The Mortenson Center in Engineering for Developing Communities (MCEDC) promotes integrated and participatory solutions to improve living standards through advancing research on issues relevant to developing communities, facilitating community capacity building, and educating globally responsible engineers using a systems perspective. Propelled forward by a $5 million endowment from Mort and Alice Mortenson and the M. A. Mortenson Company, the center is solidly positioned to make major strides in changing the course of engineering research and education.

MCEDC’s interdisciplinary cadre of affiliated faculty are engaged in research related to solutions for some of the world’s most pressing issues including the need for disaster-resistant, affordable housing; clean drinking water; adequate sanitation and hygiene; sustainable infrastructure and roads; and safer, sustainable cooking and heating alternatives. The Mortenson Center’s methodology focuses on transferring knowledge in both directions: from the community and on-site organizations to the engineers, and vice versa so that together, they can develop the best long-term solution based on local conditions. This empowers the community to move forward with completing and maintaining the project, rather than the project driven from the outside. The Mortenson Center is dedicated to transforming engineering education and research including the way engineering is understood, applied, and evaluated throughout the world community.

On the education side, MCEDC builds on the technical expertise provided by traditional engineering courses to provide CU-Boulder students with a holistic skill set that views technology as just one piece of the puzzle. Students learn to work across disciplines and side-by-side with local community partners to develop creative, community-appropriate solutions.

Recent Highlights

- MCEDC recently initiated a CU-Boulder campus-wide working group on global development to focus diverse intellectual resources in an integrated educational and research community that can provide a revolutionary approach to educating the next generation of global citizens as well as generating evolutionary solutions to global challenges.
- MCEDC students earn highly competitive national awards including NSF graduate research, EPA STAR, Boren, and American Waterworks fellowships.
- Three recent alumni of the Engineering for Developing Communities program were selected as 2012-2013 American Association for the Advancement of Science (AAAS). AAAS Fellows spend a year in an executive branch agency or congressional office in Washington, DC. Coincidentally, these three students were the first to have earned their PhDs with research focusing on issues related to engineering for developing communities.
- Former EDC student, Ms. Avery Bang, was named one of the Engineering News Record Top 25 Newsmakers for 2012.

MCEDC Directors: Past & Present

Dr. Bernard Amadei started the Engineering for Developing Communities Program in 2003 along with two environmental engineering faculty at the University of Colorado Boulder. He became the founding faculty director of the Mortenson Center in Engineering for Developing Communities at its inception in April 2009 and held that role until June 2012. Dr. Amadei still holds the Mortenson Endowed Chair in Global Engineering and works closely with the new MCEDC Director, Dr. Paul Chinowsky, to set the center’s goals. Among other distinctions, Dr. Amadei was the 2007 co-recipient of the Heinz Award for the Environment; the recipient of the 2008 ENR Award of Excellence; and was elected to the U.S. National Academy of Engineering in 2009. In November 2012 he was named a Science Envoy for the U.S. Department of State.

Dr. Paul Chinowsky became faculty director of the Mortenson Center in July 2012 and holds the Mortenson Endowed Professorship in Sustainable Development. He is also the Co-Director of the Institute of Climate and Civil Systems (iCiCS) and is currently conducting research in the areas of infrastructure adaptation to climate change and community response to extreme events. Recently, he led the effort to initiate a campus-wide working group to bring together a multidisciplinary group of individuals with experience in multiple aspects of the global development field. The group of 40 faculty members represents each of the Colleges and Schools on campus. This unique network has evolved with a single purpose – to position the University of Colorado as a thought-leader in the field of Global Development and to provide its students with a unique opportunity to become leaders in the global community.
Student Practicums with Partner Organizations

In 2012, the Mortenson Center partnered with organizations in 15 countries on 4 continents to provide field experiences for our students. Twenty-five students spent periods ranging from several weeks to several months working alongside staff of governmental, non-governmental, university, and tribal organizations. Student work ranged from conducting door-to-door surveys about perceived air quality, latrine usage and upkeep, and grey water filter designs to training individuals on the basics of using Google SketchUp software and electrical design for photovoltaic systems.

Host organizations included African Wildlife Fund, Bridges to Prosperity, El Porvenir, Groundwork Denver, the UN Ministry of Transport, and Water for People, among others.

Affiliated Faculty

Bernard Amadei
Founding Director MCEDC, Professor, Department of Civil, Environmental, and Architectural Engineering. Sustainable development, compressed earth block technology and construction.

John Bennett
Professor, Department of Computer Science, and Director, ATLAS Institute. Design, implementation, and evaluation of distributed systems; Engineering education, Utilizing virtual worlds and gaming as a tool for teaching.

Paul Chinowsky
MCEDC Director, Professor, Department of Civil, Environmental, and Architectural Engineering. Infrastructure adaptation to climate change and community response to extreme events.

Michael Hannigan
Assistant Professor, Department of Mechanical Engineering and Program in Environmental Engineering. Environmental problem solving with specific focus on studying the impacts of particle air pollution.

Amy Javernick-Will
Assistant Professor, Department of Civil, Environmental, and Architectural Engineering. Project-based organizations in architecture, engineering and construction (AEC) industries; global organizations and projects; knowledge management and organizational learning; networks; and integrated project delivery.

Matthew Jelacic
Assistant Professor, Program in Environmental Design. Sustainable materials for sheltering displaced people and the role of alternative organizational paradigms for traumatic urbanization planning.

Karl Linden
Professor, Department of Civil, Environmental, and Architectural Engineering. Advanced oxidation processes for the degradation of environmental pollutants of concern in clean and reclaimed water for reuse.

Alan Mickelson
Associate Professor, Electrical, Computer, and Energy Engineering. Information and communication technology for development.

Lupita Montoya
Assistant Professor, Department of Civil, Environmental, and Architectural Engineering. Health effects of aerosols and indoor air quality.

Darin Toohey
Professor, Department of Atmospheric and Oceanic Sciences and Program in Environmental Studies. Addresses the role of trace gases and aerosols on Earth's climate, atmospheric oxidation, and air quality.

Ajume Wingo
Associate Professor, Department of Philosophy. Liberal democratic philosophy and politics, particularly on institutional building in places where there are non-liberal democratic or illegitimate political institutions.

John Zhai
Associate Professor. Dynamics applied to building systems, renewable energy and sustainable building design, indoor air quality.

More Information

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