Index

abatement strategies 160–1
absorptive capacity 273
adaptation strategies 337–8, 341
climate system 20
costal communities 321–35
organisational culture 252–3
policy initiatives 8, 50, 52–3
strategic environmental assessment 83–4
valuation of preferences 88
adaptive capacity 269, 271–9, 285–90, 293–8
advanced thermal treatment (ATT) plants 213–14, 218
aerobic fermentation 315
ageing populations 78
aggregate materials 142–4
agricultural soils management 160–1
air conditioning
- green infrastructure 170–1
  policy initiatives 50
  sustainable design 134–5
air pollution 37, 181–91
air transportation 193–6
airports 114
alien species invasion 108, 109
anaerobic digestion 315–16
anthropogenic climate change theory
  controversy and context 5–8
  emerging global trends 14–16
  primary cause of climate change 3–5
  strategic environmental assessment 75
appraisal mechanisms 198–9
Association of British Insurers 59
ATT see advanced thermal treatment
attribution methods 14

bamboo 145–6, 339
BC see black carbon
biodiversity 340
- green economics 58
green infrastructure 167, 168–9
socio-environmental vulnerability
  assessment 293, 295
soil maps 113–14, 120–1
urban environments 99–106
biofuels 57, 58, 159–60
biological waste treatment 212–13, 215, 218
biomass 114, 304–5, 314–16
black carbon (BC) 116–17
blastfurnace slag 143
Botanical Society of the British Isles (BSBI) 107
Brahmaputra River Basin 283–4, 291–300
BRE see Building Research Establishment
brick and masonry 144–5
brownfield sites 102–3, 109, 122
BSBI see Botanical Society of the British Isles
building construction see construction industry
Building Research Establishment (BRE) 136, 165–6
business continuity planning 276–7
cancellation property 289
capture technologies 155–6, 158
car fuel efficiency 157
carbon dioxide
  anthropogenic climate change theory 3–7
  climate system 11–13
  eco- and resilient materials 141, 148
  energy efficiency 155–7
  green economics 65
  green infrastructure 172–3
  renewable energy 303
  sustainable transportation 201–2
  urbanization 36–7
  waste management 207–10, 212–16
Carbon Emissions Reduction Target (CERT) 70
carbon footprints 65–6, 70–1, 82
carbon monoxide 37

Edited by Colin A. Booth, Felix N. Hammond, Jessica E. Lamond and David G. Proverbs.
© 2012 Blackwell Publishing Ltd. Published 2012 by Blackwell Publishing Ltd.
carbon neutral buildings
  energy efficiency 154–5, 158
  organisational culture 252
  valuation of preferences 88
carbon sequestration 155–7, 158, 172–3
carbon sinks
  strategic environmental impact assessment 81–2, 85
  urban soils 120
  valuation of preferences 87
carbon taxes 77
carpooling 201, 202
cathodic protection of steel 147
CBA see cost–benefit analysis
CBO see Congressional Budget Office
CDM see clean development mechanism
CE see choice experiments
census data 292
Central England Temperature record (CET) 17–18
CERT see Carbon Emissions Reduction Target
CFC see chlorofluorocarbons
CfSH see Code for Sustainable Homes
charrettes 135
China
  green economics 62, 66–7, 68–9
  urbanization 34, 36–7, 40–1
chlorofluorocarbons (CFC) 75
choice experiments (CE) 94
CHP see combined heat and power
circles of socialisation 262–3
circular rotation failures 228, 235
clay soil drying shrinking 47, 50
clean development mechanism (CDM) 217, 219
climates, definition 2–3
climate change, definition 1
climate change projections (UKCP09) 18
climate change theory 2–5
  see also anthropogenic climate change theory
climate engineering 155–7
climate system 11–22
  built environment 19–20
  emerging global trends 13–17
  emerging UK trends 17–19
radiative forcing 11–14
solutions 20–1
  strategic environmental assessment 83–4
closed-loop stepwise process 128–30
coal-based generation 158
coastal communities 340
  adaptation strategies 321–35
  case study 326–32
  challenges 323–4
context 321–2
integrated coastal zone management 324–5, 333
landforms and process 322–3
shoreline management plans 325–6, 329–32
solutions 333
coastal squeeze 322–3, 326
Code for Sustainable Homes (CfSH) 131–3, 136–7
cogeneration see combined heat and power
cohesive forces 230, 235
combined heat and power (CHP) 79, 154, 214
combustion of biomass 314–15
committed warming 17
community resilience 273–5, 276–9
concrete 142–4, 147–8
congestion 37, 71–2
congestion charges 197, 201–2
Congressional Budget Office (CBO) 3, 6
conservation management 184–8
conservation sites 102
conservation tillage 160
constraints assessment 77–9
construction industry
  eco- and resilient materials 141–51
  flood risk 59
  green economics 57–62
  limited building lifespans 60–1
  organisational culture 251–67
  policy initiatives 47–9, 50–2, 54
  sustainable design 127–39
  unsustainable building practices 59–62
  urban and spatial planning 61–2
  valuation of preferences 87–8
consumer surplus 89–90
consumers driving green living 133–4
contaminated land 115–17, 119–20
contingent ranking (CR) 94
contingent valuation (CV) 94
craltung and convergence mechanism 65, 303–4
Copenhagen conference 46, 67
coping capacity 278–9, 285–6
cost of alternatives method 92
cost–benefit analysis (CBA) 88, 199, 341–2
CR see contingent ranking
cradle-to-cradle philosophy 128
created habitats 102
Curitiba (Brazil) 71–2
CV see contingent valuation
cyclic materials loops 129
cycling 201

DEC see displayed energy certificates
Decent Homes Standard 69–70
deforestation 75, 160
Delphi technique 288–90, 292, 299
detection methods 14
detention ponds 175, 244, 246
developing countries
  green economics 57–8, 65
  urbanization 34–5, 37–41
DEX see Dunfermline Eastern Expansion
diachronic environmental impacts 195–6
diesel particulates 182, 187
dinitrogen oxide see nitrous oxide
disaggregation of value 90
disaster resilience of place (DROP) model 273–5
dishwashers 240
displayed energy certificates (DEC) 136–7
district heating 154
Dongtan Green City project 68–9
dose–response method 93
drainage 122
DROP see disaster resilience of place
droughts
  green economics 58
  regional implications 29
  socio-environmental vulnerability assessment 292
  water resources 237
Dubai 62
Dunfermline Eastern Expansion (DEX) 175, 245
dynamical downscaling 26

early-successional habitats 102–3, 109
EC see elemental carbon
ECCP see European Climate Change Programme
eco- and resilient materials 141–51, 338
  brick and masonry 144–5
  concrete 142–4, 147–8
  future trends 149
  glass 145, 149
  nanotechnology 148
  polymer-based materials 147–8
  steel 146–7
  timber and bamboo 145–6
ecological footprint (EF) 82
ecological value
  brownfield and early-successional habitats 102–3, 109
  climate change 107–9
  context 99–101
  created habitats 102
  dimensions and boundaries 106–7
  garden habitats 105–6, 109
  habitat types 101–6
  post-industrial sites 103–5, 109
  seminatural habitats 101–2
  solutions to climate change 108–9
  urban environments 99–112
economic factors
  anthropogenic climate change theory 6, 7
  urbanization 34, 39–41
  valuation of preferences 87–98
see also green economics
ecosystem services approach 63–4
eco-tech see green technologies
EF see ecological footprint
element risk 296
elemental carbon (EC) 182
energy efficiency 153–61
  abatement strategies 160–1
  carbon sequestration and climate engineering 155–7, 158
  carbon-neutral buildings 154–5, 158
  combined heat and power 154
  context 153–5
  sustainable development 157–61
Energy Performance Certificates (EPC) 131, 132–3, 137
energy usage
  climate system 19–20
  green economics 67, 70–1
  organisational culture 253
  policy initiatives 50–1, 54
  strategic environmental assessment 77, 79, 81
  sustainable design 128–30, 133–4
  urbanization 36, 40
engineered landfill sites 231–5
England and Wales Precipitation dataset (EWP) 18
English Flood and Water Management Bill 243
ensembles of opportunity 25–6
Environment Agency 59
environmental receptors 77–9
environmental sustainable transport (EST) 198
EPBD see Energy Performance of Buildings Directive
EPC see Energy Performance Certificates
EPOE see Extended Post Occupancy Evaluation
EST see environmental sustainable transport
European Climate Change Programme (ECCP) 48–9, 53
European Environment Agency 67
European Renewable Energy Directive 132
evaporative cooling 170–1
EWP see England and Wales Precipitation
Extended Post Occupancy Evaluation (EPOE) 135–6, 137
extensive green roofs 164–5
extreme weather events 269–81
  context and definition 269–70
  disaster resilience of place model 273–5
  green economics 59
  policy initiatives 52–3
  regional implications 29–30
  risk assessment framework models 276–9
  uncertainty and risk 270–1
  vulnerability, resilience and adaptive capacity 269, 271–9
fast breeder reactors 317
feed in tariffs (FIT) 137–8
fibre-reinforced plastic 147–8
fission 159
FIT see feed in tariffs
floating houses 149
flooding 339
costal communities 322–4
green economics 59
green infrastructure 167–8
policy initiatives 50, 52–3
socio-environmental vulnerability assessment 283–4, 292, 297–9
strategic environmental assessment 78–9
urban soils 121–2
valuation of preferences 88, 90
water resources 237, 242–7
fly ash 143
Foreseeable Natural Risk Prevention Plan (PPR) 52–3
forest fires 50
forest management 160
fossil fuels
climatic system 12, 20
energy efficiency 157, 158
renewable energy 318–19
urbanization 36–7
French Climate Plan 53
frictional forces 229–30, 235
fuel cells 159, 318–19
fusion reactors 317–18
future costs and benefits 89, 90–1
gardens
ecological value 105–6, 109, 118
green infrastructure 175
gas-based generation 158
gasification 213–14, 315
GCM see general circulation models
GDP see gross domestic product
gender factors 293–6
general circulation models (GCM) 340
climate system 17, 19–20
downsizing 26
ensembles of opportunity 25–6
output interpretation 25
parameterizations 24–5
projections for future climate change 27–8
regional implications 24–8
urban soils 121–2
geo-engineering 64–5
geotechnical stability of landfill sites 223–36
geothermal power 304, 316–17
glass 145, 149
global climate models see general circulation models
global cooling 6–7
global warming 337
controversy and context 5–8
definition 1
emerging global trends 13–17
emerging UK trends 17–19
greenhouse gases 3–5
strategic environmental assessment 75
golf courses 327–8
government payments 93
granulated blast furnace slag 143
green economics 57–74, 341–2
construction industry 57–62
costs of climate change 67–8
Decent Homes Standard 69–70
Dontan Green City project 68–9
ecosystem services approach 63–4
flood risk 59
greenhouse gases 338
Homo economicus approach 63–4
lifestyle changes 66, 67
limited building lifespans 60–1
limits to growth 62–3
market mechanism 64
project case studies 68–72
raw materials 66–7
Re-charge Scheme 71
regulation 65
strategic choices 64–6
sustainable cities 71–2
unsustainable building practices 59–62
urban and spatial planning 61–2
Warm Zone Project 70–1
Green Guide 136
green infrastructure 163–79, 339–40
biodiversity 167, 168–9
building efficiency 169–71
carbon sequestration 172–3
city centres 173–5
dalton 163
context 163
green roofs and walls 164–6, 173–4
human health and wellbeing 171–2
integration into built environment 163–7
intercepting rainfall and reducing flood risk 167–8
solutions for climate change 173–6
suburbia 175
urban heat islands 165, 169–71, 174
urban periphery 176
vegetated porous paving 166–7
water resources 244
green roofs and walls 164–6, 173–4
green technologies 66–7, 71
greenfield sites 66, 122
greenhouse gases 338
anthropogenic climate change theory 3–8
climatic system 11–13, 20–1
eco- and resilient materials 141
green economics 65
policy initiatives 45, 46–7, 50
regional implications 25–6
renewable energy 303
Index 347

strategic environmental assessment 78
sustainable transportation 194–5, 201–2
urbanization 36–7, 40–1
waste management 207–16, 218–19
greywater harvesting 241–2
gross domestic product (GDP) 34, 57
ground granulated blastfurnace slag 143
ground stability effects 224–5
growth, limits to 62–3

habitat creation 120–1
habitat loss/destruction
coastal communities 322–3
ecological value 107
green economics 58
socio-environmental vulnerability assessment 293, 295
hay meadows 120–1
hazardous waste incineration directive 94/67/EC 217
heat pumps 306
heavy metal contamination 115–17, 119–20
hedonic pricing (HP) 95
high-temperature solar power 307
HIPS see home inspection plans
historic buildings 181–91
home inspection plans (HIPS) 133
Homo economicus approach 63–4
household water usage 239–40, 248
HP see hedonic pricing
human impacts see anthropogenic climate change theory
human resource capacity 294–6
hydrogen generation
energy efficiency 155–6, 158, 159
renewable energy 309, 316, 318–19
hydropower 304, 310–13
hypotaxia 61

ice cores 13
ICZM see integrated coastal zone management
ILO see International Labour Organisation
immigration 294–5, 299–300
incineration plants 212, 213–14, 217–18
industrial sites 114, 116
industrialization of construction 51, 54–5
infrared (IR) radiation 3–4
infrastructure
socio-environmental vulnerability assessment 293, 295–6
sustainable transportation 199–201
water resources 242–6
see also green infrastructure
inland water transport 196
Institute for Public Policy Research (IPPR) 134
insulation 154, 161

insurance policies
extreme weather events 269
green economics 59
organisational culture 253
policy initiatives 52
water resources 248
integrated coastal zone management (ICZM) 324–5, 333
integrated planning 71–2
integrated solutions approach 209–16
intensive green roofs 164–5
Intergovernmental Panel on Climate Change (IPCC) 2–3, 5
coastal communities 324
policy initiatives 46
socio-environmental vulnerability assessment 285–7, 290
urbanization 35–6
International Labour Organisation (ILO) 69–70
IPCC see Intergovernmental Panel on Climate Change
IPPR see Institute for Public Policy Research
IR see infrared
isotope ratios 12

Kirkles (UK) Council 69–71
Kyoto Protocol 2, 64

land claims 326–7
land cover/use 2

green economics 58, 61–2
soil maps 113–15, 117
strategic environmental assessment 81–2
land value tax 67
landfill 214–16, 219
circular rotation failures 228, 235
cohesive forces 230, 235
context 223
engineered landfill sites 231–5
frictional forces 229–30, 235
geotechnical stability 223–36
ground stability effects 224–5
organisational culture 265
pore fluid suctions 230–1
shallow slides 227–8, 233–6
site design and components 232–3
slope instability 225–8, 233–4
soil shear strength 229–31, 233
solutions and insights 235–6
surface erosion 226–7
vegetation 231, 233–5
landfill directive 1993/31/EC 216, 219
LANDSAT data 292
landslides 224, 227–8, 236
lapse rate feedback 16
large-scale hydropower 310–13
lawns 118
lifecycle assessment (LCA) 207–8, 209–10
lifestyle changes 66, 67
light-weight concrete 144
limestone soiling see particulate-induced soiling
limited building lifespans 60–1
limits to growth 62–3
London Bus Priority Network 202
marine transport 196
market mechanism 64
market price 89–90
masonry 144–5
maximum likelihood factor analysis 289
mechanical biological treatment (MBT) 212–13, 215, 218
metakaolin 143
metal contamination 115–17, 119–20
methane
anthropogenic climate change theory 3, 5
climate system 12
strategic environmental assessment 78
waste management 207–10, 212–16, 218–19
metropolisation 37–9
micro-generation 134
Millenium Development Goals 64
mitigation strategies 339, 341
energy efficiency 153–61
extreme weather events 273–5
organisational culture 252–3
policy initiatives 8, 50–1
renewable energy 303–20
strategic environmental assessment 83–4
valuation of preferences 88, 92–3
motorway service areas 244–5
MSW see municipal solid waste
multi-GCM 25–6
municipal solid waste (MSW) 209, 212
nanotechnology 148, 338
National Adaptive Programmes for Action (NAPA) 40
National Environmental Policy Act (NEPA) 76
National Nature Reserves 327
natural fibres 143–4
natural impacts
emerging global trends 14–16
green economics 61–2
greenhouse gases 4
policy initiatives 50, 52–3
strategic environmental assessment 83–4
natural resources 87–8, 95–6, 142–4
NEPA see National Environmental Policy Act
nitrous oxide
anthropogenic climate change theory 5
climate system 12
waste management 207, 210, 212–15
North Sefton coast case study 326–32
nuclear power 159, 317–18
nutrient content of urban soils 116–19
ocean dead zones 61
opportunity costing 92
organisational culture 251–67
achieving and sustaining culture of sustainability 257, 262–3
case study 263–5
cclimate change-driven construction 252–3
ccontext 251–2
cycle of culture change 255, 263
cenvironmental and sustainability policies 257–61, 264
framework for cultural change 262–3
influences 262–3
phenomenon and role of culture 253–5
solutions 263
training 257, 264
UK construction industry 256–7
web presence 257
ozone concentration 14
packaging and packaging waste directive 94/62/EC 217
paleo-climate reconstructions 13
parabolic collectors 307
parallel model paradigm 201
parameterizations 24–5
parking areas 122
particulate-induced soiling 181–91
Bath case study 184–8
classification systems 184–6
cclimate change impacts 188
ccontext 181–2
impacts and mechanisms 182–3
curban particulate pollution 182
passive solar heating 306
Passivhaus buildings 154–5
PCMDI see Program for Climate Model Diagnosis and Intercomparison
pedagogical value
characteristics of urban soils 115–17
policy initiatives 119–22
soil maps 113–19
urban landscapes 113–26
urbanization 113–15, 117
perturbed physics ensembles (PPE) 25–6
photovoltaics (PV) 159, 308
phytoremediation 120
planning strategies
green economics 59, 61–2, 71–2
strategic environmental assessment 80–2, 83–5
sustainable design 135
urban soils 121–2
urbanization 38–41
policy initiatives 45–55
  adaptation policies 50, 52–3
anthropogenic climate change theory 6, 8
background 47–9
built environment 45–7, 53–5
construction industry 47–9, 50–2, 54
extreme weather events 270
mitigation policies 50–1
solutions for the built environment 53–5
strategic environmental assessment 83–4
sustainable design 130–3
sustainable transportation 197–8
urban soils 119–22
urbanization 41
waste management 216–19
water resources 238, 239–40, 248
polymer-based materials 147–8
polystyrene materials 148
ponds 244, 246
population growth 47, 113
pore fluid suctions 230–1
porous paving 166–7, 244, 246
post-industrial landscapes 103–5, 109, 224–5,
  340
poverty 65, 319
power plant efficiency 158
PPE see perturbed physics ensembles
PPR see Foreseeable Natural Risk Prevention
Plan
precipitation patterns
  emerging global trends 17
  emerging UK trends 18
  regional implications 28–9
  water resources 238
preferences see valuation of preferences
pressure and release model 283
process risk 286
product lifecycle 207–8, 209–10
professional indemnity insurance 253
Program for Climate Model Diagnosis and
  Intercomparison (PCMDI) 25
projections for future climate change 27–31
public goods 90
public participation 203
public transport 197, 201–2
pumped storage hydropower 312
PV see photovoltaics
pyrolysis 213–14, 315
radiative forcing 11–14
rail transport 196
rainfall see precipitation patterns
rainwater harvesting 166, 167–8, 241
rammed earth 145
RAMSAR sites 327
RCM see regional climate models
Re-charge Scheme 71
recycling 338
eco- and resilient materials 146, 149
waste management 211–12, 218
regional climate models (RCM) 26
regional implications 23–32
characterisation of climatic risks 30–1
climate modelling 23–8
extreme weather events 29–30
projections for future climate change 27–31
rehydration swelling 50
renewable energy 338
biomass 304–5, 314–16
context 303–4
contraction and convergence mechanism 303–4
current global sustainable energy
  provision 304–5
energy efficiency 159–60
environmental impacts 311–12
geothermal power 304, 316–17
green economics 71
hydrogen generation and fuel cells 309, 316,
  318–19
hydropower 304, 310–13
mitigation strategies 303–20
nuclear power 317–18
photovoltaics 308
solar power 304–7, 319–20
solutions 319–20
strategic environmental assessment 78–9, 81
sustainable design 129, 132, 134
tidal power 304, 310, 313
wave power 310
wind power 304–5, 308–10
resilience to extreme weather events 269,
  271–9
resilient building materials see eco- and resilient
  materials
re-use 211–12, 218, 240, 241–2
RH see risk-hazard
Rio de Janeiro Conference 2
risk assessment framework models 276–9
risk-hazard (RH) model 283
road pricing and taxing schemes 201–2, 203
road transport see transport and traffic
Royal Society for the Protection of Birds
  (RSPB) 326–7
runoff water 166, 167–8, 237, 244
salt marshes 322–3, 326–7
sand dunes 322–3, 329–30
SAP see Standard Assessment Procedures
satellite data 14
SBCI see Sustainable Buildings and Climate
  Initiative
SEA see strategic environmental assessment
sea ice 17
sea level rise
  coastal communities 322–4
  emerging global trends 16
  policy initiatives 47
seasickness 285–90, 293–8
Sefton coast case study 326–32
self-compacting concrete 144
seminal natural habitats 101–2
sensitivity 285–90
SEVA see socio-environmental vulnerability assessment
sewage treatment plants 224–5
shadow project costs 93
shallow slides 227–8, 233–6
shear strength of soil 229–31, 233
shoreline management plans (SMP) 325–6, 329–32
significant possibility of significant harm (SPOSH) 116
simple climate models 24
single-occupant vehicles (SOV) 201, 202
Sites of Special Scientific Interest (SSSI) 327
slope instability of landfill sites 225–8, 233–4
sludge lagoons 224–5, 236
small-scale hydropower 312–13
Smith, Adam 89
SMP see shoreline management plans
snow cover 17
SOC see soil organic carbon
social inclusion 72
social learning 273–5
social networks 294–5
socialisation circles 262–3
socio-environmental vulnerability assessment (SEVA) 283–301
approach 284–91
Brahmaputra River Basin case study 283–4, 291–300
conceptualizing socioeconomic vulnerability 284–7
construction of indices 289–90
context and background 283–4
definitions of vulnerability 285
domain identification and indicators 287–8, 292, 295–6, 299
domain ranking 288–9, 292
opportunities and threats 285–6
results 291–300
review of data 292–5
sensitivity and adaptive capacity 285–90, 293–8
spatial variations 295–9
stakeholder participation/validation 291
socioeconomic factors
strategic environmental assessment 76
urbanization 39, 41
vulnerability 284–7, 290, 293–6
soil maps
  characteristics of urban soils 115–17
  pedagogical value 113–17
  policy initiatives 119–26
  urbanization 113–15, 117
soil organic carbon (SOC) 116–18, 120
soil shear strength 229–31, 233
Soil Survey of England and Wales 114
soiling see particulate-induced soiling
solar power 304–7, 319–20
solar radiation reflection 157
solar water heating 306–7
SOV see single-occupant vehicles
SPA see Special Protection Areas
spatial planning 61–2
Special Protection Areas (SPA) 327
spontaneous successional habitats 102–3, 109
SPOSH see significant possibility of significant harm
SSSI see Sites of Special Scientific Interest
stakeholder participation/validation 84, 287–8, 291
Standard Assessment Procedures (SAP) 132–3
stated preference methods 94
statistical downscaling 26
steel 146–7
steel-reinforced concrete 142, 147
Stern Review 58, 64, 251
Stirling engines 307
storage technologies 156–7, 158
strategic environmental assessment (SEA) 75–86, 341–2
  addressing environmental issues 82
  analysing environmental problems 80
  baseline data 79–80
  climate change solutions 77–84
  constraints assessment 77–9
  context and historical development 75–7
  environmental receptors and interrelationships 77–9
  integrating environment with planning processes 80–2, 84–5
  limitations of strategic actions 77
  methods 82
  mitigation and adaptation policies 83–4
  stakeholder consultation 84
Strategy for Sustainable Construction 131
stratospheric cooling 13, 14–16
street trees 174–5
subcontractors 256
SUDS see sustainable urban drainage systems
surface erosion 226–7
Surface Water Management Team 243–6
Sustainable Buildings and Climate Initiative (SBCI) 48–9
sustainable cities 71–2
sustainable design 127–39, 338
closed-loop stepwise process 128–30
consumers driving green living 133–4
context 127–30
drivers 130–5
energy and materials 127–30, 133–5
innovation in technology and materials 127–8, 134–5
policy initiatives 130–3
rethinking construction 135–7
solutions 137–8
sustainable development
energy efficiency 157–61
green infrastructure 169
policy initiatives 46, 48–9
strategic environmental assessment 76, 77
urbanization 42
valuation of preferences 90–1
sustainable mobility 201–2
sustainable procurement 66
sustainable transportation 193–205
appraisal mechanisms 198–9
barriers 199–200
climate change impacts 194–5
context and definitions 193–4
diachronic environmental impacts 195–6
indicators and levels of analysis 198–9
infrastructure development 199–201
perspectives 195–7
policy initiatives 197–8
public participation 203
solutions 203–4
sustainable mobility 201–2
system development 197–203
trade-off approach 195–7
sustainable urban drainage systems (SUDS) 79
swales 244–6
synfuels plants 159
taxation instruments 67, 77
thermal insulation 50–1
tidal power 304, 310, 313
timber 145–6
tokamaks 318
trade-off approach 195–7
training 257, 264
transport and traffic 342
congestion 37, 71–2, 197, 201–2
energy efficiency 157
green economics 71–2
organisational culture 253
particulate-induced soiling 182–8
renewable energy 316
road traffic pollution 119
strategic environmental assessment 83
sustainable transportation 193–205
urbanization 36–7, 40
travel cost method 94–5
tree rings 13
tropical cyclones 29–30
UHI see urban heat islands
UK Climate Impacts Programme (UKCIP) 53, 59
UKCP09 see climate change projections
ultraviolet (UV) radiation 3–4
UN-Habitat 33–4, 38–9
UNEP see United Nations Environment Programme
UNFCCC see United Nations Framework Convention on Climate Change
unfired-clay bricks 145
United Nations Environment Programme (UNEP) 46, 48–9
United Nations Framework Convention on Climate Change (UNFCCC) 2, 46, 48–9
United Nations Population Fund (UNFPA) 33–4
unsustainable building practices 59–62
urban environmental transitional model 38, 39–40
urban environments
brownfield and early-successional habitats 102–3, 109
climate change 107–9
context 99–101
created habitats 102
dimensions and boundaries 106–7
ecological value 99–112
garden habitats 105–6, 109
habitat types 101–6
post-industrial sites 103–5, 109
seminatural habitats 101–2
solutions to climate change 108–9
urban flooding 237, 242–6
urban heat islands (UHI)
green infrastructure 165, 169–71, 174
policy initiatives 50
urbanization 36, 37–8
urban particulate pollution 182
urban soils 339
characteristics 115–17
habitat creation 120–1
nutrient content 116–19
pedagogical value 113–26
policy initiatives 119–22
urbanization 113–15, 117
urbanization 33–43, 337, 339
climatic system 19–20
coastal communities 326
global trends 33–4
impact on climate change 35–6
mechanisms of climate change impacts 36–9
pedagogical value 113–15, 117
planning regulations 38–41
policy initiatives 47
urbanization (cont’d)
  socio-environmental vulnerability assessment 294–5
  solutions for change 39–41
  water resources 237
  utility 90
  UV see ultraviolet
valuation of preferences 87–98
  categorization of human values 90–1
  context 87–8
  methods 91–5
  pricing methods 92–3
  solutions 95–6
  theory 89–91
  valuation approaches 93–5
  vegetated porous paving 166–7
  vegetation 231, 233–5
  vernacular buildings 47–8, 52, 54, 135
  volcanic eruptions 16, 62
  vulnerability to extreme weather events 269, 271–9
  see also socio-environmental vulnerability assessment
  vulnerability-resilience indicator prototype (VRIP) model 283

walking 201
Warm Zone Project 70–1
waste directive 75/692/EEC 217
waste incineration directive 2000/67/EC 217
waste management 38, 207–21, 338
  context 207–8
  hierarchy 210–16
  integrated solutions approach 209–16
  landfill 214–16, 219
  mechanical biological treatment 212–13, 215, 218
  policy initiatives 216–19
  prevention of waste 211, 218
  product lifecycle and lifecycle assessment 207–8, 209–10
  recycling and re-use 211–12, 218
  solutions 219
valuation of preferences 89
  waste-to-energy incineration plants 212, 213–14, 218
waste-to-energy (WtE) 212, 213–14, 218
water butts 241
Water Framework Directive (WFD) 238
water meters 240
water resources 237–50, 339
  context 237–8
  flood-resilient measures 247
  flood-resistant measures 246–7
  flooding 237, 242–7
  greywater harvesting 241–2
  household usage and savings 239–40, 248
  present and future solutions 247–8
  property-level measures 246–7
  rainwater harvesting 241
  socio-environmental vulnerability assessment 293, 295
  supply shortages 237, 238–42
  water vapour 3, 11–12, 16
  wave power 310
WCBSD see World Council of Business and Sustainable Development
WCC see World Climate Conference
weather balloon data 14
wetlands 244–6, 324
WFD see Water Framework Directive
WHO see World Health Organizations
willing to accept (WTA) 94
willingness to pay (WTP) 89–90, 94
wind power 159, 304–5, 308–10
WMO see World Meteorological Organization
wood products 146
World Climate Conference (WCC) 48–9
World Council of Business and Sustainable Development (WCBSD) 58
World Health Organizations (WHO) 37
World Meteorological Organization (WMO) 2–3, 49
WTA see willing to accept
WtE see waste-to-energy
WTP see willingness to pay