Green Buildings Pay
Design, productivity
and ecology
Third Edition

Brian W. Edwards
and
Emanuele Naboni
Contents

List of image credits vii
Notes on contributors viii
Foreword by Brian Carter ix
Preface xi
Acknowledgements xiii
Introduction to the third edition xv

PART ONE
THE GREENING OF THE PROPERTY INDUSTRY 1

1 How do green buildings pay? 3
1.1 New evidence that green buildings produce wide economic and social benefits 3
1.2 The procurement and marketability of green offices: experiences from Sheppard Robson and the British Council for Offices 9
1.3 2009 BCO Guide to Specification 16

PART TWO
THE GREENING OF ARCHITECTURAL PRACTICE AND DESIGN 21

2 Designing green buildings 23
2.1 Designing green buildings: the impact of LCA, BREEAM and LEED 23
2.2 How do architectural practices deal with sustainability? An international comparison 40

3 Research and development for green buildings 47
3.1 Developing the knowledge base for practice 47
3.2 Environmental simulation tools for designers 54
3.3 Post-occupancy evaluation (POE) and the responsibility of architects 67
3.4 Occupancy satisfaction in different types of offices 71

4 New approaches to the design of offices 76
4.1 Innovation, institutional change and the design of offices: green strategies and varying typologies 76
4.2 Performance and productivity in the workplace 85
4.3 Form, technology and energy: efficiency through architectural and mechanical means 88
4.4 The importance of the façade 97
4.5 The importance of roofs to sustainability 102
4.6 The importance of the atrium 105

PART THREE
CASE STUDIES OF GREEN OFFICE DESIGN 109

Introduction to Part Three and a note on methodology and objectives 110
CONTENTS

5 The US and Canadian cases 112
  5.1 Hearst Tower, New York, by Foster + Partners 112
  5.2 Bank of America Tower, New York, by Cook + Fox Architects 117
  5.3 New York Times Building by Renzo Piano with Fox & Fowle 122
  5.4 San Francisco Federal Building by Morphosis Architects 128
  5.5 Genzyme HQ, Cambridge, MA, by Behnisch Architects 132
  5.6 US Census Bureau, Maryland, by SOM 138
  5.7 NASA Sustainability Base by William McDonough + Partners 143
  5.8 Manitoba Hydro Place, Winnipeg, by KPMB Architects 148

6 The UK cases 152
  6.1 Environmental Building, Watford, by Feilden Clegg Bradley Studios 152
  6.2 BDP Office, Manchester, by BDP 158
  6.3 Wessex Water HQ, Bath, by Bennetts Associates 165
  6.4 The Woodland Trust HQ, Grantham, by Feilden Clegg Bradley Studios 171

7 Green office refurbishments 176
  7.1 New business realities 176
  7.2 West End House, London, by 3D Reid Architects 177
  7.3 Queen Elizabeth II Court, Winchester, by Bennetts Associates 183

8 Danish green offices 188
  8.1 VKR Group HQ, near Copenhagen, by Hvidt & Mølgaard 188

8.2 Rambøll HQ, Copenhagen, by Dissing+Weitling 195

PART FOUR
EDUCATIONAL BUILDINGS 203

9 Sustainability and education: buildings as carriers of ecological messages 205
  9.1 Kroon Hall Forestry Building, Yale University, by Hopkins Architects 207
  9.2 Global Ecology Center, Stanford University, by EHDD 211
  9.3 Green Lighthouse, University of Copenhagen, by Christensen & Co. Architects 216
  9.4 California Academy of Sciences by Renzo Piano with Stantec 219
  9.5 City of Westminster College, London, by Schmit Hammer Lassen 224
  9.6 Sidwell Friends Quaker School, Washington, DC, by KieranTimberlake Architects 229

PART FIVE
EMERGING PROJECTS 235

10 Green offices in emerging economies 237
  10.1 China 238
  10.2 The Gulf region 241

PART SIX
CONCLUSIONS 245

11 The value of ‘green’ to business and education 247

Index 265