material on the use of GIS in water and sewer management New laws related to infrastructure, including the U.S. EPA's efforts to develop a distribution system rule

The goal of this dissertation research was to model risk in delivery, operation and maintenance phases of infrastructure asset management. More specifically, the two main objectives of this research were to quantify and measure financial risk in privatizing and operational risks in maintenance and rehabilitation of infrastructure facilities. To this end, a valuation procedure for valuing large-scale risky projects is proposed. This valuation approach is based on mean-risk portfolio optimization in which a risk-averse decision-maker seeks to maximize the expected return subject to downside risk. We showed that, in complete markets, the value obtained from this approach is equal to the value obtained from the standard option pricing approach. Furthermore, we introduced Coherent Valuation Procedure (CVP) for valuing risky projects in partially complete markets. This approach leads to a lower degree of subjectivity as it only requires one parameter to incorporate user's risk preferences. Compared to the traditional discounted cash flow analysis, CVP displays a reasonable degree of sensitivity to the discount rate, since only the risk-free rate is used to discount future cash flows. The application of this procedure on valuing a transportation public-private partnership is presented. Secondly, a risk-

based framework for prescribing optimal risk-based maintenance and rehabilitation (M & R) policies for transportation infrastructure is presented. These policies guarantee a certain performance level across the network under a predefined level of risk. The long-term model is formulated in the Markov Decision Process framework with risk-averse actions and transitional probabilities describing the uncertainty in the deterioration process. Conditional Value at Risk (CVaR) is used as the measure of risk. The steady-state risk-averse M & R policies are modeled assuming no budget restriction. To address the short-term resource allocation problem, two linear programming models are presented to generate network-level policies with different objectives. In the first model, decision-maker minimizes the total risk across the network, and in the second model, the highest risk to the network performance is minimized.

Finance and Development

Communities will need an estimated \$300 billion to \$1 trillion over the next 20 years to repair, replace, or upgrade aging drinking water & wastewater facilities; accommodate a growing pop'n.; & meet new water quality standards. This report examines: (1) how the amount of funds obtained by large public & private drinking water & wastewater utilities -- those serving populations greater than 10,000 -- through user charges & other local funding sources compare with their cost of providing service; (2) how such utilities manage existing capital assets & plan for needed capital improvements; & (3) what factors influence private companies' interest in assuming the operation or ownership of publicly owned drinking water & wastewater facilities. Tables.

Engineering Asset Management discusses state-of-the-art trends and developments in

the emerging field of engineering asset management as presented at the Fourth World Congress on Engineering Asset Management (WCEAM). It is an excellent reference for practitioners, researchers and students in the multidisciplinary field of asset management, covering such topics as asset condition monitoring and intelligent maintenance; asset data warehousing, data mining and fusion; asset performance and level-of-service models; design and life-cycle integrity of physical assets; deterioration and preservation models for assets; education and training in asset management; engineering standards in asset management; fault diagnosis and prognostics; financial analysis methods for physical assets; human dimensions in integrated asset management; information quality management; information systems and knowledge management; intelligent sensors and devices; maintenance strategies in asset management; optimisation decisions in asset management; risk management in asset management; strategic asset management; and sustainability in asset management.

Public Infrastructure Asset Management, Second Edition McGraw Hill Professional

Governments own a vast array of real property--from large stretches of land to public housing projects, from water distribution systems and roads to office buildings. Typically, management of public property is highly fragmented, with responsibility for each type of asset falling within a different agency or bureaucracy. In almost all countries, different classes of property are managed according to their own rules, often following traditional practices rather than any assessment of what type of management

is appropriate. Over the past decade, however, a new discipline has emerged that examines this important component of public wealth and seeks to apply standards of economic efficiency and effective organizational management. *Managing Government Property Assets* reviews and analyzes this recent wave of activity. The authors draw upon a wide variety of national and local practices, both in countries that have been leaders in management reforms and in countries just beginning to wrestle with the problem. This comparison reveals that the issues of public property management are surprisingly similar in different countries, despite striking differences in institutional contexts and policy solutions.

Major changes are taking place in the Chinese countryside as China rushes to modernize and urbanize its rural fabric. The transformation is improving the quality of life of rural inhabitants, but also brings about challenges as people strive to adjust. This book systematically examines the impact of change on the daily lives and activities of the residents of Sichuan Province, in China's South-west. It examines the themes of infrastructure, transport modes and preferences, sanitation, water conservation, earthquake and flood disaster preparedness, and the impact these have on villager behavior and quality of life. This book is an essential reference guide for graduate students and practitioners in the fields of rural planning, renewal, and construction. The pace of recovery has disappointed in recent years, and downside risks have increased, including from heightened geopolitical tensions. These increased risks make

it a priority to raise actual and potential growth. In a number of economies, an increase in public infrastructure investment can also provide support to demand and help boost potential output. And in advanced economies as well as emerging and developing economies there is a general, urgent need for structural reforms to strengthen growth potential or make growth more sustainable. The four individual chapters examine the overall global outlook, the prospects for individual countries and regions, the benefits of increased public infrastructure investment in terms of raising output, and the extent to which global imbalances have narrowed significantly since their peak in 2006.

No person or place is immune from disasters or disaster-related losses. Infectious disease outbreaks, acts of terrorism, social unrest, or financial disasters in addition to natural hazards can all lead to large-scale consequences for the nation and its communities. Communities and the nation thus face difficult fiscal, social, cultural, and environmental choices about the best ways to ensure basic security and quality of life against hazards, deliberate attacks, and disasters. Beyond the unquantifiable costs of injury and loss of life from disasters, statistics for 2011 alone indicate economic damages from natural disasters in the United States exceeded \$55 billion, with 14 events costing more than a billion dollars in damages each. One way to reduce the impacts of disasters on the nation and its communities is to invest in enhancing resilience--the ability to

prepare and plan for, absorb, recover from and more successfully adapt to adverse events. *Disaster Resilience: A National Imperative* addresses the broad issue of increasing the nation's resilience to disasters. This book defines "national resilience", describes the state of knowledge about resilience to hazards and disasters, and frames the main issues related to increasing resilience in the United States. It also provide goals, baseline conditions, or performance metrics for national resilience and outlines additional information, data, gaps, and/or obstacles that need to be addressed to increase the nation's resilience to disasters. Additionally, the book's authoring committee makes recommendations about the necessary approaches to elevate national resilience to disasters in the United States. Enhanced resilience allows better anticipation of disasters and better planning to reduce disaster losses-rather than waiting for an event to occur and paying for it afterward. *Disaster Resilience* confronts the topic of how to increase the nation's resilience to disasters through a vision of the characteristics of a resilient nation in the year 2030. Increasing disaster resilience is an imperative that requires the collective will of the nation and its communities. Although disasters will continue to occur, actions that move the nation from reactive approaches to disasters to a proactive stance where communities actively engage in enhancing resilience will reduce many of the broad societal

and economic burdens that disasters can cause.

The Latest Tools and Techniques for Managing Infrastructure Assets Fully updated throughout, this practical resource provides a proven, cost-effective infrastructure asset management framework that integrates planning, design, construction, maintenance, rehabilitation, and renovation. Public Infrastructure Asset Management, Second Edition, describes the most current methodologies for effectively managing roads, bridges, airports, utility services, water and waste facilities, parks, public buildings, and sports complexes. This comprehensive guide covers information management and decision support systems, including proprietary solutions and new technological developments such as cloud storage. The book discusses total quality management, economics, life-cycle analysis, and maintenance, rehabilitation, and reconstruction programming. Up-to-date examples and real-world case studies illustrate the practical applications of the concepts presented in this thoroughly revised reference. This new edition features: Planning, needs assessment, and performance indicators Database management, data needs, and analysis Inventory, historical, and environmental data In-service monitoring and evaluation data Performance modeling and failure analysis Design for infrastructure service life Construction Maintenance, rehabilitation, and reconstruction strategies, policies, and treatment alternatives

Dealing with new or alternate concepts Prioritization, optimization, and work programs Integrated infrastructure asset management systems Visual IMS: an illustrative infrastructure management system and applications Available asset management system and commercial off-the-shelf providers Benefits of implementing an asset management system Sustainability, environmental stewardship, and asset management Future directions for infrastructure asset management

This proceedings of the 13th World Congress on Engineering Asset Management covers a range of topics that are timely, relevant and practically important in the modern digital era towards safer, cost effective, efficient, and secure engineered assets such as production and manufacturing plants, process facilities, civil structures, equipment, machinery, and infrastructure. It has compiled some pioneering work by domain experts of the global Engineering Asset Management community representing both public and private sectors. The professional coverage of the book includes: Asset management in Industry 4.0; Standards and models; Sustainable assets and processes; Life cycle perspectives; Smart and safer assets; Applied data science; Workplace safety; Asset health; Advances in equipment condition monitoring; Critical asset processes; and Innovation strategy and entrepreneurship The breadth and depth of these state-

of-the-art, comprehensive proceedings make them an excellent resource for asset management practitioners, researchers and academics, as well as undergraduate and postgraduate students.

This book is focused on techniques, technologies a

Asset management is becoming increasingly important to an organization's strategy, given its effects on cost, production, and quality. No matter the sector, important decisions are made based on techniques and theories that are thought to optimize results; asset management models and techniques could help maximize effectiveness while reducing risk. Optimum Decision Making in Asset Management posits that effective decision making can be augmented by asset management based on mathematical techniques and models. Resolving the problems associated with minimizing uncertainty, this publication outlines a myriad of methodologies, procedures, case studies, and management tools that can help any organization achieve world-class maintenance. This book is ideal for managers, manufacturing engineers, programmers, academics, and advanced management students.

The definitive guide on fund and asset managers worldwide Fund Managers: The Complete Guide is an all-encompassing overview of fund and asset managers around the globe. The only comprehensive guide on the subject, this book covers

both the fund manager and the market as a whole while providing insights from current and future fund managers and leaders in the technology industry from the UK, EU and US. Focused examination of the fund managers and their investors – the categories of manager, the asset classes they participate in, how they are using technology and their views on the market – complements a wider survey of the market that includes upcoming changes to regulation, taxation and political shifts in the Western world. The asset management industry continues to undergo significant changes that rise from the Global Financial Crisis and its recovery, the recent technology boom and political fluctuations that have altered the way business is conducted in financial markets around the world. Questions concerning China and Asia's rise, Trumpian influence in America and post-Brexit UK-EU relations underscore the contemporary relevance of Fund Managers: The Complete Guide to current and future discourse within the industry. This important volume: Explains worldwide roles, purposes and operations of asset managers including how local culture influences their strategies Examines different types of assets and asset-management strategies Investigates the influence of macroeconomic and political factors such as governance and regulation, international taxation, anti-globalisation and populism Illustrates the impact of technology and its disruptive products and players Describes the

different types of investor investing in the managers' funds and how they view the industry Future-gazes over the ten years and beyond for the industry Fund Managers: The Complete Guide is the authoritative resource for anyone who requires an overview of the asset management industry and up-to-date insights on current and future trends and practices. The book also complements the author's earlier work Funds: Private Equity, Hedge and All Core Structures. Land-based financing of urban infrastructure is growing in importance in the developing world. Why is it so difficult to finance urban infrastructure investment, when land values typically increase by more than the cost of investment? Unlocking Land Values to Finance Urban Infrastructure examines the theory underlying different instruments of land-based finance, such as betterment levies, developer exactions, impact fees, and the exchange of publicly owned land assets for infrastructure. It provides a wealth of case-study illustrations of how different land-based financing tools have been implemented, and the lessons learned from these experiences. This practical guide is designed to help expand the role of land-based financing in urban capital budgets in a way that strengthens urban infrastructure finance and urban land markets. "Gives a broad view of trends and techniques in infrastructure financing around the world today. The title considers a wide range of projets including transport, water

systems, power and toll road privatisation. Themes include the rising need for infrastructure investment, the quality of country infrastructure, government budget limitations and benefits and risks of investment." - publisher's website.

Engineering Asset Management 2010 represents state-of-the art trends and developments in the emerging field of engineering asset management as presented at the Fifth World Congress on Engineering Asset Management (WCEAM). The proceedings of the WCEAM 2010 is an excellent reference for practitioners, researchers and students in the multidisciplinary field of asset management, covering topics such as: Asset condition monitoring and intelligent maintenance Asset data warehousing, data mining and fusion Asset performance and level-of-service models Design and life-cycle integrity of physical assets Education and training in asset management Engineering standards in asset management Fault diagnosis and prognostics Financial analysis methods for physical assets Human dimensions in integrated asset management Information quality management Information systems and knowledge management Intelligent sensors and devices Maintenance strategies in asset management Optimisation decisions in asset management Risk management in asset management Strategic asset management Sustainability in asset management Infrastructure Planning and Finance is a non-technical guide to the engineering, planning, and financing of major infrastructure projects in the United States, providing both step-by-step guidance, and a broad overview of the technical, political, and

economic challenges of creating lasting infrastructure in the 21st Century. Infrastructure Planning and Finance is designed for the local practitioner or student who wants to learn the basics of how to develop an infrastructure plan, a program, or an individual infrastructure project. A team of authors with experience in public works, planning, and city government explain the history and economic environment of infrastructure and capital planning, addressing common tools like the comprehensive plan, sustainability plans, and local regulations. The book guides readers through the preparation and development of comprehensive plans and infrastructure projects, and through major funding mechanisms, from bonds, user fees, and impact fees to privatization and competition. The rest of the book describes the individual infrastructure systems: their elements, current issues and a 'how-to-do-it' section that covers the system and the comprehensive plan, development regulations and how it can be financed. Innovations such as decentralization, green and blue-green technologies are described as well as local policy actions to achieve a more sustainable city are also addressed. Chapters include water, wastewater, solid waste, streets, transportation, airports, ports, community facilities, parks, schools, energy and telecommunications. Attention is given to how local policies can ensure a sustainable and climate friendly infrastructure system, and how planning for them can be integrated across disciplines.

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