

# THE SINGAPORE WATER STORY

Sustainable Development  
in an Urban City State

CECILIA TORTAJADA  
YUGAL JOSHI  
ASIT K. BISWAS

ROUTLEDGE

The Routledge logo, which consists of a stylized white profile of a person's head facing right, positioned to the right of the word "ROUTLEDGE" in a bold, sans-serif font.

## EVENT PROGRAMME

*The Singapore Water Story*

Time	Activity
3.30pm	Registration
3.50pm	Guests to be seated
4.00pm	Arrival of guest-of-honour: Dr Vivian Balakrishnan, Minister for the Environment and Water Resources
4.05pm	Introductory remarks by Prof. Kishore Mahbubani, Dean, Lee Kuan Yew School of Public Policy, NUS
4.10pm	Opening speeches by: <ol style="list-style-type: none"> <li>1. Prof. Dennis Wichelns, Director, Institute of Water Policy, Lee Kuan Yew School of Public Policy, NUS</li> <li>2. Mr Roger Horton, CEO, Taylor &amp; Francis</li> <li>3. Dr Cecilia Tortajada, co-author and President, Third World Centre for Water Management</li> </ol>
4.30pm	Remarks by Dr Vivian Balakrishnan
4.40pm	Background to research and future plans by Prof. Asit Biswas, co-author, Visiting Professor, Lee Kuan Yew School of Public Policy and Founder, Third World Centre for Water Management
4.50pm	Panel Discussion on <i>The Singapore Water Story</i> <u>Panellists:</u> <ol style="list-style-type: none"> <li>1. Mr Tan Gee Paw, Chairman, PUB</li> <li>2. Dr Cecilia Tortajada</li> <li>3. Mr Bindu N. Lohani, Vice President for Knowledge Management and Sustainable Development, ADB</li> </ol>
5.20pm	Q&A session moderated by Prof. Kishore Mahbubani
5.55pm	Book launch
6.00pm	Cocktail reception and book sale

## MEDIA RELEASE

## *The Singapore Water Story*

---

19 March 2013

### **Singapore's Water Story an Example of Sustainable Environmental Protection in the Road to Economic Development**

*Authors from LKY School of Public Policy produce in-depth analysis of  
Singapore's water strategies over the last five decades*

*Singapore.....* Authors from the Lee Kuan Yew School of Public Policy at the National University of Singapore, and the Third World Centre for Water Management in Mexico, have published *The Singapore Water Story*, after two years of research.

The 300-page book, published by Routledge, provides an objective analysis of Singapore's water and wastewater management, alongside its urban planning and economic development since the country's independence in 1965.

The book critically examines how the city-state, notwithstanding scant natural resources and a high dependency on external water sources, transformed its water and wastewater management into one of the best in the world today. It chronicles the setting up of the Public Utilities Board — to replace the City Council and its inherent bureaucracy — marking the move towards stringent regulations and use of legislation to control and harness water.

A number of chapters also discuss Singapore's evolving framework to meet demands on domestic and industrial water uses; the implementation of pricing and mandatory water conservation strategies; and the promotion of nature and recreational activities related to its waterways.

In addition, the book analyses the role of the media in water negotiations between Singapore and its neighbour Malaysia, at times contentious and often regarded as an analogue for wider bilateral relations.

The authors — Dr Cecilia Tortajada and Prof. Asit K. Biswas, President and Founder of Third World Centre for Water Management, respectively, and Mr Yugal Joshi, a former Research Fellow at the Lee Kuan Yew School of Public Policy — analysed plans, policies, institutions, laws and regulations as well as interviewed key actors in related agencies within the Singapore government.

Dr Tortajada sums up her evaluation of Singapore’s record so far:

“Singapore’s water story is one of consistent long-term and visionary planning followed by timely execution, notwithstanding its scarcity of natural resources that would normally limit such a development process.

“Nonetheless, no production of water would ever be enough unless managed and used wisely by the population and industrial and commercial sectors. This is a critical issue that calls for serious reflection in the implementation of stricter water conservation measures: no matter how much water is drawn from different innovative sources, the amount will never be sufficient if not consumed more efficiently.”

Prof. Kishore Mahbubani, Dean of the Lee Kuan Yew School of Public Policy, provided the foreword to the book:

“There are many secrets revealed in this book on how Singapore dramatically transformed its water management. But the real big secret is how Singapore integrated its public policies from many dimensions — from public housing to urban management, from industrial regulation to education. All this was done within a larger and complex political vision, which included a long-term view of Singapore’s prospects.... If Singapore could go from third world to first world in water management in one generation, it provides hope to millions, if not billions, of urban residents in Asia and beyond.”

*The Singapore Water Story* is now available at Books Kinokuniya. A Mandarin version is under preparation.

#### **About Lee Kuan Yew School of Public Policy**

Part of the National University of Singapore, the Lee Kuan Yew School of Public Policy was established in 2004 with the mission of educating and training the next generation of Asian policy-makers and leaders.

With over 400 students spanning 50 countries, the School's unique Asian focus allows students to experience public policy education in a distinctively global environment. The School runs a number of research centres, including the Institute of Water Policy, and frequently plays host to numerous distinguished speakers and visiting scholars. [www.spp.nus.edu.sg](http://www.spp.nus.edu.sg)

### **About Third World Centre for Water Management, Mexico**

The Third World Centre for Water Management in Mexico is primarily a knowledge-based, application oriented think tank, with activities in multiple areas related to water, energy, food, environment and development in different parts of the world.

## BOOK INFORMATION

*The Singapore Water Story*

<b>Title</b>	The Singapore Water Story: Sustainable Development in an Urban City State
<b>Authors</b>	Cecilia Tortajada, Yugal Joshi and Asit K. Biswas
<b>Publisher</b>	Routledge (London and New York)
<b>Year</b>	2013
<b>Extent</b>	282 pp
<b>ISBN</b>	ISBN13: 978-0-415-65782-2 (hardback) ISBN13: 978-0-415-65783-9 (paperback) ISBN13: 978-0-203-07649-1 (ebook)
<b>Retail price</b>	SGD 46 (now available at Books Kinokuniya)
<b>Synopsis</b>	<p><i>The Singapore Water Story</i> is an authoritative text that critically and objectively analyses how the city state managed to transform its water and wastewater management from that of a third-world country in 1965 to one of the best in the world today. It also discusses the enabling environment that made this possible.</p> <p><i>The Singapore Water Story</i> is one of consistent long-term and visionary planning followed by timely execution, notwithstanding Singapore's scarcity of natural resources that would normally limit such a development process.</p> <p>Today, Singapore, with a land area of 714 square kilometres, has 17 reservoirs, 67% of total land coverage for water catchment and heightened capacities for desalination, production of high quality treated wastewater as well as industrial water capacity.</p> <p>In addition to providing an extensive account of Singapore's water and wastewater policies, management and governance practices as well as technical and technological solutions, the book assesses the several challenges and solutions taken in the continuous search for excellence, consistent with domestic social, economic and political expectations as well as international dynamics.</p> <p>The chapters highlight meaningful lessons, policies and practices that may prove relevant to developing as well as developed countries.</p> <p>The book is the result of a collaboration between the Lee Kuan Yew School of Public Policy, National University of Singapore, and the Third World Centre for Water Management, Mexico. A Mandarin version is under preparation.</p> <p><b>Cecilia Tortajada</b> is President, Third World Centre for Water Management, Mexico, and formerly Visiting Professor at the Lee Kuan Yew School of Public</p>

	<p>Policy, Singapore.</p> <p><b>Yugal Joshi</b> works with Northern Railways, Delhi, India, and formerly as a Research Fellow at the Lee Kuan Yew School of Public Policy, National University of Singapore.</p> <p><b>Asit K. Biswas</b> is Distinguished Visiting Professor, Lee Kuan Yew School of Public Policy, National University of Singapore, and founder of the Third World Centre for Water Management, Mexico.</p>
<p><b>Reviews</b></p>	<p>“The Singapore Water Story shows that Leadership and Commitment right from the highest levels in government down to the utility are critical for success. Empowering a capable workforce at the Public Utilities Board translated vision into outputs, ‘safe drinking water, proper sanitation, and clean rivers’ in Singapore. This book is a valuable knowledge product and recommended for wider knowledge sharing.”</p> <p style="text-align: right;">— Mr Bindu N. Lohani, Vice-President of Asian Development Bank for Knowledge Management and Sustainable Development</p> <p>“Water development horizons are beyond the life of most governments. The book’s comprehensive story of Singapore illustrates the importance of consistent long-term policies based on a holistic approach. Singapore has achieved sustainability through continuity of multiple supply source strategies and, very importantly, demand side management policies including investment to minimise non-revenue water.”</p> <p style="text-align: right;">— Professor Michael Rouse, School of Geography and the Environment, Oxford University</p> <p>“<i>The Singapore Water Story</i> is a story of how Singapore successfully draws on clear vision, long term planning, constant innovation, a practical and effective approach and a national commitment to overcome the challenge of limited fresh water resources to develop a sustainable water strategy. In this remarkable book, the co-authors authoritatively and objectively analyse the various success factors in Singapore’s sustainable water strategy and draws valuable lessons from Singapore’s experience. It is an essential read for all water practitioners.”</p> <p style="text-align: right;">— Tan Yong Soon, Permanent Secretary, Ministry of the Environment and Water Resources, Singapore, 2004–2010</p>

## BIOGRAPHIES

### *The Singapore Water Story*

---

#### ASIT BISWAS

Prof. Asit K. Biswas is the founder of the Third World Centre for Water Management in Mexico, and is currently Distinguished Visiting Professor at the Lee Kuan Yew School of Public Policy in Singapore and Indian Institute of Technology, Bhubaneswar, India. Formerly a Professor in the UK, Canada and Sweden, he was a member of the World Commission on Water. He has been a senior advisor to 19 governments, six Heads of United Nations Agencies, Secretary-General of the OECD and also to many other major international and national organisations. He was president of the International Water Resources Association, and has held positions in several major international water and environment-related professional associations. Prof. Biswas is the founder of the *International Journal of Water Resources Development* and has been its Editor-in-Chief for the past 28 years. He has written and edited 81 books (with six new titles underway) and published over 680 scientific and technical papers. His work has now been translated into 37 languages. Among his numerous prizes are the two highest awards of the International Water Resources Association (Crystal Drop and Millennium Awards), the Walter Huber Award from the American Society of Civil Engineering, Honorary Degree of Doctor of Technology from University of Lund, Sweden, and Honorary Degrees of Doctor of Science from University of Strathclyde, Helsinki University of Technology, and Indian Institute of Technology.

Prof. Biswas received the Stockholm Water Prize in 2006 for “his outstanding and multi-faceted contributions to global water resource issues,” as well as the Man of the Year Award from Canadian Prime Minister Stephen Harper, and the Aragon Environment Prize in Spain. In 2012, he was named a “Water Hero of the World” by *Impeller* magazine, and also as one of the 10 thought-leaders of the world in water by Reuters. He is a member of the Global Agenda Council on Water Security of the World Economic Forum. Prof. Biswas is a regular contributor to many national and international newspapers on resource and development related issues and is also a television commentator in three continents.

#### SELECTED BIBLIOGRAPHY



### Journal Articles:

- Joshi, Yugal, Cecilia Tortajada and K B ASIT, "Cleaning of the Singapore River and Kallang Basin in Singapore: Human and Environmental Dimensions". *AMBIO: A Journal of the Human Environment*, (2012).
- Joshi, Yugal, Cecilia Tortajada and K B ASIT, "Cleaning of the Singapore River and Kallang Basin in Singapore: Economic, Social, and Environmental Dimensions". *International Journal of Water Resources Development*, (2012).
- ASIT, K B, "Cooperation or Conflict in Transboundary Water Management: Case Study of South Asia". *Hydrological Sciences Journal Journal Des Sciences Hydrologiques*, 56, no. 4 (2011).
- ASIT, K B, "Water Quality Management: An Introductory Framework". *International Journal of Water Resources Development*, 27, no. 1 (2011).

### Papers presented in international / regional conferences / seminars:

- ASIT, K B, "Water Infrastructure in Asia: Future Requirements". *Singapore International Water Week* ( 1 Jul 2012, Singapore)
- ASIT, K B, "Water: A Global Perspective Beyond 2025". *Sixth World Water Forum* (12–17 Mar 2012, Marseille, France)

### Books:

- ASIT, K B, eds., *Managing of Transboundary Waters of Latin America*, 0 ed., London: Routledge, 2012.
- ASIT, K B and Cecilia Tortajada, eds., *Asian Perspectives in Water Management*, 0 ed., London: Routledge, 2012.
- Tortajada, Cecilia, K B ASIT and Yugal Joshi, eds., *Urban Water Management in Singapore: From Third World to First World*, 0 ed., London: Routledge, 2012.
- ASIT, K B, Cecilia Tortajada and Rafael Izquierdo, eds., *Water Quality Management. Present Situations, Challenges and Future Perspectives*, Berlin Heidelberg: Springer Verlag, 2012. 281 pp.
- Tortajada, Cecilia, Dogan Altinbilek and K B ASIT, eds., *Impacts of Large Dams: A Global Assessment*, Berlin Heidelberg: Springer Verlag, 2012. 407 pp.
- Tortajada, Cecilia and K B ASIT, eds., *Improving Water Policy and Governance*, Abingdon, Oxon: Routledge, 2011. 195 pp.
- *Water Institutions: Policies, Performance and Prospects*, trans. Gopalakrishnan, Chennai, Cecilia Tortajada and K B ASIT. N/A: N/A, 2011. 217 pp. (In Chinese).

## BIOGRAPHIES

### *The Singapore Water Story*

---

#### **CECILIA TORTAJADA**

Dr Cecilia Tortajada is the President of the Third World Centre for Water Management, Mexico. Her work focuses on multidisciplinary research on public policy aspects of natural resources management, especially water, in developed and developing countries. She is currently working on future global environment and water security; involvement of new actors in natural resources decision-making; and development of innovative approaches for poverty alleviation through regional development.

She has been an advisor to major international institutions like FAO, UNDP, JICA, ADB, OECD and GIZ, and has worked in countries in Africa, Asia, North and South America and Europe on natural resources and environment-related policy, management and governance aspects. She is former President of the International Water Resources Association (2007–2009). She is Editor-in-Chief of the *International Journal of Water Resources Development*, Associate Editor of *Water International*, member of the Editorial Board of the *Journal of Natural Resources Policy Research* and *IWRA (India)*, and member of the Series Advisory Board, Springer Briefs in Earth Sciences, Geography & Earth System Sciences. She is the author and editor of more than 30 books by major international publishers. Her work has been translated into Arabic, Chinese, French, German, Japanese and Spanish languages.

She is also a member of the OECD Initiative in Water Governance and collaborates with the UNDP Post-2015 Development Agenda.

## BIOGRAPHIES

### *The Singapore Water Story*

---

#### **YUGAL JOSHI**

Yugal Kishore Joshi has two decades of working experience in private-sector production companies, public-sector upstream oil company, academia and in government.

Mr Joshi joined the Indian Civil Service in 1997. Since then he has served Ministry of Railways in various capacities as well as the Ministry of Petroleum and Natural Gas. Presently he is serving as Senior Divisional Commissioner, Delhi Division, at the Ministry of Railways.

He received his post-graduate education from the Indian Institute of Technology in Delhi and a law degree from University of Delhi. He passed his civil services examinations with History and Anthropology as subjects. Mr Joshi is an alumnus of the Lee Kuan Yew School of Public Policy, where he completed his Masters in Public Administration and was also Research Fellow.

## PANELLISTS

### *The Singapore Water Story*

---

#### **TAN GEE PAW**

Mr Tan Gee Paw was appointed Chairman of the PUB, Singapore's national water agency on 1 April 2001. He is also the Chairman of OpenNet Pte Ltd, and a Director of the Singapore Millennium Foundation, Ascendas Pte Ltd and Jurong International Holdings Pte Ltd.

Mr Tan graduated with First Class Honours in Bachelor of Engineering (Civil) from the University of Malaya in 1967, and a Master of Science in Systems Engineering from the University of Singapore on 1971.

In 1978, Mr Tan received the Public Administration Medal (Silver), and in 2001, the Meritorious Service Medal. He also received a Special Award (Gold Medal) for Clean River Commemoration in 1987. He received the Medal of Commendation at the NTUC May Day Award in 2005, and the President's Award for the Environment in 2007. Mr Tan was also bestowed the Distinguished Service Order in 2010. In 2011, Mr Tan was conferred the Distinguished Engineering Alumni Award by the National University of Singapore, and elected an Honorary Fellow of the Institution of Engineers, Singapore. Mr Tan was also elected a Fellow of the Academy of Engineering, Singapore in 2012.

#### **BINDU N. LOHANI**

Mr Bindu N. Lohani is Vice-President of the Asian Development Bank (ADB) for Knowledge Management and Sustainable Development and a member of the ADB's Management Team. Prior to assuming his current post, Mr Lohani was Vice-President (Finance and Administration) of ADB.

Mr Lohani is responsible for ADB's Economic and Research Department (Office of the Chief Economist), Office of Regional Economic Integration (OREI), Regional and Sustainable Development Department (RSDD), and the Office for Information Systems and Technology (OIST). He is a member the International Advisory Panel of the Institute of Water Policy (Singapore). He is an elected member of the National Academy of Engineering of United States, and is a diplomat of the American Academy of Environmental Engineers and Fellow of the American Association for the Advancement of Science Council.