Index

access to water supply
aid 90
corruption and 76–7, 79
privatisation and 81, 83
role of 73–6, 77, 78, 87, 88
capability approach see capability
approach
conclusions 87–90
consumer preferences see consumer
preferences
corruption 76–8, 79–80, 84, 87
cost–benefit analysis see cost–benefit
analysis
definitions of access 12, 63–4, 89
titlements approach see
titlements
India 71, 90, 112, 158–60, 161, 256
Chennai see Chennai
institutions 156–8, 161–2, 191, 255–6
inequality see inequality
institutions see institutions
introduction 55–6, 143–4
Millennium Development Goals 2,
56–8, 63–4
criticisms of 58–63
projections 250, 251
multiple regression analyses 81–7
previous assessments of Target 10
64–72
private sector see private sector,
involvement of
privatisation see privatisation
right to water see under human
rights
synergy between access to water and
to sanitation 69–71, 88
Ackerman, J. 8
Action Aid International 87–8
Adamowicz, V. 194, 214
Adams, W. 8
Africa 7, 35, 145, 146, 251
Southern 93
Sub-Saharan 32, 65
see also individual countries
Agarwal, A. 55, 116
agency, individual 152–3, 190, 236,
250, 252–3
agenda, research 221–3, 253–60
agriculture 91
Cauvery river dispute 131–2
dam-building nations 42, 44
genetic crop technology 21
intensity of water use 46, 49–50
irrigation see irrigation
livestock 21
neo-Malthusians 20
water allocation to 36–8, 51, 219
aid 3, 90, 249
access to water supply, role in 73–6,
77, 78, 87, 88
corruption and 76–7, 79
MDGs 60, 62–3
privatisation and 81, 83
Alkire, S. 153
Allan, J.A. 20
Alston, P. 59–60
Altarf, M.A. 149, 194
Anand, P.B. 4, 5, 17, 22, 100, 145
capability approach 235, 237, 239
Chennai 161, 165, 185, 192, 215, 226
collective action 96, 103, 256–7
MDG 7, analysis of progress on
68–72, 78, 81, 89, 90, 249
anti-dam protests 5, 112
arbitration 110
Argentina 7, 10–11
Arkansas river 108–9
Arnold, D. 138
Arrow, K. 145
Asia 65, 145, 251
Southeast 148
see also individual countries

299
Asian Development Bank (ADB) 148, 158, 181
Australia 195–6
Murray–Darling Basin 106–8, 109, 138, 139

Bagolin, I. 153
Bahamas 25
Bahrain 25, 32
balance sheet, water 165–7
using CGE model 172–3
Baland, J.M. 8, 255
Bangladesh 5, 32, 256
Barbados 35
Bardhan, P. 8, 11, 96, 138, 145
‘group equity’ politics 219, 221
new institutional economics 23, 255
Barlow, M. 148
Barrett, S. 5, 9, 92, 100, 237
Basu, K. 145, 222
Bauer, C. 6
Baviskar, A. 5, 112
Bayliss, K. 7, 148
Beach, H. 97, 106
Beesley, M. 6
Ben-Akiva, M. 194, 197, 199, 205, 209, 210, 214, 223, 224
Bennett, L. 95, 108, 257
Benvenisti, E. 9, 92, 94, 108
Bhatia, B. 155
Bhutan 141
Biswas, A. 5, 92, 238
Bjornlund, H. 6
Black, M. 22
Blamey, R. 196, 200, 224
Blore, I. 194
‘blue’ water 53
Botswana 35
Brazil 25, 112
Brenner, R. 17
Brockman, R. 148
Broome, J. 199
bureaucracies 146
Burkina Faso 55
Cairncross, S. 149
Cairo 7
Camdessus Panel Report 66, 75, 90
Canada 25
capability approach 23–5, 28, 151–4, 223, 234–5, 252–3
adaptive preferences 242–4
agency, individual 152–3, 190, 236, 250, 252–3
agency responsible to provide 59, 223, 231
collective freedoms 154
conclusions 244
entitlements approach see entitlements
implications of 235–6
listing basic capabilities 227, 243, 244–5
right to water and 227, 231–2, 240–44
river disputes 236–40, 243
capability–sustainability–collective action (CSCA) model 237–40
Cauvery river dispute 118
1892 and 1924 agreements 118–22, 125, 127
arguments, main 125–7
asymmetry of power 117, 136
Cauvery River Authority (CRA) 124, 136–7
conclusions 139–41
irrigation and dam projects 119–20, 131–2
key issues 127–8
economy 131–2, 138
electoral politics 132–5
hydrology 128–31
other factors hindering conciliation 136–9
milestones, 1970 to date 123–5
Monitoring Committee 124
‘narrow rationality trap’ 240
Tribunal 117, 123, 124, 125, 139, 140
Central African Republic 34, 256
Central Asia 25, 31, 32, 36, 39
Centre for International Economics 18, 195–6
Chambers, R. 7, 255
Chapman, G. 92
charges, water 147
willingness to pay (WTP) 178, 194, 214–20, 221
Chasek, P. 9
Cheerapunji 55
access to water 161, 177–8, 190–91
inequality in 173–7, 192
allocation of water 164–8
entitlements approach 175–8
groundwater regulation and market response 168–72, 191–2
household water sources 1991 163, 191
1996 163–4
inequality in water access 173–7, 192
institutional arrangements in 161–2, 191
per capita quantity of water 200, 225
private sector 7, 161, 165–8, 252
quality, household steps on water 178–80
sources of water, increasing 164, 191
survey of consumers see under consumer preferences
water balance sheet 165–7
using CGE model 172–3
Chenoweth, J. 107
Chile 229
China 25, 112, 114
choice modelling see under consumer preferences
cities
equilibrium framework for water markets 172–3
see also individual cities
Clark, D. 153
Clemens, M. 60
climate change 3, 21, 93, 94
Coasean bargain framework river disputes 111
water supply institutions 190
Cohen, M. 153
Cold War 60
collective action approach 8–9, 92, 256–7, 257–8
capability approach 154
capability–sustainability–collective action (CSCA) model 237–40
conceptual framework 13
river-water disputes 103–4
urban residents 145
commercialisation 147–8, 190
common property resources (CPR) 8
Comoros 71
conceptual framework 11–14, 246–7
themes 14–16
conflict
dependence on external water and 32–4, 254
international river basins see river basins, international
local-level 90
interstate river disputes see river basins, national interstate
‘paradigm wars’ 5
individuals, role of 7–8
large projects v small, localised solutions 5
private sector v state 6–7
rights to resources 21–2, 53
scarcity and national security 4–5, 21–2, 26
Congo, Democratic Republic of 35, 55
Congo, Republic of 34, 55
consumer preferences
Chennai survey 200–201, 221
choice sets used 203–5
hierarchical or lexicographic decision making 210–13
modelling the decisions 207–10
options and attributes 201–3
options chosen 206–7
willingness to pay (WTP) 214–20
choice modelling 194–7, 224
choice-based sampling 222, 225
exogenous sampling 201, 225
theoretical framework 197–200
consultation methods 193, 224
contingent valuation method (CVM) 194
further research 221–3
introduction 193
random utility maximisation (RUM) approach 194, 197–200
review of literature on 194–6
contingent valuation method (CVM) 194
Convention on the Law of the Non-navigational Uses of International Water Courses (UNCIW) 95–6, 110, 136
Cook, B. 255
Copenhagen Consensus project 66
<table>
<thead>
<tr>
<th>Name</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cornes, R.</td>
<td>9, 10</td>
</tr>
<tr>
<td>corporatisation</td>
<td>147–8, 190</td>
</tr>
<tr>
<td>Corriea, F.</td>
<td>91</td>
</tr>
<tr>
<td>corruption</td>
<td>8–9, 136, 157, 258</td>
</tr>
<tr>
<td>aid</td>
<td>76–7, 79</td>
</tr>
<tr>
<td>improving access to water supply</td>
<td>77–8, 80, 87</td>
</tr>
<tr>
<td>privatisation</td>
<td>81, 84</td>
</tr>
<tr>
<td>rent-seeking behaviour</td>
<td>146–7</td>
</tr>
<tr>
<td>Corruption Perception Index</td>
<td>9, 76–7</td>
</tr>
<tr>
<td>cost–benefit analysis</td>
<td>18, 148–50, 238, 248, 249, 260</td>
</tr>
<tr>
<td>water and sanitation targets</td>
<td>66–7</td>
</tr>
<tr>
<td>Courtland Robinson, W.</td>
<td>114</td>
</tr>
<tr>
<td>Crane, R.</td>
<td>149</td>
</tr>
<tr>
<td>Cullis, J.</td>
<td>9, 168–70</td>
</tr>
<tr>
<td>dams</td>
<td>39–43, 44, 46, 50, 54, 114, 247</td>
</tr>
<tr>
<td>India 114</td>
<td></td>
</tr>
<tr>
<td>Cauvery–Mettur project</td>
<td>119–20</td>
</tr>
<tr>
<td>KRS project</td>
<td>119–20</td>
</tr>
<tr>
<td>Periyar 141–2</td>
<td></td>
</tr>
<tr>
<td>protests against</td>
<td>5, 112</td>
</tr>
<tr>
<td>right to water</td>
<td>232–3</td>
</tr>
<tr>
<td>see also irrigation</td>
<td></td>
</tr>
<tr>
<td>Dasgupta, J.</td>
<td>117</td>
</tr>
<tr>
<td>Dasgupta, P.</td>
<td>9</td>
</tr>
<tr>
<td>De Fraiture, Cai K.</td>
<td>20</td>
</tr>
<tr>
<td>De Villiers, M.</td>
<td>4</td>
</tr>
<tr>
<td>de Vries, F.W.T.</td>
<td>21</td>
</tr>
<tr>
<td>definitions</td>
<td></td>
</tr>
<tr>
<td>external renewable water resources</td>
<td>(ERWR) 25</td>
</tr>
<tr>
<td>internal renewable water resources</td>
<td>(IRWR) 25</td>
</tr>
<tr>
<td>total renewable water resources</td>
<td>25</td>
</tr>
<tr>
<td>water scarcity</td>
<td>see under scarcity, water</td>
</tr>
<tr>
<td>Delhi 158</td>
<td></td>
</tr>
<tr>
<td>demographic transition</td>
<td>21</td>
</tr>
<tr>
<td>Denmark 35</td>
<td></td>
</tr>
<tr>
<td>dependence ratio (external water/total renewable water)</td>
<td>32–4</td>
</tr>
<tr>
<td>dam capacity and 41</td>
<td></td>
</tr>
<tr>
<td>intensity of water use</td>
<td>46, 49</td>
</tr>
<tr>
<td>desalination</td>
<td>34, 43–5, 52–3</td>
</tr>
<tr>
<td>Devarajan, S.</td>
<td>172</td>
</tr>
<tr>
<td>diarrhoeal disease</td>
<td>1, 2, 17, 155, 192</td>
</tr>
<tr>
<td>Dinar, A.</td>
<td>97</td>
</tr>
<tr>
<td>disasters 3, 50</td>
<td></td>
</tr>
<tr>
<td>Dixit, A.</td>
<td>98</td>
</tr>
<tr>
<td>domestic use</td>
<td></td>
</tr>
<tr>
<td>increased access to water</td>
<td>89</td>
</tr>
<tr>
<td>India 158, 165–8</td>
<td></td>
</tr>
<tr>
<td>water allocation to 36–9, 40, 51–2, 90, 91</td>
<td></td>
</tr>
<tr>
<td>Drèze, J.</td>
<td>5, 112, 155</td>
</tr>
<tr>
<td>Dubash, N.</td>
<td>6</td>
</tr>
<tr>
<td>Dubourg, W.R.</td>
<td>223</td>
</tr>
<tr>
<td>Dumol, M.</td>
<td>6</td>
</tr>
<tr>
<td>Duraiappah, A.</td>
<td>234</td>
</tr>
<tr>
<td>Dwivedi, R.</td>
<td>5, 112</td>
</tr>
<tr>
<td>Easter, K.</td>
<td>6</td>
</tr>
<tr>
<td>Easton, M.</td>
<td>3</td>
</tr>
<tr>
<td>ECLAC 148</td>
<td></td>
</tr>
<tr>
<td>economic development, water allocation and 36–9, 40, 51–2</td>
<td></td>
</tr>
<tr>
<td>economies of</td>
<td>scale 42, 60, 88, 195</td>
</tr>
<tr>
<td>scope 139–40, 257</td>
<td></td>
</tr>
<tr>
<td>economy, dam-building and size of 41–2</td>
<td></td>
</tr>
<tr>
<td>Egypt 7, 32, 35, 55, 138</td>
<td></td>
</tr>
<tr>
<td>EKCs 35, 53, 68</td>
<td></td>
</tr>
<tr>
<td>elections</td>
<td></td>
</tr>
<tr>
<td>Caupvery river dispute and 132–5 tool in 191</td>
<td></td>
</tr>
<tr>
<td>Elhance, A.</td>
<td>92, 106</td>
</tr>
<tr>
<td>endowment equation, water 155, 190 energy</td>
<td></td>
</tr>
<tr>
<td>lack of access to 155–6, 178–80 security 97</td>
<td></td>
</tr>
<tr>
<td>Engel, J.</td>
<td>200, 223, 224</td>
</tr>
<tr>
<td>entitlements 11–12, 13 agency responsible to provide 59, 223, 231</td>
<td></td>
</tr>
<tr>
<td>collective 154 energy, lack of access to 155–6, 180 household water supply 150–56, 190 Chennai 175–8</td>
<td></td>
</tr>
<tr>
<td>environmental Kuznets curves (EKCs) 35, 53, 68</td>
<td></td>
</tr>
<tr>
<td>equilibrium framework water balance for cities 172–3</td>
<td></td>
</tr>
<tr>
<td>Erin Research Inc. 147</td>
<td></td>
</tr>
<tr>
<td>Eritrea 34</td>
<td></td>
</tr>
<tr>
<td>Ethiopia 229</td>
<td></td>
</tr>
<tr>
<td>‘exit–voice’ framework 8, 145, 250, 252</td>
<td></td>
</tr>
</tbody>
</table>

Scarcity, entitlements and the economics of water
Index

Falkenmark, M. 4, 20, 53
famine 150, 155
Fass, S. 149
federalism, fiscal 146
Fiji 34
fiscal federalism 146
Folmer, H. 9
Food and Agriculture Organisation (FAO)
   Aquastat database 19, 25, 32, 39, 42, 50, 114, 158
   thresholds of water scarcity 19
   unsustainable water use 23
food security 20–21, 97, 137, 247
Fortune 100 list 3
framework, conceptual 11–14, 246–7
themes 14–16
free riding, problem of 10, 23, 50, 99–100
fugitive resource 4
Gaard, G. 8
Galiani, S. 7
game theory and river disputes 96–9
Gandhi, Rajiv 115
Gasper, D. 154, 243
Gaza Strip 25
GDP
   dam capacity and total 41–2
   per capita see per capita GDP
gender 7–8, 256
   inequality 55, 150
   Millennium Development Goal 57
genetic crop technology 21
Ghana 229–30, 252
Giddens, A. 190
Gini coefficient 41
Giordano, M. 92, 94, 95, 96, 109, 122, 140
Gleditsch, N. 92
Gleick, P. 4, 5, 17, 20, 92
Goldin, I. 172
Gore, C. 154
Goss, K. 107–8
‘green’ water 53
Griffin, C. 149, 194
groundwater 248
   fluoride and arsenic in 160
   property rights 4, 101
regulation (Chennai) and market response 168–72, 191–2
Seoul Rules 110
Guhan formula 137, 140
Guhan, S. 94, 100, 118, 119, 123, 124
Gulhati, N. 5
Gunning, J. 172
Haas, P. 9, 92
Hall, D. 148
Hall, S. 104, 111
Hanemann, W.M. 214
Hanley, N. 194
Harcourt, W. 58
Hardin, R. 98
Hardoy, A. 148
‘Harmon doctrine’ 94
Haughton, G. 6
Hausman, J. 194
health 1, 2, 17, 24, 55, 185
diarrhoeal disease 1, 2, 17, 155, 192
Millennium Development Goals 57
   quality, household steps on water 178–80
   six levels of risk 66–7
Helsinki Rules 1966 95, 136
Herman, E. 22
Hewitt, J. 224
Hillel, D. 5
Hirshman, A. 8, 13, 145, 250
Hirshleifer, J. 98
Hohfeld, W. 230, 231, 245
Hollick, A. 9
Holmes, H. 11, 259
Homer-Dixon, T. 4, 21, 91
human rights 64
   duties and obligations 231, 240–41, 245
   MDGs 59–60
   right to life 232, 233
   right to water 227–31
   capability approach and 227, 231–2, 240–44
   tensions in applying 231–4
Hungary 32
Hutton, G. 66, 67, 186
ICESCR 228
identity and river disputes 104–6, 111, 137, 138–9
income levels
endowment, household water 175–7, 192
quality, household steps on water
178–80
source of water 195
India 35, 71, 90, 94, 112
Bangladesh and 5
Cheerapunji 55
Chennai see Chennai
collective action 256–7
dams 119–20
anti-dam protests 5, 112
capacity 114
Periyar 141–2
identity 105, 137
interstate river-water agreement 191
interstate river-water disputes 94, 112–14
asymmetry of power 102, 117, 136
Cauvery river see Cauvery river dispute
ISWD Act 1956 116–17, 139–40
Mullaperiyar river 141–2
tribunals 117
masculinity, paradigm of 114–15, 116, 138, 141
Pakistan 5
Indus Water Treaty 102, 106, 237
privatisation 252
pure public goods 191
water policy 114–16
water supply
access to 71, 90, 112, 158–60, 161, 173–8, 190–91, 192, 256
Chennai see Chennai
institutions 156–8, 161–2, 191, 255–8
water-resource potential in river basins 113
women 256
Indian Water Resources Society 116
Indonesia 25, 229–30
Indus Water Treaty 102, 106, 237
industry, water allocation to 36–8, 51, 165–8
inequality 249, 252, 256
capability approach 235–6
dam capacity 41
economic development 38, 52
forms of 227
intra-household 55, 150
landholdings 23
non-entitlement transfers of water 154
in water access in Chennai 173–7, 192
information
adequate to action rights 231
asymmetry
and bureaucracies 146
and game theory 96–9
capability approach and right to 236
consumer access to 147
consumer preferences and lack of 196, 200, 225
cost–benefit analysis 149–50
failure 10
manipulation of 22–3, 26–7, 53, 62
movement for right to 157
infrastructure and water scarcity, inadequate 22, 26
institutions 8–9, 255
delivering water supply 144–8, 190
India 156–8, 161–2, 191, 255–6
failure of 23, 24, 27
participatory 11, 22, 99, 107, 223–4, 240
integrated water resources management (IWRM) 238
intensity of water use 45–51, 52
International Covenant on Economic, Social and Cultural Rights (ICESCR) 228
International Monetary Fund (IMF) 58
International Rivers Network (IRN) 112
International Water Management Institute (IWMI) 23, 53
Iraq 92
irrigation 7, 42–3, 54, 91, 258
India 114, 115, 119–20, 131–2, 138
intensity of water use 46, 49–50, 52
see also dams
<table>
<thead>
<tr>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irwin, A. 16</td>
</tr>
<tr>
<td>Israel 92</td>
</tr>
<tr>
<td>Iyer, R.R. 5, 100, 102, 117, 140, 141</td>
</tr>
<tr>
<td>Jenkins, R. 147</td>
</tr>
<tr>
<td>Jeyarajan, J. 100</td>
</tr>
<tr>
<td>Jodha, N.S. 8</td>
</tr>
<tr>
<td>Johansson, P.-O. 197, 214, 225</td>
</tr>
<tr>
<td>Johnston, Eric 92</td>
</tr>
<tr>
<td>Johnstone, N. 6</td>
</tr>
<tr>
<td>Jolly, R. 7, 65, 251</td>
</tr>
<tr>
<td>Jordan 92</td>
</tr>
<tr>
<td>Kabir, N. 147</td>
</tr>
<tr>
<td>Kahneman, D. 194</td>
</tr>
<tr>
<td>Kanbur, R. 59, 100, 146</td>
</tr>
<tr>
<td>Karachi 7</td>
</tr>
<tr>
<td>Karnataka 118, 123–6, 127, 128, 131, 132–3, 138, 140, 158</td>
</tr>
<tr>
<td>Cauvery river see Cauvery river dispute</td>
</tr>
<tr>
<td>Kathmandu 178</td>
</tr>
<tr>
<td>Kaul, I. 17, 99</td>
</tr>
<tr>
<td>Kenya 55, 195</td>
</tr>
<tr>
<td>Keohane, R. 9</td>
</tr>
<tr>
<td>Kerala 118, 123, 124–5, 158</td>
</tr>
<tr>
<td>Cauvery river see Cauvery river dispute</td>
</tr>
<tr>
<td>Khan, M. 8, 258</td>
</tr>
<tr>
<td>Khartoum 7</td>
</tr>
<tr>
<td>Khoo, S. 59–60</td>
</tr>
<tr>
<td>knowledge transfers 35</td>
</tr>
<tr>
<td>Kohli, A. 117</td>
</tr>
<tr>
<td>Korea, Republic of 141</td>
</tr>
<tr>
<td>Krishna, A. 255</td>
</tr>
<tr>
<td>Kuwait 25, 32</td>
</tr>
<tr>
<td>Kuylenschierna, J. 4, 53</td>
</tr>
<tr>
<td>Lacina, B. 16</td>
</tr>
<tr>
<td>lakes and property rights 4</td>
</tr>
<tr>
<td>Latin America 7, 148</td>
</tr>
<tr>
<td>Leach, M. 154</td>
</tr>
<tr>
<td>Lebanon 35, 92</td>
</tr>
<tr>
<td>legal principles and international rivers 94–5</td>
</tr>
<tr>
<td>see also property rights</td>
</tr>
<tr>
<td>Lesotho Highlands Water Project 5</td>
</tr>
<tr>
<td>Lockwood, M. 199</td>
</tr>
<tr>
<td>Loehr, W. 10</td>
</tr>
<tr>
<td>Louviere, J. 194</td>
</tr>
<tr>
<td>Lovei, L. 149</td>
</tr>
<tr>
<td>Lowi, M. 5, 101–2, 106</td>
</tr>
<tr>
<td>McCormick, Z. 95</td>
</tr>
<tr>
<td>McCully, P. 5</td>
</tr>
<tr>
<td>McFadden, D. 11, 194</td>
</tr>
<tr>
<td>choice modelling 198, 199, 210, 213, 223, 225, 226</td>
</tr>
<tr>
<td>McIntosh, A. 165</td>
</tr>
<tr>
<td>Madanat, S. 195</td>
</tr>
<tr>
<td>Maddala, G.S. 198, 199</td>
</tr>
<tr>
<td>Maharashtra 158</td>
</tr>
<tr>
<td>Mahoney, J. 230, 231, 245</td>
</tr>
<tr>
<td>Malawi 256</td>
</tr>
<tr>
<td>Malaysia 5</td>
</tr>
<tr>
<td>Maldives 25</td>
</tr>
<tr>
<td>Mali 35</td>
</tr>
<tr>
<td>Malthusians, neo- 20–21, 22, 26</td>
</tr>
<tr>
<td>Manski, C. 225</td>
</tr>
<tr>
<td>Maria-Saleth, R. 8</td>
</tr>
<tr>
<td>masculinity, paradigm of 5, 22, 26, 114–15, 116, 138, 141, 247</td>
</tr>
<tr>
<td>Mauritania 32</td>
</tr>
<tr>
<td>mediation 92, 110, 237, 238</td>
</tr>
<tr>
<td>Mehta, L. 22</td>
</tr>
<tr>
<td>Meier, G. 9</td>
</tr>
<tr>
<td>Mekong River Commission 139, 140, 142</td>
</tr>
<tr>
<td>MENA 20–21, 25, 31, 39</td>
</tr>
<tr>
<td>Menon, P. 142</td>
</tr>
<tr>
<td>Middle East 4, 18, 31</td>
</tr>
<tr>
<td>dam capacity 39</td>
</tr>
<tr>
<td>international river basins 5, 92, 93, 101–2</td>
</tr>
<tr>
<td>rainfall 25</td>
</tr>
<tr>
<td>trade 20–21, 52</td>
</tr>
<tr>
<td>Millennium Development Goals 56–8</td>
</tr>
<tr>
<td>criticisms of 58–63</td>
</tr>
<tr>
<td>sanitation and water in 2, 63–4</td>
</tr>
<tr>
<td>Target 10 249</td>
</tr>
<tr>
<td>aid, role of 73–7, 78, 79, 87, 88</td>
</tr>
<tr>
<td>assessments, previous 64–72</td>
</tr>
<tr>
<td>conclusion 87–90</td>
</tr>
<tr>
<td>corruption 76–8, 79–80, 84</td>
</tr>
<tr>
<td>multiple regression analyses 81–7</td>
</tr>
<tr>
<td>privatisation 7, 78–81, 82, 83, 84, 87, 88–9</td>
</tr>
<tr>
<td>projections 250, 251</td>
</tr>
<tr>
<td>Mishra, N. 147</td>
</tr>
<tr>
<td>Missouri river 108</td>
</tr>
</tbody>
</table>
Moench, M. 190
Moldova 32
monitoring of interstate river disputes, independent 137
Morrison, M. 194, 214, 215
Morrissey, O. 99
Mosse, D. 255
Mu, X. 195
Mudur, G. 3
Murray–Darling Basin (MDB) 106–8, 109, 138, 139, 140
Musgrave, R. 9
Myanmar 229, 256
Nakayama, M. 92, 109, 138, 142
national security, water scarcity and 4–5, 21–2, 26
Natsios, A. 59, 60
Nehru, Jawaharlal 114, 141
neo-Malthusians 20–21, 22, 26
Nepal 71, 178
Netherlands 233
Niger 32
Nigeria 112
Nile river 138
Niskanen, W. 146
Noronha, R. 8
North Africa 31
dam capacity 39
rainfall 25
trade 20–21
see also Egypt
North, D. 8, 11, 144
Nussbaum, M. 1, 11, 16, 227, 236, 242, 243
Oates, W. 146
Oceania 65
O’Connor, M. 194
OECD 90
countries 3, 76
Credit Reporting System (CRS) data 73
Ohlsson, L. 4, 22
Olsaretti, S. 153
Olson, M. 8, 92, 103, 146
Olsthoorn, X. 233
ombudsman 148, 189, 190, 224
O’Neill, O. 1, 231, 241, 245
Ostrom, E. 8, 10, 145, 255
Pakistan 7, 35, 195, 256
India 5
Indus Water Treaty 102, 106, 237
Papua New Guinea 34
participation, stakeholder 11, 22, 99, 107, 223–4, 240
MDGs 61
Pattanayak, S. 178, 216
Paul, S. 8, 145, 147, 157
Pelkey, N. 100
per capita GDP
access to water/sanitation 68–9
dam capacity 41
desalination 45
water aid 76, 78
water use 35–6, 38–9, 40, 45–52
peri-urban areas 227, 240, 258
Chennai 206, 218, 219–20, 221, 222
Peters, T. 205
Philippines 5
population
dam capacity 41, 54
density 46, 49
extension of water/sanitation access 87
growth and water scarcity 20–21
rural 161
urban 46, 49, 52, 161
slum dwellers 233
water resources per capita 25, 29–32, 33
Postel, S. 4, 20
poverty 24
human poverty index 1, 16
reduction see Millennium Development Goals
water scarcity as symptom of 22, 26
precipitation see rainfall
preference revelation, problem of 10
preferences, consumer see consumer preferences
prior appropriation doctrine 4, 32, 94, 101, 248
private goods 10, 11, 145, 249–50
or public 251–2
private sector, involvement of 6–7, 251, 252
India 7, 157–8, 161, 165–8, 252
privatisation 6–7, 10–11, 148, 249, 250–52
access to water 78–81, 82, 83, 87, 88–9
corruption 81, 84
low-income neighbourhoods 6–7
property rights 4, 101, 248
entitlements and 12, 13
legal principles and international
rivers 94–5
percentage share of river waters 137, 140
prior appropriation doctrine 4, 32, 94, 101, 248
private and communal 190
Pruss, A. 66–7
public goods 9–10, 11, 145, 249–50
aggregation technologies 99, 100, 110–11
global 17, 99
India 191
international 99–100
or private 251–2
regional 99
transboundary water resources 99–100, 110–11
public policy, role for 10
quality, household steps to improve water 178–80
quantity of water on earth 2
rainfall 25, 29
conflict potential and variations in 93, 94
dam capacity 41
desalination and level of 43, 44
India 55, 118, 122, 128–31
Randall, A. 17
random utility maximisation (RUM) 194, 197–200
see also consumer preferences
Rathore, N. 55
Rausser, G. 9
Ravi Raman, K. 112
Rawls, J. 244–5
recycling
capital costs of 224
Chennai survey 201–3, 210
religion 8–9, 101
research agenda 221–3, 253–60
reservoirs 5
see also dams
right to water see human rights
Rijsberman, F. 66, 74
Ringler, C. 172
river basins, international 5, 9, 248
asymmetry, degree of 101–2
capability approach to disputes 236–40, 243
collective action, scope for 103–4
conclusions 110
conflict potential of 21–2, 92–4, 254
Euphrates river 102
Helsinki Rules 1966 95, 136
human right to water 233
identity and river disputes 104–6, 111
Indus river 102
Indus Water Treaty 102, 106, 237
introduction 91–2
Jordan river 92, 102
legal principles 94–5
number of 17
property rights, contested 101
public goods 99–100, 110–11
strategic interdependence and game theory 96–9
theories and principles of dispute resolution 94–6
UNCIW 95–6, 110, 136
river basins, national interstate
asymmetry, degree of 101, 102–3, 117, 136
conclusions 110
dispute resolution 100
Australia 106–8, 109, 138, 139
capability approach 236–40, 243
independent monitoring 137
India see under India
percentage share of water 137
treaties, effective 96, 109, 122
United States 92, 108–9
human right to water 233
identity and river disputes 104–6, 111, 137, 138–9
introduction 91–2
property rights, contested 101
Robeyns, I. 153
Rock, M. 4
Scarcity, entitlements and the economics of water

Rogers, P. 97
Rolfe, J. 215, 216
Rose-Ackerman, S. 8, 258
Runge, C.R. 8
Russia 25
Russian Federation, dam capacity in 114
Sadoff, C. 92
Sagoff, M. 250
salinisation of groundwater 10
land 43
Salman, S. 6, 92, 117
Sand, P. 92
Sandler, T. 8, 9, 17, 92, 103, 146
aggregation technologies 99, 100, 110–11
game theory 98
mediation 237
Satterthwaite, D. 60–61, 64, 87
Saudi Arabia 92
Saxena, N. 55
scarcity, water
conclusions 51–3
cost–benefit analysis 18
dam nations 39–43, 44, 46, 50, 52
definitions of
capability deprivation 23–5, 28
institutional failure 23, 24, 27
investment, lack of 22, 26
national security, issue of 21–2, 26
neo-Malthusians 20–21, 22, 26
poverty, symptom of 22, 26
ratio of population per flow unit 18–20
socially constructed 22–3, 26–7, 53
unsustainable use 23, 27
dependence ratio (external water/total renewable water) 32–4, 41, 46, 49
introduction 18
regression analysis on water intensity of GDP 45–51, 52
water allocation to different uses/sectors 36–9, 40, 51–2, 155
water use
intensity of 45–51, 52
internal availability 34–5
per capita GDP 35–6, 38–9, 40, 51
water-resource availability 25, 29–32, 33
dam capacity 41, 43, 54
population 32, 33
surface area 25, 54
use per capita and 31–2
Schick, F. 111
Seabright, P. 8
Sen, A. 1, 11, 61, 222, 232, 245
adaptation to circumstances 242
agency, individual 190
behavioural assumptions 243
capability approach 16, 151–3, 154, 223, 236, 239
versus right to water 240, 241–2, 244
entitlements 15, 150–51, 177
agency responsible to provide 59, 223
famine 155
identity 104
individual liberty 234
listing basic capabilities 227, 244
positive and negative freedoms 231
poverty 24
process aspect of freedom 243–4
Senegal 94
Sengupta, A. 59, 231
Serageldin, Ismail 4
Shafik, N. 68
Shah, T. 6, 190
Shiklomanov, I. 4, 53
Shiva, V. 5, 6, 148, 255
Shordt, K. 65
shortage, water 19
Shughart, W. 145
Singh, B. 149, 194, 219, 226
Singh, S. 5, 112
Smakhtin, V. 50
Solow, R. 239
South Africa 11, 228, 229–30
South America 31
South Asia 31, 36, 39, 93, 146
sovereignty and international rivers 94–5
Spash, C. 199, 224
Spulber, N. 148
Sri Lanka 229–30, 257–8
starvation 150, 155
Stevens, T. 194
strategic interdependence and game theory 96–9
stress, water 19
Sub-Saharan Africa 32, 65
subsidiarity principle 146
Sudan 7
sustainability 23, 37
capability approach to river disputes 236–40
Swain, A. 4, 21, 92
Swarna, V. 148
synergy between access to water and to sanitation 69–71, 88
Syria 92
Tajikistan 35
Tamil Nadu 23, 118, 123–5, 126, 127, 128, 131, 132–3, 135, 138, 140, 158, 162
Cauvery river see Cauvery river dispute
Chennai see Chennai
Tanzania 229–30, 252, 256
technology 52–3
genetic crop 21
river disputes 98–9
Thailand 229–30
Thaler, R. 220
Thompson, J. 17
Todaro, M. 9
total GDP, dam capacity and 41–2 trade
international liquid water 52–3
virtual water 20–21
see also private sector, involvement of; privatisation
Transboundary Freshwater Disputes Database (TFDD) 92, 248
treaties, water 5, 102, 106, 237
Tullock, G. 146, 147, 189, 191
Turkey 5
Turkmenistan 32, 141
Tversky, A. 219
Uganda 229
UNECAFE 237
UNESCO–WWAP 2, 22, 23, 230
United Kingdom 6, 10, 35, 39, 252
United Nations 16, 58
Economic and Social Council
General Comment 15 228, 232, 234, 244
UNCIW 95–6, 110, 136
United Nations Development Programme (UNDP) 1, 16
Human Development Report 2003 60, 78, 87
2005 60, 249, 251
2006 24–5, 229–30, 254
Millennium Project Task Force on Water and Sanitation 65–6, 87
United States
dam capacity 114
interstate rivers 92, 108–9
Universal Declaration of Human Rights (UDHR) 227, 228, 231
unsustainability see sustainability
Uphoff, N. 7, 22, 145, 255
urbanisation, water allocation and 36–9, 40
USAID 158
Demographic and Health Surveys (DHS) 65
utility function 11, 151, 152, 153, 223
utility maximisation 235, 236
random 194, 197–200
see also consumer preferences
Vajpayee, Atal Behari 115
Vandemoortele, J. 59
Varian, H. 151, 197
Varshney, A. 117, 257
Vasek, K. 231
Velasco, H. 230
virtual water 20–21
Vossler, C. 224
Wade, R. 8, 22, 138, 145, 255, 258
wars over resources 53
see also conflict
‘water and well-being’ (WaW) framework 11–14
themes 14–16
Webb, P. 178
Weiss, E. 92
White, G. 17
White, M. 2
White, T. 8
Whittington, D. 149, 194
willingness to pay (WTP) 178
    Chennai survey 214–18, 221
    reasons for reluctance to pay 218–20
    contingent valuation method (CVM) 194
Winnepenny, J. 19–20, 66, 74, 90
Wolf, A. 5, 92, 106, 248, 254
women 55, 150, 256
Wood, G. 8, 258
World Bank 3, 4, 68, 146, 148
    capability approach and 24
    Chennai 224, 225, 226
    mediation 237
    privatisation 6, 81
    protests against 58
Water Demand Research Team 149, 194, 218, 259
World Development Movement 81
World Health Organisation (WHO) 1, 2, 244
World Health Organisation–UNICEF 65, 87, 88, 161, 256
2004 MDG assessment 1, 55, 56, 68, 112, 160, 229, 249
    definition of ‘improved’ source 64
World Trade Organisation (WTO) 58
WTP (willingness to pay) 178, 194, 214–20, 221
Yearley, S. 16
Yoffe, S. 91, 92–4
Yusuf, S. 21, 32
Zedillo Panel 60