

1. Record Nr.	UNINA9910592294603321
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Titolo	Introduction to Development Engineering : A Framework with Applications from the Field // edited by Temina Madon, Ashok J. Gadgil, Richard Anderson, Lorenzo Casaburi, Kenneth Lee, Arman Rezaee
Pubbl/distr/stampa	Cham, : Springer Nature, 2023 Cham : , : Springer International Publishing : , : Imprint : Springer, , 2023
ISBN	3-030-86065-5
Edizione	[1st ed. 2023.]
Descrizione fisica	1 online resource (XXI, 652 p. 139 illus., 118 illus. in color.)
Disciplina	628 660.6
Soggetti	Environmental engineering Biotechnology Bioremediation Energy policy Energy and state Development economics Economic development Engineering design Developmental psychology Environmental Engineering/Biotechnology Energy Policy, Economics and Management Development Economics Development Studies Engineering Design Developmental Psychology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Part I: A New Discipline: Development Engineering -- Chapter 1: The Role Of Technology In Development -- Chapter 2: The Development

Engineering Framework: Innovate, Evaluate, Scale -- Chapter 3: Asking the Right Questions -- Part II: Water, Sanitation and Health -- Chapter 4: Advances In Water and Health Technologies -- Chapter 5: Case Study: Electrochemical Arsenic Remediation, India (Innovation) -- Chapter 6: Case Study: Information For Intermittent Water Supply, India (Evaluation) -- Chapter 7: Case Study: Mobile Phone Diagnostic Microscopy, Vietnam/Cameroon (Innovation, Scale) -- Part III: Governance -- Chapter 8: Technologies for Governance And Accountability -- Chapter 9: Case Study: Sensors For Aid Accountability, Rwanda (Evaluation, Scale) -- Chapter 10: Case Study: High Resolution Development Indicators, Afghanistan (Evaluation, Scale) -- Chapter 11: Case Study: Monitoring For Elections And Public Service Delivery, Kenya (Evaluation, Scale) -- Part IV: Energy and Resources -- Chapter 12: Advances in Energy & Environmental Technologies -- Chapter 13: Case Study: Economic Impacts Of Rural Electrification, Kenya (Evaluation, Scale) -- Chapter 14: Case Study: Cool Joule: Flexible Energy Loads, Nicaragua (Innovation, Evaluation) -- Chapter 15: Case Study: Cookstove Monitoring and Use In East Africa (Innovation, Evaluation) -- Part V: Information -- Chapter 16: Information and Communications Technology For Development -- Chapter 17: Case Study: Community Cellular Networks, Philippines (Innovation, Evaluation) -- Chapter 18: Case Study: ICT Solutions To Bring Telemedicine To Rural India (Innovation) -- Chapter 19: Case Study: Platforms For Development Data (ODK/Mezuri) (Innovation, Scale) -- PART VI: Markets (Incorporates Agriculture) -- Chapter 20: Technologies To Improve Market Performance -- Chapter 21: Case Study: Ag Market Information Platforms, India (Innovation, Evaluation, Scale) -- Chapter 22: Case Study: Agricultural Trading Platforms, Uganda (Innovation, Evaluation) -- Chapter 23: Case Study: Inventory And Supply Chain Tracking, Sri Lanka (Evaluation) -- PART VII: Human Capital (Incorporates Labor) -- Chapter 24: Increasing the Productivity of Human Capital -- Chapter 25: Case Study: Electronic Job Search Platforms, India (Evaluation, Scale) -- Chapter 26: Case Study: Customized E-Learning Innovations, India (Evaluation) -- Chapter 27: Case Study: TBD (Evaluation) -- PART VIII: Conclusion -- Chapter 28: Promising Directions in Development Engineering.

Sommario/riassunto

This open access textbook introduces the emerging field of Development Engineering and its constituent theories, methods, and applications. It is both a teaching text for students and a resource for researchers and practitioners engaged in the design and scaling of technologies for low-resource communities. The scope is broad, ranging from the development of mobile applications for low-literacy users to hardware and software solutions for providing electricity and water in remote settings. It is also highly interdisciplinary, drawing on methods and theory from the social sciences as well as engineering and the natural sciences. The opening section reviews the history of “technology-for-development” research, and presents a framework that formalizes this body of work and begins its transformation into an academic discipline. It identifies common challenges in development and explains the book’s iterative approach of “innovation, implementation, evaluation, adaptation.” Each of the next six thematic sections focuses on a different sector: energy and environment; market performance; education and labor; water, sanitation and health; digital governance; and connectivity. These thematic sections contain case studies from landmark research that directly integrates engineering innovation with technically rigorous methods from the social sciences. Each case study describes the design, evaluation, and/or scaling of a technology in the field and follows a single form, with common

elements and discussion questions, to create continuity and pedagogical consistency. Together, they highlight successful solutions to development challenges, while also analyzing the rarely discussed failures. The book concludes by reiterating the core principles of development engineering illustrated in the case studies, highlighting common challenges that engineers and scientists will face in designing technology interventions that sustainably accelerate economic development. Development Engineering provides, for the first time, a coherent intellectual framework for attacking the challenges of poverty and global climate change through the design of better technologies. It offers the rigorous discipline needed to channel the energy of a new generation of scientists and engineers toward advancing social justice and improved living conditions in low-resource communities around the world.
