

城市

ENERGY  
FUTURES

AND URBAN  
AIR POLLUTION

Challenges for China and  
the United States

NATIONAL ACADEMY OF ENGINEERING AND  
NATIONAL RESEARCH COUNCIL  
OF THE NATIONAL ACADEMIES  
IN COLLABORATION WITH  
CHINESE ACADEMY OF ENGINEERING  
CHINESE ACADEMY OF SCIENCES

空气

# Contents

|                                                |     |
|------------------------------------------------|-----|
| Summary                                        | 1   |
| 1 Introduction                                 | 17  |
| 2 Energy Resources                             | 25  |
| 3 Air Pollution: Sources, Impacts, and Effects | 61  |
| 4 Institutional and Regulatory Frameworks      | 113 |
| 5 Energy Intensity and Energy Efficiency       | 161 |
| 6 Coal Combustion and Pollution Control        | 187 |
| 7 Renewable Energy Resources                   | 207 |
| 8 The Pittsburgh Experience                    | 229 |
| 9 The Huainan Experience                       | 253 |
| 10 The Los Angeles Experience                  | 275 |
| 11 The Dalian Experience                       | 301 |
| 12 Findings And Recommendations                | 321 |

## Appendixes

|                                                        |     |
|--------------------------------------------------------|-----|
| A Web-Based Resources on Energy and Air Quality        | 339 |
| B Alternative Energy Resources                         | 347 |
| C Summary of PM Source-Appportionment Studies in China | 353 |
| D Energy Conversion                                    | 365 |