Preface

The last couple of decades have seen a fundamental shift in how society perceives it should prepare for the future, giving rise to the discipline of sustainability science. Since the issues we are facing today are highly complex, such as climate change and difficulty in meeting the rising energy demands while not harming the planet, it is important that they are dealt with in an interdependent and holistic manner. Inevitably, this requires academia to undergo a transformation from following a sectionalized approach to the one where different disciplines and fields collaborate together, essentially a transdisciplinary approach.

Since establishing the Integrated Research System for Sustainability Science (IR3S) in 2005 and the Graduate Program in Sustainability Science (GPSS) in 2007, the University of Tokyo has become a widely recognized leader not only in advancing sustainability research, but also in attempting to apply in practice the findings from such research. Building on the foundations and progress forged by the IR3S and GPSS, "the Graduate Program in Sustainability Science-Global Leadership Initiative (GPSS-GLI)" was established in 2011 to advance the field of sustainability science by aiming to train the next generation of "global leaders". Such leaders should be characterized as individuals that are not only highly specialized in their own fields, but also have extensive knowledge of a variety of other disciplines and are guided by ethically sound principles. Essentially, GPSS-GLI is one of the nine competitive degree programs within the University of Tokyo that is being supported by "Program for Leading Graduate Schools" initiative funded by Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT). As a collaborative effort between the Graduate School of Frontier Sciences and the United Nations University (UNU), GPSS-GLI combines the educational resources and international research networks of these leading institutions and thereby provides participants with the training and opportunities necessary to become global leaders.

One of the key elements in the GPSS-GLI program to train "global leaders" is to provide students with ample opportunity to experience the reality in the field, framed around Global Field Exercise (GFE) and Exercises on Resilience (ER). The exercises not only help students broaden their horizons and attempt to

holistically understand problems and develop solutions, but also serve to develop general methodologies that students and sustainability science practitioners can use in the field. This book attempts to summarize some of the experiences in running these GPSS-GLI courses and showcase other field works that GPSS-GLI students have undertaken as part of their formation as sustainability science leaders.

We hope that the book will serve as a good source of background information for those who wish to conduct field exercises in sustainability science, by illustrating the type of research that is possible, and inspire others to continue to develop conceptual and practical ways of conducting such work.

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