

Reinventing sanitation through education and research

The Bill & Melinda Gates Foundation launched a strategy in June to help bring safe and reliable sanitation services to millions of poor people in the developing world. One of the foundation's new investments included a US\$8 million grant awarded to UNESCO-IHE. The grant will be used for postgraduate sanitation education and research with a focus on solutions for the urban poor in sub-Saharan Africa and South-East Asia. This 5-year capacity-building and research project (2011-2016) was developed by Damir Brdjanovic, Professor of Sanitary Engineering at UNESCO-IHE, and his team.

In a keynote address at the 2011 AfricaSan Conference in Kigali, Sylvia Mathews Burwell, president of the foundation's Global Development Program, called on donors, governments, the private sector, and NGOs to address the urgent challenge, which affects nearly 40 percent of the world's population.

"No innovation in the past 200 years has done more to save lives and improve health than the sanitation revolution triggered by invention of the toilet," Burwell said in her speech at AfricaSan, the third African Conference on Sanitation and Hygiene, organized by the African Ministers' Council on Water. "But it only reached one-third of the world."

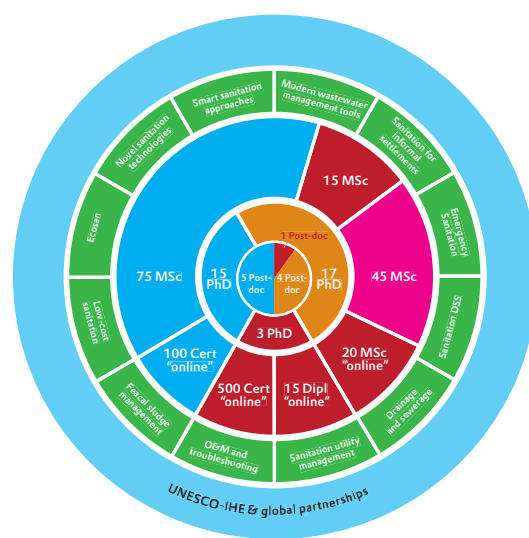
"What we need are new approaches and new ideas developed and implemented by a new generation of sanitation professionals," Prof. Brdjanovic said. The foundation announced \$42 million in new sanitation grants to spur innovations in human excreta capture and storage, as well as its processing into reusable energy, fertilizers and fresh water. In addition, the foundation will support work with local communities to end open defecation and increase access to affordable, long-term sanitation solutions that people will want to use.

PROJECT GRANT

The total project budget is US\$11.1 million and is partially output-based, providing incentives to excel and outperform project expectations. The project will be jointly executed by UNESCO-IHE (principal grantee) and its eight partners from developing countries in sub-Saharan Africa, South East Asia and South America: the Asian Institute of Technology in Thailand, the Institut Teknologi Bandung in Indonesia, the International Institute of Water and Environmental Engineering (2iE) in Burkina Faso, the Kwame Nkrumah University of Science and Technology in Ghana, Makerere University Institute of Environmental and Natural Resources in Uganda, the University of Cape Town in South Africa, the Federal University of Minas Gerais in Brazil and the Universidad del Valle in Colombia. "They have been working hand in hand with the Gates Foundation in shaping the project to address the needs of the 2.6 billion people worldwide who do not have access to improved sanitation," explained Prof. András Szöllösi-Nagy, Rector at UNESCO-IHE. "I would like to commend the Gates Foundation for supporting innovative approaches that lead to sustainable local solutions."

"This is probably the largest research and postgraduate education project ever conducted on sanitation for the urban poor," elaborated Prof. Damir Brdjanovic, Project Director. "This exciting project will increase the number of adequately trained sanitation professionals in developing countries, provide research opportunities, education and training for the new generation of 'all-round' sanitary engineers, and make postgraduate education in sanitary engineering more accessible to individuals from developing countries."

"To address the needs of the 2.6 billion people who don't have access to safe sanitation, we not only must reinvent the toilet, we also must find safe, affordable and sustainable ways to capture, treat, and recycle human waste," said Sylvia Mathews Burwell, president of the Global Development Programme at the Bill & Melinda Gates Foundation. "Most importantly, we must



- Co-funded by the Bill and Melinda Gates Foundation at partner institutions and UNESCO-IHE
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Dhaka, Bangladesh. One of the five major research themes within the new project is to develop smart sanitation solutions for slums and informal settlements.

work closely with local communities to develop lasting sanitation solutions that will improve their lives."

The project has five major research themes: smart sanitation for slums and informal settlements; emergency sanitation following natural and anthropological disasters; decentralized sanitation aimed at resource recovery; low cost wastewater collection and treatment; and fecal sludge management.

GLOBAL RELEVANCE

Focusing on affordable solutions that cost no more than 5 cents per person per day and are easy to install, use, and maintain, the foundation and its partners are developing new tools and technologies that address every aspect of sanitation—from waterless, hygienic toilets without sewer connections, to pit emptying, to waste processing and recycling, often involving cutting-edge technology that could turn human waste into fuel to power local communities, fertilizer to improve crops, or even safe drinking water. The foundation's strategy involves gathering evidence to determine what people want and measuring what really works, as well as education and awareness-raising to stimulate demand for improved sanitation, and advocacy for gov-

ernments and public and private partners to prioritize sanitation policies.

"Across Africa, improved sanitation is an essential human need that we must take action to address," said Mamadou Dia, President of the African Water Association. "We welcome efforts to focus new attention, ideas and resources on this important issue." Sanitation brings substantial economic benefits. According to the World Health Organization, improved sanitation can produce up to \$9 for every \$1 invested by increasing productivity, reducing health care costs, and preventing illness, disability, and early death. People with access to clean and convenient sanitation services also experience greater dignity, privacy, and security. "Disease caused by unsafe sanitation accounts for roughly half of all hospitalizations in the developing world," said Prince Willem-Alexander of the Netherlands, chair of the United Nations Secretary-General's Advisory Board on Water and Sanitation. "This statistic is unacceptable, as is the fact that many decision makers remain reluctant to talk about sanitation, further stigmatizing the topic, and perpetuating a crisis whose solutions are within our reach." Water, Sanitation & Hygiene is part of the foundation's Global Development Program, which addresses issues such as

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agricultural development and financial services—problems that affect the world's poorest people but do not receive adequate attention. With these new grants, the foundation's commitment to Water, Sanitation & Hygiene efforts total more than \$265 million; the new strategy represents an increased focus on sanitation.

Prof. Brdjanovic concluded: "There is no doubt that the project 'Stimulating local innovation on sanitation for the urban poor in sub-Saharan Africa and South-East Asia' will substantially contribute to a global effort in building the much needed capacities in the sanitation sector. Among other outputs, the project will deliver 5 post-doctoral fellows, 20 PhD researchers, 60 Master's laureates, and in excess of 500 trained professionals from developing countries, an estimated stunning total of 130 man-years of research."