Book Review

Making Microchips

Author: Jan Mazurek
Reviewer: John Lane

In Making Microchips Jan Mazurek provides not only a broad overview of the environmental challenges facing the semiconductor industry and its regulators, but also gives insights on new-style regulatory initiatives. Mazurek's goal is not to propose a grand solution to the difficult problems the chip industry faces, but to provide the background information, the historical context and the perspective necessary for the construction of any future framework.

The book is set against the backdrop of two recent US government programs (the so-called Common Sense Initiative (CSI) and Project XL) aimed at moving beyond adversarial enforcement of environmental regulations to a more co-operative framework in which firms are trusted to search for innovative manufacturing methods, which should meet regulations, but which could also better them. This is in exchange for greater leeway and increased bureaucratic flexibility from government regulators.

In the introduction, Mazurek provides a roadmap to the book's main points and discusses the importance—both ecological and economic—of solutions to the problems being presented.

Chapter One provides background information on the history of the semiconductor industry and describes how economic models used extensively and successfully in more traditional industries have been less than successful in the high-tech industry—strongly suggesting a need for newer models and further research on them.

Chapter Two provides a great deal of technical information on the computer chip fabrication process, sheds light on the industry's many environmental failings, discusses the difficulties associated with tracking industry emissions and points out the pace of technological development in the methods used in chip production. One important result is that, because of the constant change in industry chemical use, interested parties lack sufficient information to properly assess the long-term effects of current practices.

Chapters Three and Four discuss some difficulties unique to the semiconductor industry that prevent application of standard economic models, hinder effective recording and tracking of emissions and even further frustrate assessment of the threat potential of given practices. For example, the extremely high cost of building chip fabrication plants and their quick obsolescence has forced some chip manufacturers into design-only (non-manufacturing) roles and others into co-operative ventures with erstwhile

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overseas competitors—an unusual trend in more traditional business models. Furthermore, chip fabrication facilities can, and routinely are, placed all over the world—greatly frustrating enforcement of environmental reporting.

Chapters Five and Six bring the discussion back full circle to the aforementioned US government initiatives and attempt to put the successes and failings of the initiatives into their proper historical and contextual perspective—given the facts and concepts introduced in the earlier chapters. Chapter Six includes a lengthy discourse on Project XL—its shortcomings, successes and possibilities for future improvement.

The final chapter concludes with a summary and further suggestions for improvements on the current generation of regulatory frameworks.

Mazurek’s book is of relevance not only for those interested in environmental regulation of the semiconductor industry, but also for those interested in the future of environmental regulation in general. While initiatives such as Project XL and CSI have problems, they also hold great promise for cooperative efforts aimed at not simply managing harmful emissions but eliminating them before manufacturing even begins. This book provides solid insights into the challenges and issues faced in their implementation.