Index

Note: page numbers in *italics* refer to figures or tables

aesthetic modality, 136, 137, 144
Agenda 21(UNCED), 5–6, 20, 49, 81, 93, 119, 150, 157, 170, 180
analytical modality, 133, 134, 142, 144
analytic network process (ANP)
application, 160
decision-making problem, 157
stages, 108
strengths and weaknesses, 108–9
Ashby, R., 217
assessment methods
ANP, 108–9
BREEAM, 111–14
CASBEE, 113–15
CBA, 101–3
CIE, 109–10
CVM, 103–5
directory
analysis levels, 95–6
ECO² Cities study, 91
energy and material flows, 94
‘environment in general’ and ‘life-cycle assessment’, 95
LUDA project, 91–2
methods and tools, classification, 94
pre-Brundtland, 93
time dimension, 96
tools and procedures, 92–3
EIA, 97–100
environmental, 89–90
evaluation, definition, 89
gaps, 117
HPM, 105–6
LCA, 110–111
MCA, 106–7
measurement, 90
SEA, 99–101
statutory instruments, 96
ATEQUE classification system, 27
Basden, A., 126, 218, 219
Beer, S., 217
biological modality, 132, 137, 143, 144
Birkeland, J., 86
Bohm, D., 215
Bossel, H., 63, 86
Boulding, E., 50
Brandon, P., 118, 214
Brand, S., 37, 38
BREEAM. see building research establishment environmental assessment method
Brown, P.F., 50
Brugmann, J., 86
Brundtland commission (World Commission on Environment and Development), 20
Brundtland, G.H., 20, 21, 40, 60, 93
Brundtland Report, 20–21, 138
Bryson, J.M., 168
building environmental quality evaluation for sustainability through time (BEQUEST)
framework, 68
survey, 91, 93
timescale, 69
urban development, 68
building research establishment environmental assessment method (BREEAM)
CASBEE, 114
environmental labelling, 111
issues, 112
similar schemes, 112
strengths and weaknesses, 113
built capital, 58, 59
Bulte, E., 63
Bush, G.W., 5
business
Green Building, 17, 18
learning organisations, 46
long-term view, 49, 56

CASBEE. see comprehensive assessment system for built environment efficacy
case studies
health and eco-protection, 132
urban sustainability, 175
see also Modena city strategic plan; multi-stakeholder, urban regeneration; municipal waste treatment system; sustainable redevelopment, case studies
Checkland, P., 185, 186
cities
CASBEE, 115
globalisation and transnational integration, 168
solution corridor, urban regeneration, 45
spatial attributes, 91
see also Vancouver study
‘CitiesPlus’ see Vancouver study
Clock of the Long Now, The (Brand), 37, 38
Clouser, R.A., 126, 219
Club of Rome, 183
Cobb, J.B., 83
coevolutionary interdependence, 123
commission on sustainable development (CSD), 66, 81
communicative modality, 134, 135, 141, 144, 222
community capital, 58–61, 71
community impact evaluation (CIE) description, 109
planning balance sheet (PBS), 109–10
strengths and weaknesses, 110
comprehensive assessment system for built environment efficacy (CASBEE)
certification, 114–15
description, 113
environmental quality (Q) and load (L), 114
strengths and weaknesses, 115
computer-based models, 95
conservation, 12, 55, 134, 163
construction industry, 15
contingent valuation method (CVM) description, 103
public goods, 104
strengths and weaknesses, 104–5
welfare change, 103
Cooper, L., 32, 33
‘Cosmonomic Idea of Reality theory’ built environment, 128–9
description, 125
modalities, 126–7
modal order, 129–30
philosophy
Biblical ideas, 218–19
Dooyeweerd’s 15 modalities, 221–2
entities, two-dimensional representation, 220
idioms, 221
law and entity sides, 219
modalities relationship, 220–221
modal laws, 219–20
multi-modal system, 218
order, modalities, 127
system schools, 217–18
cost-benefit analysis (CBA)
capital budgeting tools, 102
description, 101
human actions, 117
project costs and benefits, 101–2
strengths and weaknesses
  community impact analysis (CIA), 102–3
  non-market measurements, 102
types, 101
credal modality, 138, 140, 144
critical failure points, 42, 44–7
Curwell, S., 120
CVM. see contingent valuation method
cybernetics, 126, 217
Daly, H.E., 83
data capture, 77, 81
Deakin, M., 90, 116, 117, 119, 120
decision-making
  CBA, 101–3
generations impact, 51
MCA, 106–7
modality approach, 149
multi-modal framework, 138–9
multi-stakeholder, urban regeneration, 163–7
participation, 77, 86–7
SEA, 100
demographic change, 194
developing nations, 53
Devuyyst, D., 120
discounted cash flow analysis, 101
dockland decline, 41
Donne, J., 6
Dooyeweerd, H., 125, 126, 138, 140, 146, 214, 217, 218, 219, 221, 222
Dooyeweerd’s theory of 15 modalities
  aesthetic, 136, 141
  analytical, 133, 142
  biological
    ecological footprint, 132
    health and eco-protection, 132
    sustainable development, 143
  communicative, 134, 141–2
  credal, 138, 140
economic
  environmental quality, 135
  harmony, 135–6
  social and, 135
  sustainable development, 141
ethical
  description, 137
  equity, 138
  issues, 140
historical
  and analytical, 133
  construction plan, development, 134
  sustainable development, 142
juridical
  biological, 137
  meaning, 136–7
  surroundings, 136
  sustainable development, 140
kinematics and physical, 131, 143
numerical and spatial, 131, 143, 145
order, 129
sensitive
  feeling, 132
  living quality, 133
  sustainable development, 142
social, 134–5, 141
driver-pressure-state-impact-response (DPSIR) framework, 65–6
driving force, state and response (DSR) model
DPSIR, 65–6
indicators classification, 66
pressure and impacts, 65
ecological footprint. see evaluational approaches
economic evaluation, 47, 50
economic modality, 135–6, 144
education, sustainability
  academic content, 203
  complex interactions, 204
information technology
  collaborative working, 208–9
  connectivity, 207
  content, 208
  convergence, 207
  creativity, 208
  culture, 207–8
education, sustainability (cont’d)
  influence, 206
  oppressive tool, 209
institutions, 209
learning organisations, 215–16
management, 205
models, 205
research
  Dooyeweerd structure, 214
  evaluation methods, 213
  imagination, 215
  knowledge-building and comparisons, 214–15
scenario planning, 206
sustainability science, 204
Torino declaration, 209–13
Einstein, A., 215
embodied energy, 61
‘4-E model’, 172
environmental assessment
  BREEAM, 111–13
  EIA, 97–8
  SEA, 99–100
  travel cost method, 93
environmental capital, 144
environmental impact analysis (EIA)
  definition, 97
  origin, 97
  SEA, 99–100
  steps, 97–8
  strengths and weaknesses, 98–9
epistemic modality, 222
equity and multi modal framework
ethical investment, 49
European commission, 67, 98, 99
Eurostat, 82, 84
evaluational approaches
  accounting frameworks, 67
  assessment methods
    BEQUEST, 68
    dynamic systems, 69–70
    environmental and social issues, 68–9
    spatial levels and timescale, 69
    target research projects, 67–8
community capital
  contributors, 58
  degrading, 60
  human intervention, 59–60
  interdependence, 60–61
  natural, human and built capital, 58–9
  value judgements, 59
DSR model, 65–6
ecological footprint
  building, operational being, 62–3
  countries, 61–2
  embodied energy, 61
  indicator systems, 63–4
  physical footprint, 63
issue/theme-based frameworks, 66
monetary/capital
  indices, 65
  national wealth, 64
  substitutability, 64–5
  Natural Step, 55–7
evaluation ‘tool-kits’, 91
Fifth discipline, The (Senge), 183, 215
financial capital, 58, 64
Folke, C., 200
Forrester, J., 69
Forum for the Future, 57
framework, evaluation
  built environment, modalities, 128–30
  decision-making, 144, 145
  holistic and integrated
    agreed structure, lack of, 124
    co-evolutionary interdependence, 123–4
    devising strategies, cities, 124
    features, 125
    LCA, 123
  modal order, 139–40
  multi-modal, decision-making
    ex ante and ex post, 139
    limitations, 138–9
    qualification system, 138
  problems, 122–3
  subject form, 122
  theoretical underpinning
    Cosmonomic Idea of Reality, 126
    dependency relation, 127
    modality, 127
  see also structuring tool, framework
Francescato, G., 90
future aversion, 48–9
‘future shock’, 38
Gilkinson, N., 189
globalisation, 2, 168, 194
Index

Gordon, A., 51
Gore, A., 2

Green Building
  business reasons, 17, 18
  milestones, 16, 17
  stakeholders, 17, 18
  top social and environmental reasons, 19
Griffioen, S., 126

Guide to Sustainable Community Indicators (Hart), 58, 59

Haberl, H., 63, 67
Habitat Agenda, 83
Hardi, P., 120
Hart, M., 58, 59, 126, 160, 219, 222

hedonic pricing method (HPM) models, 105
  strengths and weaknesses, 105–6
historical modality, 133–4, 142
Horner, R.M.V., 116
human capital, 58, 60, 67

indicators and measures
  aggregated
    calculation, 83
    challenges, 84
    single set, 82
    sustainability, urban, 86
    urban governance index (UGI), 83–4
    uses, 83
building assessment systems, 86
  choice, 79
  definition, 74
evaluation
  characteristics, 75
  EEA, 74–5
  index, 74
  information, 73
  rough indicators, 74
generic questions, 79
indices and tools, different spatial levels, 84, 85
international
  four pillars, 80–81
  local situation, 81–2
  millennium development goals (MDG), 81
  SDI, 82
United Nations, 80
  participatory process, 86–7
  reductionist approach, 86
  robust structure, 80
  traditional vs. sustainable development
    business community, 77
    economic fields, 75
    fixed indicators, 78
    gross national product (GNP) measures, 76
    health services, 75–6
    median income, family, 76–7
    participation, 77
    urban sustainability, 84
inflation, 48, 75, 76
information technology (IT), 185, 206–7, 209
institutional capital, 64, 173
Integrated Local Development Programme (ILDP), 150, 157
Intelcity, Road map-version 4, 27
interest rate, 48
Internet, 105, 184, 207, 208
Jackson, T., 2
Jacobs, J., 86
juridical modality, 136–7, 140, 144, 221

Kalsbeek, L., 126, 219, 222
Kelly, M., 17
Kieffer, S.W., 204
kinematics modality, 131, 143, 144
knowledge grids, 184, 207
Kohler, N., 45, 46, 69
Kyoto Protocol, 1, 115

Lancaster, K.J., 105
Large Urban Distressed Areas (LUDA) BEQUEST, 69, 91
  regeneration process framework, 29, 30
learning organisation, 46, 183–5, 215
Le Moigne, J.L., 217
Lichfield, N., 109, 119
life cycle assessment (LCA)
  components, 110–111
description, 110
life cycle assessment (LCA) (cont’d)
- forms, 95
- methodology, 111
- post-Brundtland forms, 94
- strengths and weaknesses, 111
- sustainable city models, 116–17

life style issues, 61

livestock investment
- banking, 49
- cyclical pattern, 41
- returns, 47–8

Lombardi, P., 90, 116, 150, 152, 153, 155, 214

long term planning, 149, 197–9

Lovelock, J., 2, 199

‘3 Ls’ concept, 51, 52

LUDA. see Large Urban Distressed Areas

management systems
- categorisation, 180
- changing nature, human world, 177, 178
- city, significance, 192
- complex, sustainability, 192
- definition, 176
- democratic society, 179
- freedom to act, 181
- human actions, 176–7

learning organisation
- definition, 183–4
- environment, 183
- knowledge grids, 184
- modelling, human brain, 185

planning framework
- definition, 181
- education, 183
- SUSPLAN, 181–2
- sustainable development, integration, 182

pollution, 177

process protocols
- building construction, 188–9
- disasters and, 190
- guidance, 188
- hard and soft gates, 190–191
- high level disaster management, 188, 189
- risk, 189
- urban planning, 191

regeneration, 178–9

resilience

adaptive capacity, 201
- definition, 200
- disasters, 199
- lifeboat islands, 199–200
- media, 202
- technology, 201
- soft system methodology, 185–7
- sustainability, 178
- Vancouver study, 192–9
- wicked problems
- models, 188
- planners and scientists, 187

Marella, G., 150

May, A., 118

MCA. see multi-criteria analysis

Meadows, D., 86

‘measurement and assessment’ see sustainable development

‘method uncertainty’, 153

Mitchell, G., 12, 120, 124

Mjwara, P., 204

modality
- built environment
- sustainable development aspects, 129, 130
- systems, 128
- urban district, 128–9
- Cosmonomic Idea of Reality, 127
- definition, 126, 219
- entity and law side, 219
- idioms, 221
- interrelation, 127
- laws, 220
- meanings, 127
- order, 222
- relationships
- analogy, 221
- dependency, 220
- functioning, 220–221

Modena, C.D., 150

Modena city strategic plan
- evolution, 169
- participatory democracy, 168–9
- social reporting, 169–74
- steps, 168

Moffat, S., 199

moral imperatives, 2, 12, 49, 140, 213

Muggia urban regeneration scheme.
- see Multi-stakeholder, urban regeneration
multi-criteria analysis (MCA)

ANP, 108–9
compensability, 106–7
critique, 154
description, 106
disadvantage, 107
planning and design solutions, 117–18
robustness, 106
strengths and weaknesses, 107
sustainable redevelopment, 155
waste treatment system, 153
multi-modal framework. see structuring tool, framework
multi-modal system thinking, 217, 218
multi-stakeholder, urban regeneration actors, relationships, 167
conflicts, 167
methodology, 163–4
planning process, 163
retrospective analysis, 164–6
municipal waste treatment system
criteria and sub-criteria, 156
goal, criteria and alternatives, 152
hierarchical model structure, 152
individual preferences, 155
MCA methods, 153
multi-modal framework, application, 154
tipping and incineration, 151

natural capital, 58–60, 63, 71
Natural Step framework
American companies, 57
conditions, 56
organisations and goals, 56–7
quality, 55–6
scientific principles, 55
shareholders, 57
system conditions, 55
Nijkamp, P., 118, 146
non renewable resources
alternative, 59–60
demise, 4
modalities, 130, 143, 145
price, 2
numerical modality, 131, 144, 145, 221

Our Common Future, 20

participatory democracy, 163
‘pay back’ model, 48
Pearce, D.W., 63
performance indicators, 169, 171–3
physical modality, 128, 131, 133, 143, 144, 220
planning
analytical modality, 133
CIE, 109–10
EIA, 97–9
environmental, 143, 144
framework, 181–3
Modena city strategic plan, 168–73
multi-stakeholder, urban regeneration decision-making, 163–7
municipal waste treatment, 151–5
SEA, 99–101
sustainable redevelopment, 155–63
Plessis, Du, 69, 86, 204
‘polluter pays’ principle, 63
post-Brundtland (life-cycle) assessment methods, 93, 94, 96, 116, 119
pre-Brundtland (‘environment in general’) assessment methods, 93, 94, 96, 116
pressure groups, 2
Process Protocol generic model, 189
process protocols, 188–91
quality of life
community capital, 6
critical failure points, 44
sustainability, 76
de Raadt, J.D.R., 126, 217, 219, 221, 222
Rees, M., 2
Rees, W., 63, 64
Reitan, P., 204
research
agenda, 213–15
assessment methods, 120
BREEAM, 111–13
restructuring, 211–12
Rio + 10 Conference, 1
Rio Earth Summit (UNCED), 5, 12, 84
risk
assessment, 47
aversion, 49
management, 44, 189
Rittel, H., 187
Robert, K.-H., 55, 57
Rosen, S., 105

Salford Quays, 41, 43
Scholes, J., 185
SEA. see strategic environmental assessment
Senge, P., 46, 183, 184, 215
sensitive modality, 132–3, 142, 144
social analysis, 101
social capital, 58, 59
social, legal, economic, political and technical (SLEPT), 12
social modality, 129, 134–5, 141, 221, 222
social reporting
graphical representation, 172
indicators, 170–171
information base, 173
issue, 169
legal framework, 170
multi-modal framework, re-classification, 173, 174
performance indicators, 172–3
steps, 171
soft system methodology
human activity systems, 186
models, 186–7
real world management situations, 185
systemicity, 186
spatial modality, 128, 131, 137, 143, 144, 145
sphere sovereignty, 219, 220
stakeholders
decision-making, 24
description, 22–3
Green Building, 17, 18
local knowledge, 77, 86
time period, 36
strategic axes, 171, 172, 173, 174
strategic environmental assessment (SEA)
description, 99
phases, 99–100
strengths and weaknesses, 100–101
strategic planning. see Modena city strategic plan
structuring tool, framework
comprehensiveness, 149
Cosmonomic Idea of Reality, 149
decision-making process and social reporting, 150
Modena city strategic plan, 168–73
multi-stakeholder, urban regeneration
decision-making, 163–7
municipal waste treatment system selection, 151–5
redevelopment, 149–50
sustainability, 148
sustainable redevelopment, 155–63
SUSPLAN project, 181–2
sustainable development.
assessment and measurement
characteristics
actors classification, 27–8
citizens, 28
clients, 28–9
consistent and integrated view, 29
consultants, 29
indicators, 27
LUDA, 29, 30
monitoring progress, 25
performance, 26
principles, 26
built environment, impact
collection and use, buildings, 14–15
consumption, 13–14
interdependence, 16
public participation, 15–16
response levels, 15
total energy use, 14
community, built environment
government, 16–17
greater health and well-being, 19
Green Building, 17–19
debate extension
root words, 13
SLEPT, 12
sustainability, meaning, 12–13
definition
Brundtland Report, 20–21
limitations, 21
Rio conference, 20
environmental perspective
current interest, 2
developing and developed nations, 5
earth’s preservation, 3
government heads, 4–5
non-renewable resources, 4
Rio conference, 1
spectrum, views, 2, 3
time, 4
framework and classification system
dialogue, 24
requirements, 24–5
implementation, management
decisions
Cooper’s process protocol, 32–3
generic model, 33
structured approach, 32
international policy debates
Agenda 21, Rio Earth Summit, 5–6
conferences, 7–11
human actions, 6
principles, environmental changes, 12
management and intervention
evaluation, 30
managers, 31–2
role of, 31
shared set of values
human race, 22
interdependency, systems, 23
stakeholders, 22–3
timescale, 23–4
value systems, 22, 23
see also education, sustainability
sustainable development indicator (SDI)
data sets, 84
public health, 82
size, 82
see also indicators and measures
sustainable redevelopment, case studies
ANP, 157
MCA methods, 155, 157
model structuring approach
clusters, 159–60
consistency, 160
evaluation, 158
network, 159
problem
alternative hypotheses, 158
design team, 157–8
ILDP, 157
results
advantages, 163
interdependences, 162
matrix, pairwise, 161
pairwise comparison, 160
priorities, 161, 162
’temporal exhaustion’, 50
Therivel, R., 120
Third World, 209
Three Gorges Dam, 206
Tian, L., 115
time and sustainability
assessments and evaluations, 35
built environment, 36
evaluation
discounting, 47
pay back model, 48
present and future values, 47–8
failure points
corporate action, 46–7
issues, 42, 44
learning organisation, 46
movements, community, 44
positive attributes, 42
solution corridor, urban regeneration, 45
transformation cycles, 46
virtuous spiral, 44–5
future aversion
banking, 49
future seeking, 48–9
risk, 49
innovation and stability
civilisation order, 38
commerce, 37–8
nature, 38
kairos and chronos, 50
luxury, horizon
AIDS, 52–3
aspirations, wealth, 53
short-term financing, 52
perceptions
atrophy, closed systems, 38, 39
Brundtland definition, 40
community, 39–40
docklands decline, 41
external factors, 42
latent model, 38
purpose, 39
Salford Quays, 41–2, 43
urban context, pattern, 40, 41
practical assessment
decision-making, 50, 51
‘3 Ls’ concept, 51–2
philosophy, 51
time and sustainability (cont’d)
  question of time, 52
  temporal exhaustion, 50
  stakeholders, 36–7
  time horizon, 52–3, 196
  time scales
    BEQUEST, 69
    temporal exhaustion, 50
  Vancouver study, 193
  ‘tool kits’, 67–70, 91
  Torino Declaration on Education and
    Research for Sustainable and
    Responsible Development
  engagements
    global, 211
    governance, strategic development, 212
    networking, 212
    restructuring, cutting-edge knowledge, 211–12
  principles
    energy policy, 210–11
    ethical approaches, 210
    models, social and economic
      development, 210
    sustainable ecosystems, 211
  recommendations, G8 leaders
    caveat, 212–13
    living laboratories, 212
  total cost accounting, 63
  travel cost method, 93
  ‘triple bottom line’ approach, 160, 169
  Turin municipal waste treatment system. see
    municipal waste treatment system

United Nations
  EIA, 99
  indicators, 79, 80, 84, 171
  Millennium Development Goals (MDG), 81
  System of Integrated Environmental
    and Economic Accounting
    (SEEA), 67
  urban regeneration
  multi-stakeholder, 163–7

  political pressures, 96
  solution corridor, 45

  value systems
    shared, 22, 33
    Western democracies, 125
    work, city environment, 23
  Vancouver study
  CitiesPlus
    Canada, 198
    language, 198
    methods and tools, development, 199
    New Zealand, 198–9
    sustainable region initiative, 197
    World Urban Forum, 199
  conclusions, 196–7
  definition
    challenges, 194
    forces, 193–4
  endowment legacy
    long-term plan, city/region, 195
    networks, 196
    urban components, 196
  long-term plan, development
    city region, 195
    phases, 194–5
    timescale, 193
  Van Kooten, C., 63
  Venice and Antiquity (Brown), 50
  von Bertalanffy, L., 217

  Wackernagel, M., 64
  waste disposal
    local authority, 180
    social conflicts, 137
  see also municipal waste treatment
    system
  Webber, M., 187
  World Commission on Environment and
    Development (WCED), 20, 33, 40,
    57, 138

  Zdan, T., 120
  Zorzi, F., 150, 152, 153