Quantifying And Controlling Catastrophic Risks

The impacts of natural and man-made disasters have increased exponentially over the past few decades. Moreover, with our global interconnectedness and the growing scale of disasters, today's catastrophic disasters can have regional, national, and even global economic consequences. Following in the tradition of the successful first edition, Hazards Analysis: Reducing the Impact of Disasters, Second Edition provides a structure and process for understanding the nature of natural and human-caused disasters. Stressing the role of hazard risk management for public, private, and nonprofit organizations, the author and expert contributors cover problem solving, risk analysis, and risk communications to ensure readers are in a position to identify key problems associated with hazards and the risks that they present. The book details a systematic process of hazards identification, vulnerability determination, and consequence assessment for the natural, built, and human environment. Using a cross-disciplinary approach, this book effectively demonstrates how to use the results of vulnerability assessment, spatial analysis, and community planning to reduce adverse disaster outcomes and foster social, economic, and environmental sustainability. Throughout, the book stresses that hazards analysis is not an isolated process but one that must engage the local community. Complete with clearly set objectives, key terms, discussion questions, satellite images and maps, and ancillary websites for further study, this authoritative guide covers every element of the hazard analysis process in a step-by-step format. Hazards Analysis presents time-proven strategies for building sustainable communities, identifying and prioritizing risks, and establishing successful disaster prevention and relief strategies prior to a disaster.

?This book describes argumentative tools and strategies that can be used to guide policy decisions under conditions of great uncertainty. Contributing authors explore methods from philosophical analysis and in particular argumentation analysis, showing how it can be used to systematize discussions about policy issues involving great uncertainty. The first part of the work explores how to deal in a systematic way with decision-making when there may be plural perspectives on the decision problem, along with unknown consequences of what we do. Readers will see how argumentation tools can be used for prioritizing among uncertain dangers, for determining how decisions should be framed, for choosing a suitable time frame for a decision, and for systematically choosing among different decision options. Case studies are presented in

the second part of the book, showing argumentation in practice in the areas of climate geoengineering, water governance, synthetic biology, nuclear waste, and financial markets. In one example, argumentation analysis is applied to proposals to solve the climate problem with various technological manipulations of the natural climate system, such as massive dispersion of reflective aerosols into the stratosphere. Even after a thorough investigation of such a proposal, doubt remains as to whether all the potential risks have been identified. In such discussions, conventional risk analysis does not have much to contribute since it presupposes that the risks have been identified, whereas the argumentative approach to uncertainty management can be used to systematize discussions.

Every day in the United States, over two million men, women, and children step onto an aircraft and place their lives in the hands of strangers. As anyone who has ever flown knows, modern flight offers unparalleled advantages in travel and freedom, but it also comes with grave responsibility and risk. For the first time in its history, the Federal Aviation Administration has put together a set of easy-to-understand guidelines and principles that will help pilots of any skill level minimize risk and maximize safety while in the air. The Risk Management Handbook offers full-color diagrams and illustrations to help students and pilots visualize the science of flight, while providing straightforward information on decision-making and the risk-management process.

This publication serves as a roadmap for exploring and managing climate risk in the U.S. financial system. It is the first major climate publication by a U.S. financial regulator. The central message is that U.S. financial regulators must recognize that climate change poses serious emerging risks to the U.S. financial system, and they should move urgently and decisively to measure, understand, and address these risks. Achieving this goal calls for strengthening regulators' capabilities, expertise, and data and tools to better monitor, analyze, and quantify climate risks. It calls for working closely with the private sector to ensure that financial institutions and market participants do the same. And it calls for policy and regulatory choices that are flexible, open-ended, and adaptable to new information about climate change and its risks, based on close and iterative dialogue with the private sector. At the same time, the financial community should not simply be reactive—it should provide solutions. Regulators should recognize that the financial system can itself be a catalyst for investments that accelerate economic resilience and the transition to a net-zero emissions

economy. Financial innovations, in the form of new financial products, services, and technologies, can help the U.S. economy better manage climate risk and help channel more capital into technologies essential for the transition. https://doi.org/10.5281/zenodo.5247742

Risk Management Handbook

Occupational Health and Safety in the Care and Use of Nonhuman Primates

Encyclopedia of Criminal Justice Ethics

FAA-H-8083-2

Tying Flood Insurance to Flood Risk for Low-Lying Structures in the Floodplain

Feeding Everyone No Matter What

In today's rapidly changing business environment, strong influence of globalization and information technologies drives practitioners and researchers of modern supply chain management, who are interested in applying different contemporary management paradigms and approaches, to supply chain process. This book intends to provide a guide to researchers, graduate students and practitioners by incorporating every aspect of management paradigms into overall supply chain functions such as procurement, warehousing, manufacturing, transportation and disposal. More specifically, this book aims to present recent approaches and ideas including experiences and applications in the field of supply chains, which may give a reference point and useful information for new research and to those allied, affiliated with and peripheral to the field of supply chains and its management.

This Intergovernmental Panel on Climate Change Special Report (IPCC-SREX) explores the challenge of understanding and managing the risks of climate extremes to advance climate change adaptation. Extreme weather and climate events, interacting with exposed and vulnerable human and natural systems, can lead to disasters. Changes in the frequency and severity of the physical events affect disaster risk, but so do the spatially diverse and temporally dynamic patterns of exposure and vulnerability. Some types of extreme weather and climate events have increased in frequency or magnitude, but populations and assets at risk have also increased, with consequences for disaster risk. Opportunities for managing risks of weather- and climate-related disasters exist or can be developed at any scale, local to international. Prepared following strict IPCC procedures, SREX is an invaluable assessment for anyone interested in climate extremes, environmental disasters and adaptation to climate change, including policymakers, the private sector and academic researchers.

On November 19, 2001 the Transportation Security Administration (TSA) was created as a separate entity within the U.S. Department of Transportation through the Aviation and Transportation Security Act. The act also mandated that all

checked baggage on U.S. flights be scanned by explosive detection systems (EDSs) for the presence of threats. These systems needed to be deployed quickly and universally, but could not be made available everywhere. As a result the TSA emphasized the procurement and installation of certified systems where EDSs were not yet available. Computer tomography (CT)-based systems became the certified method or place-holder for EDSs. CT systems cannot detect explosives but instead create images of potential threats that can be compared to criteria to determine if they are real threats. The TSA has placed a great emphasis on high level detections in order to slow false negatives or missed detections. As a result there is abundance in false positives or false alarms. In order to get a better handle on these false positives the National Research Council (NRC) was asked to examine the technology of current aviation-security EDSs and false positives produced by this equipment. The ad hoc committee assigned to this task examined and evaluated the cases of false positives in the EDSs, assessed the impact of false positive resolution on personnel and resource allocation, and made recommendations on investigating false positives without increase false negatives. To complete their task the committee held four meetings in which they observed security measures at the San Francisco International Airport, heard from employees of DHS and the TSA. Engineering Aviation Security Environments--Reduction of False Alarms in Computed Tomography-Based Screening of Checked Baggage is the result of the committee's investigation. The report includes key conclusions and findings, an overview of EDSs, and recommendations made by the committee.
Winner of the Project Management Institute's David I. Cleland Project Management Literature Award 2010 It's no wonder that project managers spend so much time focusing their attention on risk identification. Important projects tend to be time constrained, pose huge technical challenges, and suffer from a lack of adequate resources. Identifying and Managing Project Risk, now updated and consistent with the very latest Project Management Body of Knowledge (PMBOK)® Guide, takes readers through every phase of a project, showing them how to consider the possible risks involved at every point in the process. Drawing on real-world situations and hundreds of examples, the book outlines proven methods, demonstrating key ideas for project risk planning and showing how to use high-level risk assessment tools. Analyzing aspects such as available resources, project scope, and scheduling, this new edition also explores the growing area of Enterprise Risk Management. Comprehensive and completely up-to-date, this book helps readers determine risk factors thoroughly and decisively...before a project gets derailed.
Proceedings of the International Conference on Offshore Structures Engineering Held at COPPE, Federal University of Rio de Janeiro, Brazil, September 1977
Emerging Risks in the 21st Century
An Agenda for Action

Quantitative Microbial Risk Assessment
Catastrophe Modeling
A New Approach to Managing Risk

As the culminating volume in the DCP3 series, volume 9 will provide an overview of DCP3 findings and methods, a summary of messages and substantive lessons to be taken from DCP3, and a further discussion of cross-cutting and synthesizing topics across the first eight volumes. The introductory chapters (1-3) in this volume take as their starting point the elements of the Essential Packages presented in the overview chapters of each volume. First, the chapter on intersectoral policy priorities for health includes fiscal and intersectoral policies and assembles a subset of the population policies and applies strict criteria for a low-income setting in order to propose a "highest-priority" essential package. Second, the chapter on packages of care and delivery platforms for universal health coverage (UHC) includes health sector interventions, primarily clinical and public health services, and uses the same approach to propose a highest priority package of interventions and policies that meet similar criteria, provides cost estimates, and describes a pathway to UHC.

Federal, state, county, and municipal police forces all have their own codes of conduct, yet the ethics of being a police officer remain perplexing and are often difficult to apply in dynamic situations. The police misconduct statistics are staggering and indicate that excessive use of force comprises almost a quarter of misconduct cases, with sexual harassment, fraud/theft, and false arrest being the next most prevalent factors. The ethical issues and dilemmas in criminal justice also reach deep into the legal professions, the structure and administration of justice in society, and the personal characteristics of those in the criminal justice professions. The Encyclopedia of Criminal Justice Ethics includes A to Z entries by experts in the field that explore the scope of ethical decision making and behaviors within the spheres of criminal justice systems, including policing, corrections, courts, forensic science, and policy analysis and research. This two-volume set is available in both print and electronic formats. Features: Entries are authored and signed by experts in the field and conclude with references and further readings, as well as cross references to related entries that guide readers to the next steps in their research journeys. A Reader's Guide groups related entries by broad topic areas and themes, making it easy for readers to quickly identify related entries. A Chronology highlights the development of the field and places material into historical context; a Glossary defines key terms from the fields of law and ethics; and a Resource Guide provides lists of classic books, academic journals, websites and associations focused on criminal justice ethics. Reports and statistics from such sources as the FBI, the United Nations, and the International Criminal Court are included in an appendix. In the electronic version, the Reader's Guide, index, and cross references combine to provide effective search-and-browse capabilities. The Encyclopedia of Criminal Justice Ethics provides a general, non-technical yet comprehensive resource for students who wish to understand the complexities of

criminal justice ethics.

Provides the latest QMRA methodologies to determine infection riskcause by either accidental microbial infections or deliberateinfections caused by terrorism • Reviews the latest methodologies to quantify at everystep of the microbial exposure pathways, from the first release ofa pathogen to the actual human infection • Provides techniques on how to gatherinformation, on how each microorganism moves through theenvironment, how to determine their survival rates on variousmedia, and how people are exposed to the microorganism • Explains how QMRA can be used as a tool to measure theimpact of interventions and identify the best policies andpractices to protect public health and safety • Includes new information on genetic methods • Techniques use to develop risk models for drinkingwater, groundwater, recreational water, food and pathogens in theindoor environment

Approaches to Enterprise Risk Management is a multi-author book written by leading experts in the field of risk management including Aswath Damodoran, John C. Groth and David Shimko. It is a valuable tool that enables you to assess the potential business threats, both from within your organization and from external sources. It comprises over 25 chapters covering the range of risks your organization might face including financial, strategic, operational risks. It offers you over 20 practical step-by-step guides on the required steps to cope with any detrimental event that could impact on your company's financial health. There are also a range of checklists including Balancing Hedging Objectives with Accounting Rules (FAS 133) , Creating a Risk Register, What Is Forensic Auditing? And Managing and Auditing the Risk of Business Interruption, Captive Insurance Companies: How to Reduce Your Costs, Hedging Credit Risk-Case Studies and Strategies.

Theory, Methods, and Applications

Risk Management for Design and Construction

Offshore Structures Engineering

Improving Health and Reducing Poverty

The Economic Consequences of a Hotter Planet

Managing Climate Risk in the U.S. Financial System

Risk analysis is not a narrowly defined set of applications. Rather, it is widely used to assess and manage a plethora of hazards that threaten dire implications. However, too few people actually understand what risk analysis can help us accomplish and, even among experts, knowledge is often limited to one or two applications. Explaining Risk Analysis frames risk analysis as a holistic planning process aimed at making better risk-informed decisions and emphasizing the connections between the parts. This framework requires an

understanding of basic terms, including explanations of why there is no universal agreement about what risk means, much less risk assessment, risk management and risk analysis. Drawing on a wide range of case studies, the book illustrates the ways in which risk analysis can help lead to better decisions in a variety of scenarios, including the destruction of chemical weapons, management of nuclear waste and the response to passenger rail threats. The book demonstrates how the risk analysis process and the data, models and processes used in risk analysis will clarify, rather than obfuscate, decision-makers' options. This book will be of great interest to students and scholars of risk assessment, risk management, public health, environmental science, environmental economics and environmental psychology.

Feeding Everyone No Matter What presents a scientific approach to the practicalities of planning for long-term interruption to food production. The primary historic solution developed over the last several decades is increased food storage. However, storing up enough food to feed everyone would take a significant amount of time and would increase the price of food, killing additional people due to inadequate global access to affordable food. Humanity is far from doomed, however, in these situations - there are solutions. This book provides an order of magnitude technical analysis comparing caloric requirements of all humans for five years with conversion of existing vegetation and fossil fuels to edible food. It presents mechanisms for global-scale conversion including: natural gas-digesting bacteria, extracting food from leaves, and conversion of fiber by enzymes, mushroom or bacteria growth, or a two-step process involving partial decomposition of fiber by fungi and/or bacteria and feeding them to animals such as beetles, ruminants (cows, deer, etc), rats and chickens. It includes an analysis to determine the ramp rates for each option and the results show that careful planning and global cooperation could ensure the bulk of humanity and biodiversity could be maintained in even in the most extreme circumstances. Summarizes the severity and probabilities of global catastrophe scenarios, which could lead to a complete loss of agricultural production More than 10 detailed mechanisms for global-scale solutions to the food crisis and their evaluation to test their viability Detailed roadmap for future R&D for human

survival after global catastrophe
Best practice solutions from the world's leading experts in risk management.
Although many Bayesian Network (BN) applications are now in everyday use, BNs have not yet achieved mainstream penetration. Focusing on practical real-world problem solving and model building, as opposed to algorithms and theory, Risk Assessment and Decision Analysis with Bayesian Networks explains how to incorporate knowledge with data to develop and use (Bayesian) causal models of risk that provide powerful insights and better decision making. Provides all tools necessary to build and run realistic Bayesian network models Supplies extensive example models based on real risk assessment problems in a wide range of application domains provided; for example, finance, safety, systems reliability, law, and more Introduces all necessary mathematics, probability, and statistics as needed The book first establishes the basics of probability, risk, and building and using BN models, then goes into the detailed applications. The underlying BN algorithms appear in appendices rather than the main text since there is no need to understand them to build and use BN models. Keeping the body of the text free of intimidating mathematics, the book provides pragmatic advice about model building to ensure models are built efficiently. A dedicated website, www.BayesianRisk.com, contains executable versions of all of the models described, exercises and worked solutions for all chapters, PowerPoint slides, numerous other resources, and a free downloadable copy of the AgenaRisk software.
Offshore Engineering
Proceedings ...
Risk Modeling for Hazards and Disasters
Quantifying and Controlling Catastrophic Risks
Handbook of Risk Management in Energy Production and Trading
Disease Control Priorities, Third Edition (Volume 9)

Evidence-Based Diagnosis explains diagnostic, screening, and prognostic tests in clinical medicine. The authors' approach is based on many years of experience teaching physicians in a clinical research training program. Although needing only a minimum of mathematics, the quantitative discussions in this book are deeper and more

rigorous than in most introductory texts. The book includes numerous worked examples and 60 problems (with answers) based on real clinical situations and journal articles. This book is a great choice for anyone looking to select, develop, or apply medical tests. Topics covered include: the diagnostic process; test reliability and accuracy; testing and treatment thresholds; critical appraisal of studies of diagnostic, screening and prognostic tests; test independence and methods of combining tests; quantifying treatment benefits using randomized trials and observational studies; Bayesian interpretation of P values and confidence intervals; challenges for evidence-based diagnosis; likelihood ratios and ROC curves.

Safety and Reliability – Safe Societies in a Changing World collects the papers presented at the 28th European Safety and Reliability Conference, ESREL 2018 in Trondheim, Norway, June 17-21, 2018. The contributions cover a wide range of methodologies and application areas for safety and reliability that contribute to safe societies in a changing world. These methodologies and applications include: - foundations of risk and reliability assessment and management - mathematical methods in reliability and safety - risk assessment - risk management - system reliability - uncertainty analysis - digitalization and big data - prognostics and system health management - occupational safety - accident and incident modeling - maintenance modeling and applications - simulation for safety and reliability analysis - dynamic risk and barrier management - organizational factors and safety culture - human factors and human reliability - resilience engineering - structural reliability - natural hazards - security - economic analysis in risk management Safety and Reliability – Safe Societies in a Changing World will be invaluable to academics and professionals working in a wide range of industrial and governmental sectors: offshore oil and gas, nuclear engineering, aeronautics and aerospace, marine transport and engineering, railways, road transport, automotive engineering, civil engineering, critical infrastructures, electrical and electronic engineering, energy production and distribution, environmental engineering, information technology and telecommunications, insurance and finance, manufacturing, marine transport, mechanical engineering, security and protection, and policy making.

The 1989 Annual Meeting of the Society for Risk Analysis dramatically demonstrated one of the most important reasons for having the Society - to bring together people with highly diverse backgrounds and disciplines to assess the common problems of societal and individual risks. The physical scientists emphasized the analytical tools for assessing environmental effects and for modeling risks from engineered systems and other human activities. The health scientists presented numerous methods of analyzing health effects, including the subject of dose-response relationships, especially at low exposure levels - never an easy analysis. The social and political scientists concentrated on issues of risk perception, communication, acceptability, and human touch. Others discussed such

issues as cost-benefit analysis and the risk-based approach to decision analysis. Use of risk assessment methods for risk management continued to be a matter of strong opinion and debate. The impacts of state and federal regulations, existing and planned, were assessed in sessions and in luncheon speeches. These impacts show that risk analysis practitioners will have an increasingly important role in the future. They will be challenged to provide clear, easily understood evaluations of risk that are responsive to society's concern for risk, as evidenced in laws and regulations. Of course, the various risk analysis specialties overlapped in domains of interest.

The perception, assessment and management of risk are increasingly important core principles for determining the development of both policy and strategic responses to civil and environmental catastrophes. Whereas these principles were once confined to some areas of activity i.e. financial and insurance, they are now widely used in civil and environmental engineering. Comprehensive and readable, Civil and Environmental Risk: Mitigation and Control, provides readers with the mathematical tools and quantitative methods for determining the probability of a catastrophic event and mitigating and controlling the aftermath. With this book engineers develop the required skills for accurately assessing risk and formulating appropriate response strategies. The two part treatment starts with a clear and rigorous exposition of the quantitative risk assessment process, followed by self-contained chapters concerning applications. One of the first books to address both natural and human generated disasters, topics include events such as pandemic diseases, climate changes, major hurricanes, super earthquakes, mega tsunamis, volcanic eruptions, industrial accidents and terrorist attacks. Case studies appear at the end of the book allowing engineers to see how these principles are applied to scenarios such as a super hurricane or mega tsunamis, a reactor core melt down in a nuclear plant, a terrorist attack on the national electric grid, and an abrupt climate change brought about by a change in the ocean currents in the North Atlantic. Written by the current Chairman of the U.S. Nuclear Waste Technical Review Board, Environmental risk managers will find this reference a valuable and authoritative guide both in accurately calculating risk and its applications in their work. Key Features Mathematical tools for calculating and Controlling Catastrophic Risk Presents a systematic method for ranking the importance of societal threats Includes both Natural and Industrial Catastrophes Case studies cover such events as pandemic diseases, climate changes, major hurricanes, super earthquakes, mega tsunamis, volcanic eruptions, industrial accidents, and terrorist attacks.

The Oak Ridge School of Reactor Technology ...

Hazards Analysis

Safety and Reliability – Safe Societies in a Changing World

Risk Assessment and Decision Analysis with Bayesian Networks
Identifying and Managing Project Risk
Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation

Risk Modeling for Hazards and Disasters covers all major aspects of catastrophe risk modeling, from hazards through to financial analysis. It explores relevant new science in risk modeling, indirect losses, assessment of impact and consequences to insurance losses, and current changes in risk modeling practice, along with case studies. It also provides further insight into the shortcomings of current models and examines model risk and ideas to diversify risk assessment. Risk Modeling for Hazards and Disasters instructs readers on how to assess, price and then hedge the losses from natural and manmade catastrophes. This book reviews current model development and science and explains recent changes in the catastrophe modeling space, including new initiatives covering uncertainty and big data in the assessment of risk for insurance pricing and portfolio management. Edited by a leading expert in both hazards and risk, this book is authored by a global panel including major modeling vendors, modeling consulting firms, and well-known catastrophe modeling scientists. Risk Modeling for Hazards and Disasters provides important insight into how models are used to price and manage risk. Includes high profile case studies such as the Newcastle earthquake, Hurricane Andrew and Hurricane Katrina Provides crucial information on new ideas and platforms that will help address the new demands for risk management and catastrophe risk reporting Presents the theory and practice needed to know how models are created and what is and what is not important in the modeling process Covers relevant new science in risk modeling, indirect losses, assessment of impact and consequences to insurance losses, and current changes in risk modeling practice, along with case studies

The field of occupational health and safety constantly changes, especially as it pertains to biomedical research. New infectious hazards are of particular importance at nonhuman-primate facilities. For example, the discovery that B virus can be transmitted via a splash on a mucous membrane raises new concerns that must be addressed, as does the discovery of the Reston strain of Ebola virus in import quarantine facilities in the U.S. The risk of such infectious hazards is best managed through a flexible and comprehensive Occupational Health and Safety Program (OHSP) that can identify and mitigate potential hazards. Occupational Health and Safety in the Care and Use of Nonhuman Primates is intended as a reference for vivarium managers, veterinarians, researchers, safety professionals, and others who are involved in developing or implementing an OHSP that deals with nonhuman primates. The book lists the important features of an OHSP and provides the tools necessary for informed decision-making in developing an optimal program that meets all particular institutional needs.

Effective risk management is essential for the success of large projects built and operated by the Department of Energy (DOE), particularly for the one-of-a-kind projects that characterize much of its mission. To enhance DOEâ€™s risk management efforts, the department asked the NRC to prepare a summary of the most effective practices used by leading owner organizations. The studyâ€™s primary objective was to provide DOE project managers with a basic understanding of both the project ownerâ€™s risk management role and effective oversight of those risk management activities delegated to contractors.

Introduces risk assessment with key theories, proven methods, and state-of-the-art applications Risk Assessment: Theory,

Methods, and Applications remains one of the few textbooks to address current risk analysis and risk assessment with an emphasis on the possibility of sudden, major accidents across various areas of practice—from machinery and manufacturing processes to nuclear power plants and transportation systems. Updated to align with ISO 31000 and other amended standards, this all-new 2nd Edition discusses the main ideas and techniques for assessing risk today. The book begins with an introduction of risk analysis, assessment, and management, and includes a new section on the history of risk analysis. It covers hazards and threats, how to measure and evaluate risk, and risk management. It also adds new sections on risk governance and risk-informed decision making; combining accident theories and criteria for evaluating data sources; and subjective probabilities. The risk assessment process is covered, as are how to establish context; planning and preparing; and identification, analysis, and evaluation of risk. Risk Assessment also offers new coverage of safe job analysis and semi-quantitative methods, and it discusses barrier management and HRA methods for offshore application. Finally, it looks at dynamic risk analysis, security and life-cycle use of risk. Serves as a practical and modern guide to the current applications of risk analysis and assessment, supports key standards, and supplements legislation related to risk analysis Updated and revised to align with ISO 31000 Risk Management and other new standards and includes new chapters on security, dynamic risk analysis, as well as life-cycle use of risk analysis Provides in-depth coverage on hazard identification, methodologically outlining the steps for use of checklists, conducting preliminary hazard analysis, and job safety analysis Presents new coverage on the history of risk analysis, criteria for evaluating data sources, risk-informed decision making, subjective probabilities, semi-quantitative methods, and barrier management Contains more applications and examples, new and revised problems throughout, and detailed appendices that outline key terms and acronyms Supplemented with a book companion website containing Solutions to problems, presentation material and an Instructor Manual Risk Assessment: Theory, Methods, and Applications, Second Edition is ideal for courses on risk analysis/risk assessment and systems engineering at the upper-undergraduate and graduate levels. It is also an excellent reference and resource for engineers, researchers, consultants, and practitioners who carry out risk assessment techniques in their everyday work.

A Revised Framework

The Essential Engineer

The Owner's Role in Project Risk Management

Measuring and Managing Information Risk

21st Century Prometheus

International Convergence of Capital Measurement and Capital Standards

This book describes the evolving CBRN risk landscape and highlights advances in the “core” CBRN technologies, including when combined with (improvised) explosive devices (CBRNe threats). It analyses how associated technologies create new safety and security risks, challenging certain assumptions that underlie current control regimes. The book also shows how technologies can be enablers for more effective strategies to mitigate these risks. 21st-century safety and security risks emanating from chemical, biological, radiological and nuclear materials – whether resulting from natural events, accidents or malevolent use - are increasingly shaped by technologies that enable their development, production or use in ways that differ

from the past. Artificial intelligence, the use of cyberspace, the revolution in the life sciences, new manufacturing methods, new platforms and equipment for agent delivery, hypersonic weapons systems, information tools utilised in hybrid warfare – these and other technologies are reshaping the global security environment and CBRN landscape. They are leading to a growing potential for highly targeted violence, and they can lead to greater instability and vulnerability worldwide. At the same time, technology offers solutions to manage CBRN risks. Examples are faster detection, more accurate characterisation of the nature and origin of CBRN agents, new forensic investigation methods, or new medical treatments for victims of CBRN incidents. New educational concepts help to foster a culture of responsibility in science and technology and strengthen governance. New training methods help develop practical skills to manage CBRN risks more effectively. The book concludes that there is a growing need for a holistic framework towards CBRN risk mitigation. Traditional arms control mechanisms such as global, regional or bilateral treaties and export controls are still needed, as they provide a necessary legal and institutional framework. But laws and technology denial alone will not suffice, and institutional mechanisms can at times be weak. Given the pace of technological progress and the diffusion of critical knowledge, tools and materials, policymakers must accept that CBRN risks cannot be eliminated altogether. Instead, society has to learn to manage these risks and develop resilience against them. This requires a “softer”, broadly based multi-stakeholder approach involving governments, industry, the research and development communities, educators, and civil society. Furthermore, educating policymakers that cutting-edge technologies may seriously affect global strategic stability could create incentives for developing a more creative and contemporary arms control strategy that fosters cooperation rather than incremental polarisation.

Since the dawn of the Atomic Age, nuclear experts have labored to imagine the unimaginable and prevent it. They confronted a deceptively simple question: When is a reactor “safe enough” to adequately protect the public from catastrophe? Some experts sought a deceptively simple answer: an estimate that the odds of a major accident were, literally, a million to one. Far from simple, this search to quantify accident risk proved to be a tremendously complex and controversial endeavor, one that altered the very notion of safety in nuclear power and beyond. Safe Enough? is the first history to trace these contentious efforts, following the Atomic Energy Commission and the Nuclear Regulatory Commission as their experts experimented with tools to quantify accident risk for use in regulation and to persuade the public of nuclear power’s safety. The intense conflict over the value of risk assessment offers a window on the history of the nuclear safety debate and the beliefs of its advocates and opponents. Across seven decades and the accidents at Three Mile Island, Chernobyl, and Fukushima, the quantification of risk has transformed both society’s understanding of the hazards posed by complex technologies and what it takes to make them safe enough.

From the acclaimed author of The Pencil and To Engineer Is Human, The Essential Engineer is an eye-opening exploration of the ways in which science and engineering must work together to address our world’s most pressing issues, from dealing with climate change and the prevention of natural disasters to the development of efficient automobiles and the search for

renewable energy sources. While the scientist may identify problems, it falls to the engineer to solve them. It is the inherent practicality of engineering, which takes into account structural, economic, environmental, and other factors that science often does not consider, that makes engineering vital to answering our most urgent concerns. Henry Petroski takes us inside the research, development, and debates surrounding the most critical challenges of our time, exploring the feasibility of biofuels, the progress of battery-operated cars, and the question of nuclear power. He gives us an in-depth investigation of the various options for renewable energy—among them solar, wind, tidal, and ethanol—explaining the benefits and risks of each. Will windmills soon populate our landscape the way they did in previous centuries? Will synthetic trees, said to be more efficient at absorbing harmful carbon dioxide than real trees, soon dot our prairies? Will we construct a "sunshade" in outer space to protect ourselves from dangerous rays? In many cases, the technology already exists. What's needed is not so much invention as engineering. Just as the great achievements of centuries past—the steamship, the airplane, the moon landing—once seemed beyond reach, the solutions to the twenty-first century's problems await only a similar coordination of science and engineering. Eloquently reasoned and written, The Essential Engineer identifies and illuminates these problems—and, above all, sets out a course for putting ideas into action.

This book presents an overview of the risks involved in modern electricity production, delivery and trading, including technical risk in production, transportation and delivery, operational risk for the system operators, market risks for traders, and political and other long term risks in strategic management. Using decision making under uncertainty as a methodological background, the book is divided into four parts, with Part I focusing on energy markets, particularly electricity markets. Topics include a nontechnical overview of energy markets and their main properties, basic price models for energy commodity prices, and modeling approaches for electricity price processes. Part II looks at optimal decisions in managing energy systems, including hydropower dispatch models, cutting plane algorithms and approximative dynamic programming; hydro-thermal production; renewable; stochastic investments and operational optimization models for natural gas transport; decision making in operating electricity networks; and investment in extending energy production systems. Part III explores pricing, including electricity swing options and the pricing of derivatives with volume control. Part IV looks at long-term and political risks, including energy systems under aspects of climate change, and catastrophic operational risks, particularly risks from terrorist attacks.

The Analysis, Communication, and Perception of Risk

The Ultimate Resource

Essential Tools for Failure-Proofing Your Project

Risk Assessment

Approaches to Enterprise Risk Management

Reasoning about Uncertainty

The essential risk assessment guide for civil engineering, design, and construction Risk management allows construction professionals to

identify the risks inherent in all projects, and to provide the tools for evaluating the probabilities and impacts to minimize the risk potential. This book introduces risk as a central pillar of project management and shows how a project manager can be prepared for dealing with uncertainty. Written by experts in the field, Risk Management for Design and Construction uses clear, straightforward terminology to demystify the concepts of project uncertainty and risk. Highlights include: Integrated cost and schedule risk analysis An introduction to a ready-to-use system of analyzing a project's risks and tools to proactively manage risks A methodology that was developed and used by the Washington State Department of Transportation Case studies and examples on the proper application of principles Information about combining value analysis with risk analysis "This book is a must for professionals who are seeking to move towards a proactive risk-centric management style. It is a valuable resource for students who are discovering the intricacies of uncertainties and risks within value estimation. For professionals, the book advocates for identifying and analyzing 'only' risks whose impact are of consequence to a project's performance." —JOHN MILTON, PHD, PE Director of Enterprise Risk Management, Washington State Department of Transportation

An authoritative reference for financial professionals features coverage of key areas ranging from auditing and banking to insurance and investments, in a volume that includes checklists, biographies, summaries of key works, and quotations.

If you had a 10 percent chance of having a fatal car accident, you'd take necessary precautions. If your finances had a 10 percent chance of suffering a severe loss, you'd reevaluate your assets. So if we know the world is warming and there's a 10 percent chance this might eventually lead to a catastrophe beyond anything we could imagine, why aren't we doing more about climate change right now? We insure our lives against an uncertain future--why not our planet? In Climate Shock, Gernot Wagner and Martin Weitzman explore in lively, clear terms the likely repercussions of a hotter planet, drawing on and expanding from work previously unavailable to general audiences. They show that the longer we wait to act, the more likely an extreme event will happen. A city might go underwater. A rogue nation might shoot particles into the Earth's atmosphere, geoengineering cooler temperatures. Zeroing in on the unknown extreme risks that may yet dwarf all else, the authors look at how economic forces that make sensible climate policies difficult to enact, make radical would-be fixes like geoengineering all the more probable. What we know about climate change is alarming enough. What we don't know about the extreme risks could be far more dangerous. Wagner and Weitzman help readers understand that we need to think about climate change in the same way that we think about insurance--as a risk management problem, only here on a global scale. With a new preface addressing recent developments Wagner and Weitzman demonstrate that climate change can and should be dealt with--and what could happen if we don't do so--tackling the defining environmental and public policy issue of our time.

Managing Extreme Financial Risk addresses the need for better management strategies in light of increased market risk and volatility in financial institutions' revenue models. Top officials from the financial and regulatory industries point to real corporate issues, showing how institutions react to financial crises. From first-hand experiences, they explain how effective sustainability management does not just prevent being blindsided; it also leads to proactive solutions that enhance an institution's strength to weather a sudden financial crisis, add significant shareholder value, and reduce systemic risk. Readable, coherent, and logical, Managing Extreme Financial Risk shows how extreme risk needs to be handled when the cost of being wrong means the difference between life and death of the institution. Based on the firsthand experiences and perspectives of senior-level executives Concentrates on extreme risk, when the cost of being wrong is not the loss of profits, but the death of the institution Written to be easily understood without algorithms, models, and quants

Engineering Aviation Security Environmentsâ¬"Reduction of False Alarms in Computed Tomography-Based Screening of Checked Baggage

The Argumentative Turn in Policy Analysis
Protecting health and the environment
Safe Enough?
Proceedings of ESREL 2018, June 17-21, 2018, Trondheim, Norway
Managing Food Security After Global Catastrophe

Based on the research that has been conducted at Wharton Risk Management Center over the past five years on catastrophic risk. Covers a hot topic in the light of recent terroristic activities and nature catastrophes. Develops risk management strategies for reducing and spreading the losses from future disasters. Provides glossary of definitions and terms used throughout the book.

Using the factor analysis of information risk (FAIR) methodology developed over ten years and adopted by corporations worldwide, Measuring and Managing Information Risk provides a proven and credible framework for understanding, measuring, and analyzing information risk of any size or complexity. Intended for organizations that need to either build a risk management program from the ground up or strengthen an existing one, this book provides a unique and fresh perspective on how to do a basic quantitative risk analysis. Covering such key areas as risk theory, risk calculation, scenario modeling, and communicating risk within the organization, Measuring and Managing Information Risk helps managers make better business decisions by understanding their organizational risk. Uses factor analysis of information risk (FAIR) as a methodology for measuring and managing risk in any organization. Carefully balances theory with practical applicability and relevant stories of successful implementation. Includes examples from a wide variety of businesses and situations presented in an accessible writing style.

Floods take a heavy toll on society, costing lives, damaging buildings and property, disrupting livelihoods, and sometimes necessitating federal disaster relief, which has risen to record levels in recent years. The National Flood Insurance Program (NFIP) was created in 1968 to reduce the flood risk to individuals and their reliance on federal disaster relief by making federal flood insurance available to residents and businesses if their community adopted floodplain management ordinances and minimum standards for new construction in flood prone areas. Insurance rates for structures built after a flood plain map was adopted by the community were intended to reflect the actual risk of flooding, taking into account the likelihood of inundation, the elevation of the structure, and the relationship of inundation to damage to the structure. Today, rates are subsidized for one-fifth of the NFIP's 5.5 million policies. Most of these structures are negatively elevated, that is, the elevation of the lowest floor is lower than the NFIP construction standard. Compared to structures built above the base flood elevation, negatively elevated structures are more likely to incur a loss because they are inundated more frequently, and the depths and durations of inundation are greater. "Tying Flood Insurance to Flood Risk for Low-Lying Structures in the Floodplain" studies the pricing of negatively elevated structures in the NFIP. This report review current NFIP methods for calculating risk-based premiums for these structures, including risk analysis, flood maps, and engineering data. The report then evaluates alternative approaches for calculating risk-based premiums and discusses engineering hydrologic and property assessment data needs to implement full risk-based premiums. The findings and

conclusions of this report will help to improve the accuracy and precision of loss estimates for negatively elevated structures, which in turn will increase the credibility, fairness, and transparency of premiums for policyholders.

Reducing the Impact of Disasters, Second Edition
A FAIR Approach
Evidence-Based Diagnosis
Applications of Contemporary Management Approaches in Supply Chains
Managing Extreme Financial Risk
A History of Nuclear Power and Accident Risk