Index of Contents

List of Tables ..... **X**

List of Figures ..... **XII**

Preface ..... **XIII**

Part I: Foresight, Roadmapping, and Governance

Governing Policy Processes and Foresight. Potential Contributions and Inherent Tensions **1**

Attila Havas

1 Introduction **1**

2 Theoretical Framework **1**

2.1 The Process of Innovation and Economic Theories 1

2.2 Implications for RTDI Policies 3

2.3 Foresight, Innovation and RTDI Policies 4

3 Policy Challenges: Why to Conduct Foresight **5**

4 A Typology of Foresight Programmes **7**

4.1 Locating Foresight Programmes among Future-oriented Analyses 7

4.2 Focus of Foresight Programmes 8

5 Coherence of Foresight Programmes **11**

5.1 Themes and Time Horizon 11

5.2 Different Approaches to the Same Theme 12

6 Conclusions **13**

References **15**

Prospective Technology Analysis for EU Level Governance of Research and Technological Development. Challenges, Problems and Possible Solutions **19**

Michael Rader

1 Introduction **19**

2 Types of Prospective Technology Analysis **19**

3 The Use of Prospective Technology Analysis for RTD Governance **20**

4 European Level Activities **22**

5 Informing Decision-Making on S&T Priorities **22**

6 Informing Decision-Makers to Provide Early Warning **23**

7 Lessons from European Level Work **24**

7.1 Foresight 24

7.2 Technology Assessment for the Parliament 25

8 Conclusions **26**

References **27**

Parliamentary Technology Assessment as Part of Technology Governance 29
Armin Grunwald
1 Introduction and Overview 29
2 Recent Developments in Technology Assessment 30
3 Parliamentary Technology Assessment – an Overview 31
4 The Office of Technology Assessment at the German *Bundestag* 33
5 Parliamentary TA as Part of Technology Governance 34
6 Challenges of Parliamentary TA 35
References 36

Technology Foresight in China and its Future Development 39
Fan Chunliang
1 Introduction 39
2 The Traditional Approach of S&T Foresight and Selection Priority Areas – *The Mid term and Long term S&T Plan* 39
3 The Approach of Selection of Critical Technologies in 1990s 40
4 China Technology Foresight Project (MOST, 2002-2006) 40
4.1 Origin 41
4.2 Aims 41
4.3 Areas 41
4.4 Organization 41
4.5 Methodological Approach 41
4.6 Phases 42
4.7 Results 42
5 Technology Foresight of China towards 2020 Project (CAS, 2003-2007) 43
5.1 Aims 43
5.2 Areas 43
5.3 Organization 43
5.4 Methodological Approach 43
5.5 Results 44
6 Conclusion 44
References 44

Nanotechnology in Brazil: Scientists' Visions and Policy Making 47
Noela Invernizzi
1 Introduction 47
2 Development of the N&N Policy in Brazil 49
3 The Promises of Nanosciences and Nanotechnologies 51
4 Economic, Social and Ethical Implications and Potential Risks 54
5 Legitimizing the Field 55

6 Main Actors 58
7 Comments and Reflections 58
References 59

Florida – Adequate Forecasting Scenarios 63
Gordon L. Nelson
1 Growth of Florida 63
2 Planned (Smart) Growth 63
3 Issues Challenging Growth 64
4 Schools 66
5 Moving Data 69
6 Traffic Data 69
7 Economy 69
8 Conclusion 69
References 70

Methodological Experiences in Hungarian Foresight Activities 71
Erzsébet Nováky, Éva Hideg
1 Introductory Thoughts 71
2 Foresights in the Field of Vocational Education 71
3 Public Foresight for Regional Foresights 74
3.1 The Future of Tuzsér Village and the Small Region of Felső-Szabolcs 74
3.2 The Future of the Hungarian Town Kiskunfélegyháza 75
4 Looking for Future Alternatives for Hungary beyond Tomorrow, by Using Participatory Futures Studies Methods 76
5 Methodological Experiences for Technology Foresight 77
References 78

Some Remarks on Future Thinking 79
Gerhard Banse
1 Introduction: A Short Review 79
2 The Problem 79
3 Limits of Future Thinking 80
4 The Scenario Method 81
5 The Influence of Values 82
6 Conclusions 83
References 83

The Methods of Hermann Kahn. The 2000 Forecast revisited **85**
Klaus Kornwachs
1 Introduction **85**
2 Contemplating Future Technologies **86**
2.1 The Determinants of Innovation Processes 86
2.2 Visions 86
2.3 Extrapolations 87
3 Think Tanks **87**
4 The Methods **88**
5 Kahn's Prognosis and Its Presuppositions **91**
5.1 The Highly Probable Forecasts 92
5.2 The Misses 95
5.3 The Reasons for Hits and Misses 96
6 Acting with Insufficient Knowledge **97**
References **98**

On Environmental Scanning, Emerging Issues Analysis and Construction of Wild Cards **103**
Imre Hronszky, Ágnes Fésüs
1 Introduction **103**
2 Environment Scanning and the Emerging Issues Analysis (EIA) **103**
3 On Abrupt Changes and Wild Cards **106**
4 On "Unbelievable", "Impossible" Scenarios **110**
References **112**

"It's All Coming Together Now ..." – Converging Networks and the Network of Convergence **115**
Hans-Joachim Petsche
1 The Myth of the Human Impact of Pure Technology **115**
1.1 E-Learning 115
1.2 Success Story of Knowledge Management (KM) 116
1.3 The Hype, the Myth and the Disenchantment of Computer Science (CS) 119
2 Will Web 2.0 be to the Rescue? **119**
3 What Can We Do to Minimize the Risks? **124**
References **125**

Ethics of a Science and Technology-based Development in Mexico and Latin America 127

Medardo Tapia Uribe

1 Introduction 127

2 The Regional Case in the Mexican and Latin American Context 129

3 The *Inertial* Scenario and the Desirable and Possible Alternative Future Scenario 131

4 Morelos' Science and Technology Resources: a Bridge between an *Inertial* and a Plausible Scenario of Development 132

5 Final Comments 136

References 136

On Qualified Use and Application of Knowledge 139

Ladislav Tondl

1 By Way of Introduction 139

2 Motives and Sources of Knowledge Management 139

3 Structure of Knowledge Application 142

4 The Quality of the Solution of a Problem Situation 143

5 Knowledge Application, Selection and Integration of Knowledge 144

6 On the Significance of the Subject of Knowledge Application 146

References 147

What Is EU Research Policy? 149

Ulric Fayl von Hentaller, Gilbert Fayl

1 Brief History of the European Union 149

2 European Research Co-operation 151

2.1 Genesis and Development 151

2.2 EU RTD Framework Programme 155

3 Renewed Political Vision for the EU 158

4 Inherent Misapprehension 159

4.1 Knowledge-based Society 159

4.2 R&D Spending 160

4.3 Political Guidance 161

5 Understanding Meaning Behind Words 163

References 163

Part II: On History and Theory of Prospective Technology Studies

Prospective Technology Analysis for EU Level Governance of Research and Technological Development. Challenges, Problems and Possible Solutions 167

Michael Rader

1 Introduction 167

2 Types of Prospective Technology Analysis 167

3 The Use of Prospective Technology Analysis for RTD Governance 168

4 European Level Activities 170

5 Informing Decision-Making on S&T Priorities 170

6 Informing Decision-Makers to Provide Early Warning 171

7 Lessons from European Level Work 172

7.1 Foresight 172

7.2 Technology Assessment for the Parliament 173

8 Conclusions 175

References 175

Foresight-type Programme in Ukraine in 2005-2006. Brief Historical Overview of Foresight-type Studies in Ukraine 177

Igor Yegorov

1 Introduction 177

2 Methodological Background and Organization of Work on Foresight-type Program 177

3 Results of Analysis of the R&D Sector 179

4 National Innovation System Formation and Ability of R&D Sector to Address Emerging RTD Priority Areas 183

5 Conclusions and Policy Implications 185

References 185

Cooperation with Middle and Eastern European Countries in the Field of Technology Assessment – Results and Experiences. A Short Overview 187

Gerhard Banse

1 The Background 187

2 Some Activities 188

3 Some Results 190

4 Closing Remarks 192

References 193

Technological Foresight and Technology Assessment. Methods for Enabling Innovations in the Czech Republic **195**

Petr Machleidt

1 Technological Foresight and Technology Assessment in the Czech Republic **195**

2 Promotion of Innovations in the Czech Republic **196**

References **198**

Technology Assessment – Possibilities and Limitations of Application in Poland **199**

Andrzej Kiepas

References **203**

Uncertainty and Local Knowledge in Environmental Policy: Forestry Research and Regulation in Northern Spain **205**

José A. López Cerezo, Marta I. González García

1 Introduction **205**

2 The Eucalyptus Controversy **206**

3 The Sources of Uncertainty **207**

4 The Many Faces of Forestry Uncertainty **208**

4.1 The Social Realm 208

4.2 The Experts' Realm 209

4.3 The Politicians' Realm 212

5 The Transformation of the Socioeconomic System **214**

6 The Evolution of the Eucalyptus Controversy **215**

7 The Utility of Lay Knowledge **217**

8 Final Discussion **217**

References **219**

Labs on Stage: Managing Science and Technology without Markets **223**

Armando Menéndez Viso

1 Introduction **223**

2 Science, Technology and Public Policies **223**

3 The Problem of "the Public" **225**

4 Individualist Solutions **225**

5 Collective Solutions **226**

6 Concluding Remarks **228**

References **228**

Evaluation: Tool for Policy Design or Brake for Reform? Anthology of the European Commission's Research Evaluation **231**

Gilbert Fayl

1 Preface **231**

2 The Issue: The Battlefield **231**

3 The Reality **232**

3.1 Struggle for Funds 232

3.2 Scientific Advice 233

4 Research Evaluation **233**

4.1 Optimal Conditions 233

4.2 Inherent Conflicts 234

5 Tool for Policy Design **234**

5.1 Credibility Concern 235

5.2 The Turning Point 235

5.3 In a Nutshell 236

5.4 Mobilizing Allies 236

5.5 Input to Legislation 237

5.6 New Challenges 237

5.7 The Way Forward 238

6 Lessons **239**

6.1 Useful Conflict 239

6.2 Policy Design or Brake for Reform? 239

7 And the Future **239**

References **240**

Annex A: Definitions Relating to Research Evaluation **241**

Annex B: Conflict between Politics and Scientific Advice **242**

Toward "Innovation of Innovation" by "Taking European Knowledge Society Seriously" **245**

Ágnes Fésüs, Imre Hronszky

1 Introductory Remarks **245**

2 Unacceptable Public Unease meanwhile a Need for Democratization of STI Dynamic? **247**

3 Changing Place of Science and Technology in Society **248**

4 The Public as Possible Roadblock to Innovation: "Folk Theories" of "Enactors" **249**

5 Risk Assessment and Its Fallacies **252**

6 Reinventing Innovation **255**

References **256**

Complete List of Literature **257**

Authors **279**