

# Preface

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The concept of regenerative sanitation (ReGenSan) was conceived from a debate on the need to expand the practicalities of sustainable sanitation (SuSan) in order to avoid sanitation falling behind again at the close of the SDG no. 6 deadline in 2030. The various challenges that sanitation faced, from the first UN international drinking water and sanitation decade, the 1970s, to the MDGs (Millennium Development Goals) era, were explored. One major recurring highlight was that sanitation has received much hype, but has never been given its own core focus. It gets lost in water, health, hygiene, poverty reduction, gender issues and technology and in the end concerns addressed are often not sanitation-specific; so much so that the solutions sought and provided bypass the existing sanitation challenges. To make things even more complicated, such solutions were often basically restricted to linear technologies, which created more ecological and social problems. Even when sanitation is given due consideration, it is regarded as a culprit that needs to be eliminated or removed out of sight. One thing is certain nowadays: sanitation is so much more complex and dynamic than was originally conceived and deserves a more holistic and integrated approach.

Questions such as: what then is the way forward for sanitation in this SDG era that will lead to universal access to adequate and equitable sanitation? How could we present sanitation without losing its essence? How can we guide research and development towards holistic, integrated and systemic solutions? are explored and resolved in this book. With so many years in practice, teaching and research, the authors have acquired insights into the challenges, shortfalls and gains of sanitation practice and research. Professor Koottatep spent over 18 years searching for solutions to sanitation's myriad challenges, particularly wastewater and faecal sludge management, and he ended up with more questions than answers as the situation globally seemed to defy all efforts. The poor conclusion at the end of the MDGs stirred up concerns and raised red flags about the way sanitation was considered and practised. As a teacher, trainer and researcher in so many regions and topics, he began to wonder if there was not really more to sanitation than the dynamic complexities that are inherent in generic and contextual cases. Several partnerships with Professor Polprasert (one of the first researchers to directly investigate the components of excreta) established his concerns as being concrete and shared by others.

Professor Polprasert had committed 40 years of his working life trying to gain insights into the secrets of the by-products of human digestion (urine and excreta). He researched extensively the recycling potentials and possible reuse of sanitation matter, as well as the best way to collect and treat organic waste. As a pioneer of sanitation, particularly in the tropics, Asia and the developing world, he, too, was concerned with the persistent global dilemma. With studies and reports raising more questions on how to reduce the impact of sanitation on public health and environmental quality, he investigated along with Professor Koottatep the use of constructed wetlands for septage and faecal sludge treatment and recycling options. In 1989, he gathered his findings in a book titled *Organic Waste Recycling* (published by IWA Publishing, UK) and three revised editions followed within a span of 18 years, all of which considered technology and management in organic waste recycling. It was during a brainstorming session while working on the fourth edition (*Organic Waste Recycling: Technology, Management and Sustainability*) that Professor Koottatep posed the question to Dr Coockey of the possibility of using sanitation to regenerate communities recovering from disaster or facing food crisis.

Dr Coockey, with 24 years directly in the sanitation sector (as chief environmental health officer in sanitation at state level, lecturer/trainer, consultant, researcher and global player), was quick to latch on to the idea with zeal and passion. He spent seven years on the steering committee of the Water Supply and Sanitation Collaborative Council (WSSCC), Geneva (representing middle, northern and western Africa countries), trying to reconcile the challenges in dealings with policymakers, regulators, users and intervention/aid agencies with the stories from other regions across the world. He realized that his country's situation was only peculiar as it concerned place and context. He also questioned the fact that the main workforce, especially in Africa and former British colonies, that are responsible for monitoring and regulating sanitation practices (environmental health officers) are mostly left out of sanitation debates and interventions. He concluded that there was something wrong with the way sanitation was perceived, practised and taught. And so, an innocent question created the tripod union that started a revolution to explore and review the arguments; thus Regenerative Sanitation was born.

This book proposes Regenerative Sanitation as the next era of sanitation (Sanitation 4.0); indicating a paradigm shift from techno/toilet focus in solutions development to more focus on benefits, safety, functionality, replicability, reliability and moving from pilots to marketplace. And if there is anything to be emphasized in this book, it is that sanitation is so much more than the disposal and treatment of human waste. It is too big not to be given its own individual focus in the global development agenda because it deals with unavoidable human physiological activities that occur several times a day. It is time to rethink sanitation and change the narrative towards more progressive trajectories. Sanitation is as huge an issue as can be imagined (seven billion people passing faeces more than twice a day and urine at least four times a day, plus all the other aspects); so redirecting the ship towards resource recovery and reuse rather than just amelioration is needed. Sanitation's impact on food security, livelihood support, urban regeneration, rural development and even local economies, directly or indirectly, is enormous. Resources are also generated for fertilizer, animal feed, construction, horticulture etc.

Unfortunately, over the years sanitation has been mistreated as unfashionable and thought of as increasing disease burden, mortality rate, environmental risks and economic losses – there is much more talk of the burden of sanitation than of its gains. And even though there has been a recent rise in investigations into recovery and reuse of human waste, the SDGs still propagate public health and environmental protection while keeping sanitation in the shadows of water and health/hygiene, rather than harnessing its rich resources. Any progressive movement targeting 2030 will need to shift and change the way we consider sanitation. It is not just a transition from technology and toilet focus, but a complete overhaul of sanitation concepts to include users, contexts and locations and marketplace and to target those at the base-of-the-pyramid (BoP) in society. Therefore, this book aims to stir up a new way

of thinking about sanitation for practitioners, teachers/trainers, policymakers, regulators, researchers and students (and maybe to make the profession attractive to the younger and incoming workforce).

The structure of the book is inter- and trans- disciplinary, to show that sanitation management cannot be restricted to one field or discipline alone. It is a collaborative assignment that involves integrated processes across boundary lines and stakeholders. Therefore, engineers, scientists and technologists will have to share the stage with psychologists, sociologists, philosophers, anthropologists, political scientists, economists and others to provide effective and practical solutions; with the users/customers at the centre. The concept developed and proposed moves away from a compendium of technologies so as to provide a foundation for the study of sanitation. It is written as both a textbook for students and a practitioner's guide. A conceptual framework and a regenerative sanitation theory with principles are presented and expanded upon, while each chapter provides exercises and recommendations for future research. In addition, there is a simple historical review of how Sanitation 4.0 was conceived in Chapter 1, further expanded in Chapter 7.

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