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RALPH P. HALL

TECHNOLOGY, GLOBALIZATION, AND SUSTAINABLE DEVELOPMENT

TRANSFORMING THE INDUSTRIAL STATE

environment • economy • employment

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Preface

Technology, Globalization, and Sustainable Development explores the rich and multidimensional elements of sustainable development. This book grew out of courses taught over the past decade at the Massachusetts Institute of Technology, Cambridge University, and the Harvard-Cyprus International Institute for the Environment and Public Health, now associated with the Cyprus University of Technology. More recently, the course was offered at Virginia Tech.

During the first decade of the twenty-first century, there has been a significant increase in academic and societal interest in sustainable development, which has been accompanied by important political and legal changes. Although some scholars continue to insist that the concept is vague and unwieldy, this writing seeks to explore the rich and multidimensional elements of sustainability and, further, to offer an integrative, transdisciplinary approach to policy design for its attainment. Sustainability and the related concepts of development, globalization, and economic and environmental justice are interwoven with technological, organizational, institutional, and social changes and with trade as drivers of the transformation of industrial and industrializing societies.

The Schumpeterian notion of technological innovation as “the engine of growth” is being challenged as the globalization of trade is increasingly recognized to be an additional and different driving force for growth of industrial economies. With the establishment of the World Trade Organization (WTO) implementing the General Agreement on Tariffs

and Trade (GATT), the North American Free Trade Agreement (NAFTA), and other trading regimes, serious questions have been raised concerning the effects of global trade on sustainability. These effects must be viewed broadly to include not only a healthy economic base but also a sound environment, stable employment with adequate purchasing power, distributional equity, national self-reliance, maintenance of cultural integrity, and social inclusion.

Different trading regimes treat environment and labor standards differently, sometimes regarding more stringent regulatory requirements as illegal nontariff trade barriers. This book explores the many dimensions of sustainability and the use of national, multinational, and international political and legal mechanisms to further sustainable development. The interrelationship of technological change, economic growth, industrial development, employment, and the environment is examined in the context of theories of trade, employment, and regulation and of the importance of networks and organizational innovation and learning. Policies for resolving the apparent conflicts among development, the environment, and employment are explored in generating a different vision for the future.

This book draws extensively on both American and European writings on social and political theory; management science; industrial, labor, and environmental economics; ecological economics; and environmental and international law. Students from a variety of courses of study in three countries have taken the courses on which this work has been developed, and it is hoped that this book can be taught in

programs of schools of engineering, management and economics, industrial relations, law, science, public health, and international relations and political science beyond the American venue.

This work can serve both as a comprehensive reference book on the many aspects of sustainable development and as a textbook that would ideally be taught on a multidisciplinary team basis. However, parts of the book could also be incorporated into existing conventional curricula. For example, Chapter 2 (in Part I and in its expanded form on the website accompanying this text), "The Emergence of Sustainable Development," is relevant for courses in history, sociology, and political science. Chapters 3, 4, and 5 (Part II) would be valuable in courses on economic growth and development in economics departments, schools of management, and international

relations programs. Chapters 6, 7, and 8 ideally fit into courses on innovation and industrial policy in both engineering and management schools. Chapters 9 and 10 (Part IV) and Chapter 11 are dedicated to national, regional, and international environmental law and could be taught in law schools, international relations programs, political science, and schools of public health. Chapter 12 is an expansive treatment of international finance for development and the environment suitable for schools of management and departments of economics and political science.

Thus a number of selected chapters from this work could easily fill several traditional courses in different departments, but the entire book offers an opportunity for a transdisciplinary course that cuts across departments and schools, which is the trend in many forward-looking programs.

Acknowledgments

We wish not only to acknowledge the support of our families during this challenging effort but also to thank the students, scholars, writers, and public servants from whom we have learned so much. We also thank our colleagues at the Massachusetts Institute of Technology, Cambridge University, the Cyprus University of Technology, and Virginia Tech who understood the importance of crossing disciplinary lines and engaging in trans-disciplinary thinking.

This work has been in development for more than a decade and has benefited from the keen insight and inquisitive minds of hundreds of students and numerous colleagues. We are indebted to all those who have played a part in enriching the writing of this work. In particular, we would like to thank

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