### Contents

List of Figures .............................................................................. ix
List of Tables ................................................................. xiii
Acknowledgements .......................................................... xvii
Foreword ................................................................. ix
Preface ........................................................................ xxii

1. **INTRODUCTION** .............................................................. 1
   1.1 PUBLIC POLICY CONCERNS WITH THE CONSTRUCTION SECTOR ......................................................... 1
   1.2 DEFINING THE CONSTRUCTION SPACE .................................................. 3

2. **ANALYTICAL FRAMEWORK** ........................................ 7
   2.1 DEFINING INNOVATION ....................................................... 7
   2.2 INNOVATION PROCESSES AND SYSTEMS ........................................ 11
   2.3 INFLUENCE OF POLITICAL AND SOCIAL STRUCTURES ........................................ 16

3. **INTERNATIONAL PRACTICE IN CONSTRUCTION INNOVATION SYSTEMS** ........................................ 19
   3.1 INTERNATIONAL TASK GROUP .................................................. 19
   3.2 MEMBERS OF TG35 - COUNTRIES AND CONTRIBUTING AUTHORS ........................................ 21

4. **ARGENTINA** ...................................................... 23
   4.1 DESCRIPTION OF THE SITUATION ........................................... 23
   4.2 PUBLIC POLICIES THAT PROMOTE INNOVATION IN ARGENTINA .................................................. 25
   4.3 MAJOR TRENDS IN INNOVATION POLICIES ........................................ 28
   4.4 THE EFFECTIVENESS OF PUBLIC POLICIES ON INNOVATION ........................................ 28

5. **AUSTRALIA** ........................................................... 31
   5.1 INTRODUCTION ........................................................... 31
   5.2 THE AUSTRALIAN CONTEXT .................................................. 32
   5.3 INNOVATION IN THE AUSTRALIAN CONSTRUCTION SECTOR .................................................. 42
   5.4 DESCRIPTION OF INITIATIVES IMPACTING ON CONSTRUCTION INNOVATION ........................................ 48
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5</td>
<td>EFFECTIVENESS OF GOVERNMENT PROGRAMS</td>
<td>56</td>
</tr>
<tr>
<td>5.6</td>
<td>FUTURE DIRECTIONS</td>
<td>57</td>
</tr>
<tr>
<td>6.</td>
<td>BRAZIL</td>
<td>61</td>
</tr>
<tr>
<td>6.1</td>
<td>INTRODUCTION</td>
<td>61</td>
</tr>
<tr>
<td>6.2</td>
<td>CONTEXT</td>
<td>62</td>
</tr>
<tr>
<td>6.3</td>
<td>CONSTRUCTION AND TECHNOLOGICAL INNOVATION: RECENT EVOLUTION AND CURRENT PRACTICES</td>
<td>63</td>
</tr>
<tr>
<td>6.4</td>
<td>PUBLIC INTERVENTIONS</td>
<td>70</td>
</tr>
<tr>
<td>6.5</td>
<td>EFFECTIVENESS OF PUBLIC INTERVENTIONS</td>
<td>90</td>
</tr>
<tr>
<td>7.</td>
<td>CANADA</td>
<td>99</td>
</tr>
<tr>
<td>7.1</td>
<td>CANADIAN CONTEXT</td>
<td>99</td>
</tr>
<tr>
<td>7.2</td>
<td>PUBLIC INTERVENTIONS</td>
<td>102</td>
</tr>
<tr>
<td>7.3</td>
<td>EFFECTIVENESS OF PUBLIC INTERVENTIONS</td>
<td>106</td>
</tr>
<tr>
<td>7.4</td>
<td>TRENDS</td>
<td>107</td>
</tr>
<tr>
<td>7.5</td>
<td>CONCLUSION</td>
<td>109</td>
</tr>
<tr>
<td>8.</td>
<td>CHILE</td>
<td>111</td>
</tr>
<tr>
<td>8.1</td>
<td>INTRODUCTION</td>
<td>111</td>
</tr>
<tr>
<td>8.2</td>
<td>THE CHILEAN CONTEXT</td>
<td>112</td>
</tr>
<tr>
<td>8.3</td>
<td>MAJOR PROGRAMS FOR SUPPORTING R&amp;D AND INNOVATION IN THE CHILEAN CONSTRUCTION INDUSTRY</td>
<td>118</td>
</tr>
<tr>
<td>8.4</td>
<td>CHANGE DRIVERS FOR INNOVATION IN THE CHILEAN CONSTRUCTION SECTOR</td>
<td>124</td>
</tr>
<tr>
<td>8.5</td>
<td>BARRIERS TO R&amp;D AND INNOVATION IN THE CHILEAN CONSTRUCTION SECTOR</td>
<td>124</td>
</tr>
<tr>
<td>8.6</td>
<td>TRENDS IN THE CHILEAN CONSTRUCTION SECTOR</td>
<td>126</td>
</tr>
<tr>
<td>8.7</td>
<td>CONCLUSIONS AND RESEARCH AGENDA</td>
<td>127</td>
</tr>
<tr>
<td>9.</td>
<td>DENMARK</td>
<td>129</td>
</tr>
<tr>
<td>9.1</td>
<td>THE OBJECTIVES OF THE STUDY AND THE ISSUE OF INNOVATION SYSTEMS</td>
<td>130</td>
</tr>
<tr>
<td>9.2</td>
<td>CONTEXT OF INNOVATION</td>
<td>134</td>
</tr>
<tr>
<td>9.3</td>
<td>AN OVERVIEW OF PUBLIC POLICY INSTRUMENTS</td>
<td>148</td>
</tr>
<tr>
<td>9.4</td>
<td>EFFECTIVENESS OF PUBLIC POLICY INSTRUMENTS</td>
<td>155</td>
</tr>
<tr>
<td>9.5</td>
<td>TRENDS IN PUBLIC POLICY STRATEGIES AND INSTRUMENTS</td>
<td>158</td>
</tr>
<tr>
<td>9.6</td>
<td>CONCLUSION</td>
<td>162</td>
</tr>
<tr>
<td>9.7</td>
<td>APPENDIX</td>
<td>164</td>
</tr>
<tr>
<td>10.</td>
<td>FINLAND</td>
<td>167</td>
</tr>
<tr>
<td>10.1</td>
<td>INTRODUCTION</td>
<td>167</td>
</tr>
<tr>
<td>10.2</td>
<td>THE FINNISH CONTEXT</td>
<td>169</td>
</tr>
<tr>
<td>10.3</td>
<td>PUBLIC POLICY INSTRUMENTS</td>
<td>173</td>
</tr>
</tbody>
</table>
10.4 EFFECTIVENESS OF PUBLIC INTERVENTIONS .......................................... 180
10.5 TRENDS AND CONCLUSIONS ................................................................. 182
10.6 APPENDIX 1. ONGOING TEKES TECHNOLOGY PROGRAMMES AND CLINIC ACTIVITIES RELATED TO THE REAL ESTATE AND CONSTRUCTION SECTOR IN 2000 ................................................................. 183

11. FRANCE ............................................................................................................. 185
11.1 INTRODUCTION .............................................................................................. 186
11.2 GENERAL DATA ABOUT PUBLIC POLICY INSTRUMENTS ............................ 186
11.3 THE CASE OF THE CONSTRUCTION INDUSTRY ........................................... 189
11.4 CONCLUSION ............................................................................................... 195

12. GERMANY ......................................................................................................... 201
12.1 INTRODUCTION .............................................................................................. 201
12.2 RESEARCH AND INNOVATION ACTIVITY IN THE GERMAN CONSTRUCTION SECTOR ............................................................................................................. 203
12.3 INNOVATION POLICY IN THE GERMAN CONSTRUCTION SECTOR ............... 213
12.4 RESULTS ......................................................................................................... 228
12.5 ANNEX ........................................................................................................... 230

13. JAPAN .................................................................................................................. 235
13.1 INTRODUCTION .............................................................................................. 235
13.2 CONTEXT ......................................................................................................... 236
13.3 PUBLIC INTERVENTIONS .............................................................................. 255
13.4 EFFECTIVENESS OF PUBLIC INTERVENTIONS ........................................... 261
13.5 TRENDS AND CONCLUSIONS ........................................................................ 268

14. PORTUGAL ......................................................................................................... 271
14.1 INTRODUCTION .............................................................................................. 271
14.2 THE CONSTRUCTION INDUSTRY ................................................................... 272
14.3 POLICIES IN CONSTRUCTION ....................................................................... 286
14.4 EFFECTIVENESS OF R&D POLICIES .......................................................... 297
14.5 TRENDS AND CONCLUSION ........................................................................ 301

15. THE NETHERLANDS .......................................................................................... 303
15.1 INTRODUCTION .............................................................................................. 303
15.2 DUTCH CONSTRUCTION IN BRIEF .............................................................. 305
15.3 PUBLIC PROGRAMS AFFECTING INNOVATIVENESS ................................. 309
15.4 EVALUATION OF THE CURRENT INNOVATION PROGRAMS .................... 313
15.5 SUMMARY AND CONCLUSIONS .......................................................... 315
15.6 APPENDIXES .............................................................................. 317

16. SOUTH AFRICA ........................................................................... 323
16.1 BACKGROUND AND CONTEXT .................................................. 323
16.2 PUBLIC INTERVENTIONS ............................................................. 329
16.3 THE CONSTRUCTION INDUSTRY DEVELOPMENT BOARD (CIDB) .................................................. 345
16.4 DISCUSSION AND CONCLUSIONS .......................................... 347

17. UNITED KINGDOM ...................................................................... 351
17.1 INTRODUCTION ......................................................................... 353
17.2 UNDERSTANDING PUBLIC POLICY INSTRUMENTS .................... 353
17.3 DIRECT GENERAL PUBLIC POLICY INSTRUMENTS ...................... 354
17.4 DIRECT SPECIFIC RESEARCH PROGRAMMES ............................... 357
17.5 INDIRECT SPECIFIC POLICY INSTRUMENTS ................................. 366
17.6 A SUMMARY PERSPECTIVE ......................................................... 370

18. USA .............................................................................................. 373
18.1 GENERAL CONTEXT .................................................................... 373
18.2 FEDERAL PUBLIC INTERVENTIONS ............................................ 376
18.3 EFFECTIVENESS AND POSSIBLE REFORMS ................................. 381
18.4 CONCLUSION .............................................................................. 385

19. PUBLIC POLICY CONTEXT AND TRENDS ..................................... 387

20. CONCLUSION .................................................................................. 393

21. KEYWORD INDEX ......................................................................... 395

22. BIBLIOGRAPHY ............................................................................ 397