

## PREFACE AND ACKNOWLEDGEMENTS

The Master of Science (Environmental Management) [Msc (Env Mgt)] Programme was launched in July 2001, by the National University of Singapore (NUS). Often referred to as the “MEM” programme, it is a multi-disciplinary graduate programme to provide education in environmental management for senior and mid-level managers in corporations, institutions, and government and non-government organisations. It aims to equip graduates with the necessary inter-disciplinary and multi-disciplinary knowledge to properly manage the environment and to deal with the challenges of an environmentally conscious society and international market. It enables graduates to assume responsible and influential roles in the public and private sectors and to make environmentally sound decisions that support sustainable development and livelihoods.

The MEM Programme is jointly mounted by seven Faculties and Schools in the NUS, namely, the Faculties of Arts and Social Sciences, Engineering, Law, and Science; and the NUS Business School, the Yong Loo Lin School of Medicine, and the School of Design and Environment (SDE) which hosts the programme. It is administered by a Director, from the staff of the host Faculty/School, the SDE, under the leadership of a Programme Management Committee which comprises a representative from each Faculty/School. The Programme also draws on the talents of the teaching staff of the Lee Kuan Yew School of Public Policy which was established in 2004 with the mission of educating and training the next generation of Asian policymakers and leaders. The MEM Programme has formal links with the Yale School of Forestry and Environmental Studies (FES) and Duke University’s Nicholas School of the Environment and Earth Sciences, providing for collaboration in teaching and research as well as academic staff (faculty) and student exchanges. The program draws its inspiration from the Yale Master of Environmental Management (MEM) programme. Much as we would have liked to call our programme the MEM in a similar vein, we decided to name it more conventionally as an MSc programme, this being more readily acceptable by industries. And so the programme remains formally today as the MSc in Environmental Management, although we refer to it as the MEM programme.

It is a requirement of the MEM Programme that each student must pursue research in a chosen field and, under guided supervision, complete either a dissertation of 20,000 words or a study report of 10,000 words. This book is the first volume of a collection of some of the best research papers done by students in the programme for the initial years from 2001/2002 to 2006/2007. They have been edited and abridged for publication. In each chapter, the name of the student appears first, and that of the supervisor/s follows thereafter. Future volumes will soon follow. The programme wishes to acknowledge those students whose works do not appear in this volume, emphasizing that every student in this programme has contributed to its success.

Apart from the students, many people have also contributed to the success of this programme. We wish to thank them most sincerely. They are:-

1. Former NUS President Prof Shi Choon Fong, former Provost Prof Chong Chi Tat of NUS and the NUS Board of Graduate Studies for approving this unique programme in 2001.
2. The Deans of the seven Faculties and Schools in NUS who have joined us in this programme. They have supported us by mounting relevant courses in their faculties/schools and recognising the contributions of their staff in teaching, supervision of research and in examining our students.
3. Each and every member of the teaching and administrative staff.
4. The representatives of each Faculty, who serve on the Programme Management Committee. Their enthusiasm and passion for the environment and for this programme has helped in immeasurable ways to ensure its sustainability and its constant improvement.
5. The Deans of the School of Design and Environment (Prof Cheong Hin Fatt [2000–2007] and Prof Heng Chye Kiang [2008 to date]) for hosting the programme and giving it administrative and financial support.
6. The Directors of the programme, Dr Malone-Lee Lai Choo (2001–February 2009), Dr Ong Boon Lay (March 2009–31 December 2009) and Prof George Ofori (1 January 2010), who actually administer this programme.
7. The members of our Advisory Committee, particularly its Chair, Prof Tommy Koh.
8. Our partners in this venture, the Yale School of Forestry and Environmental Studies. Dean Prof Gus Speth signed an MOU with the programme at its inception in 2001, and was Lee Kuan Yew Distinguished Visitor to NUS in 2005. Each year, Assoc Prof Marian

Chertow, Director of the Industrial Management Programme teaches our students in the course “Business and the Environment”, and recently, students were also taught by Dr Weslynn Ashton, Director of the Yale programme on Industrial Ecology in Developing Countries.

Last but not least, the programme wishes to gratefully acknowledge the support of Shell Companies in Singapore. Since the programme’s early years, Shell has contributed financially, enabling us to fund bursaries for needy students and prizes for the best students. Shell also bears the costs of this publication. We wish to thank its Chairman Mr Lee Tzu-yang for his continued encouragement and support. Mr Lee has been a member of the MEM Advisory Committee since June 2002. Thanks are also due to Shell’s Mr Warren Fernandez, Regional Director (Asia Pacific), who is also on our Advisory Committee; Ms Mavis Kuek, General Manager, External Affairs & Communications, and Ms Caroline Loke, Head, Social Investment, External Affairs. They have taken a keen interest in our programme, attending our seminars and other events, sharing their expertise and facilitating internships for our students.

As has been mentioned, this is the first volume of student papers and future volumes will follow. It is hoped that these papers will be a contribution towards enhancing our knowledge and understanding of the many challenges that the environment can present, and the solutions that can be found by enlightened and responsible environmental managers.

**Assoc Prof Lye Lin Heng**

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