Index

Note: Page numbers in **bold** indicate a table, in *italics* indicate a figure; page numbers with ‘b’ following indicate a text box, and with ‘n’ following indicate an endnote.

administrative levels xiv  
Agricultural Law 90  
Agricultural Products Quality and Safety Law 159  
agroindustrialization 6, 129, 147  
companies participation in higher value markets 214–19  
diversity and 132  
Erdos Cashmere Company 131  
household specialization and 138  
households servicing unviable 216, 225n  
independent verification and measurement 218, 225n  
key companies by product in pastoral areas **143**  
livestock enterprises **196**  
premiers for higher value products 154  
quality and higher value markets 216  
sheepmeat enterprises 149, 175–7  
supply and higher value markets 217  
versus dragon head enterprises 148–52, 154  
Caoyuan Xingfa 149b  
Erdos Cashmere Company 131  
Hualing Livestock Company 151b  
Xiaofeiyang 150b  
vertical integration in the dairy industry 141b, 145b  
air quality and grasslands 36  
Altay Prefecture  
degradation 42  
five year plan for livestock 159b  
grassland inventory 105  
Grassland Station fees 81b  
household subsidies 187  
livestock fines 82n  
livestock–grassland balance 107  
livestock support 49  
local officials 73  
Reduce Grazing Return Grassland program **114**  
small raising areas for dairy 138  
stock migration 32  
winter livestock loss 189n  
alternative economic activities 234–7  
animal boundaries 58, 81n  
Animal Disease Prevention Law 159  
Animal Epidemic Prevention Law 159  
Animal Husbandry Bureau xv, 2, 5, 73, 89  
combating desertification 92–3  
funding 66, 81–2n  
grassland inspectors 66  
grassland–livestock balance regulation 105  
grassland monitoring and supervision 68–9, 71  
Grassland Plan targets 113, 122n  
Hefeng County Bureau grazing restrictions **102**  
horizontal co-ordination 80  
legislative process 98–9, 122n, 261  
livestock income estimates 157  
livestock output mandate 265–6  
officials view of market traders 209  
overview 59, 60, 62–4  
Reduce Grazing Return Grasslands program 112–13, **114–15**, 116
service delivery to pastoral households 129, 155n
setting protection areas 97, 111
vertical mis-coordination 79
wool collection and management 144–6
Animal Husbandry Law 90–1, 159–60, 188n
key chapters 183b
animal types 177–8, 186–8
shift to dairy cows 188, 190n
Artificial Grassland Construction program 110
associations 142–3
beef industry 142, 146
cashmere industry 142
dairy industry 144, 146
Galatu Township and wool association 138b
industry-wide 147
sheep industry 138b, 142, 145–7
Wushen County fine wool associations 144–6
see also organizational structure management
Australian Centre for International Agriculture Research (ACIAR) xii, 72
Australian fine wool production 198
Balinyou County dairy raising area 126
Bayataula township dairy and small raising area 133b
beef industry 167, 206
agroindustrialization 150b, 152
abattoir losses 215
associations 142, 146
diversification and specialization in genetics 188
market 129, 191, 194–7
integration 193
low capacity utilization 216–17
processing plant 203
specialization 139
traders 208
Beijing–Tianjin combating desertification program 118b
black moss 104
see also herb picking
borders, international 37
bounded rationality 7–8
breed imports 163, 183b, 186–8
breeding programs 178, 187
by-laws, regulations and standards 103–5
Caoyuan Xingfa 139, 143, 149–50b, 175–8
capital scarcity constraining pastoral growth 11
carbon reserves and grasslands 36
cashmere industry
agroindustrialization 143, 149
associations 142
Erdos Cashmere Company 131, 147b
market 192, 194–7, 206–7, 212
integration 193–4
pen feeding and 172
production 22, 25
Wushen and Erdos grasslands 28, 29
centralized markets, livestock 211–14
Central–local divide 7–8
Chifeng City prefecture specialization and vertical integration 140
China Agricultural Economics Group, University of Queensland xiii
China Agricultural University 71
China–Canada Agricultural Development Project 72
Chinese Academy of Agricultural Science 71
classification of counties 18
climate
northern temperate steppes 27
northwest desert and alpine zone 32–3
Qinghai-Tibet plateau 34
collective action 130, 135
collective economy structures 183b
collective marketing 219
by herdsmen in Habuha County 209b
collectives 53, 212, 258, 262, 264
Animal Husbandry Law and 183b
management of 57
National People’s Congress laws 90, 93
demographics 21, 22
growth and development 10–12, 35, 37
incentives 30, 261–2, 265
indicators for selected pastoral provinces 242
liberalization era 4, 43
management 57, 74
transition 5, 8, 98, 120–1, 124, 132, 267, 271
value of grasslands 37–40
viability of forage crops 161–2
viability of grassland programs 119–20
economic analysis 3
lack of up-to-date 40, 46, 209b
economic and livelihood statistics in Xinjiang 240–1
economy
collective structures 183b
market-oriented 5, 98, 124, 134
rural diversity 132–3, 208
see also collectives
dairy industry
agroindustrialization 143, 148, 150, 151b, 152, 153b
interaction with households 145b
Animal Husbandry Law chapters 183b
animal types 186–7
associations 144, 146
Bayatala Township Dairy 133
commercialized 206
expansion 166, 168, 192
feed requirements 119
five year plan for livestock 159b
imported dairy cows 188, 190n
industry targeting 200
market 194–7
growth 201–2
integration 193
Mengniu Dairy Factory 128
production 22, 25, 192
small dairy raising areas 126, 133b, 138, 141b
specialization in Chifeng City Prefecture 140
vertical integration 141
data, lack of 3, 40, 46, 175
economic constraints on livestock systems 164–6
desert pastures in southwest Xinjiang 89
desertification 8, 42
Gansu 116
see also combating desertification
Develop The West program 118, 123n, 234
Disaster Control And Prevention program 111
disaster relief programs 179, 180b, 189n
Disease Inspection and Epidemic Prevention Station 63
downsizing Central level ministries 7
dragon head enterprises 148–54, 175, 212, 215, 260
dry matter indicators for degradation 41
Index

education 12, 15–16, 40, 52n, 70–1, 200, 226–7, 256, 260
campaign 176–7
children’s 237–9
programs 79, 82n, 244, 246, 249b
Erdos Cashmere Company 131, 147b
Erdos grasslands in Inner Mongolia 28
export 178, 183b
data 197, 242
markets 216, 224n
Environmental Protection Bureau 70–1, 82n, 266

Feed and Feed Additives Management Regulations 159
Feed Law 91
feed storage 65, 81–2n, 87, 112, 189n
feeding systems and grazing restrictions 165
see also grazing bans; livestock system management
fencing 156, 161, 178, 182, 183b, 184–6
Fencing program 109–10
financial incentives for better management 74–5
fine wool industry xi, 143, 189–90n
Australian 198
marketing in Xinjiang 221
five year plans for livestock 64, 105, 109, 113, 151b, 158
Altay Prefecture 159b
Hefeng County 180b
Food Hygiene Law 159
Food Quality and Safety Law 159
food safety 202–3
Food Safety and Quality Centre 202
foreign institution aid and research 72–3
Forestry Bureau combating desertification 92–3, 111
forestry checkpoint 78
fragmented organizational structures 4

Galatu Township and wool association 138b
Gansu 14, 18–19, 26, 31–3, 38, 119
Agricultural University 71
demographics 21, 22
desertification 116
economic indicators 242
feed costs 179
grassland indicators 20
grazing restrictions and utilisable pasture 117
incomes 232, 233
livestock and settlement scheme 249b, 250
livestock numbers, turnover and products 24–5
pastoral households 22
perimeter fences 184
population growth 228
sandstorms 43–4
GDP per capita and primary industry proportion (PIP) of GDP 235
generational issues 243–4
geographic information systems (GIS) 76
geo-strategic issues 37
global positioning systems (GPS) 76
goat industry 29, 34
agroindustrialization 149
Altay Prefecture five year plan for livestock 159b
animal types 186–7
Erdos Cashmere Company 147b
livestock numbers in Inner Mongolia 167, 170
decrease 169
market 192, 194–7
numbers, turnover and products 24–5
percentage changes in pastoralists and livestock 231
production 22
targets 158
turnover channels in Inner Mongolia 173
see also cashmere industry
governance 261–2, 264–5
grass industry 38, 52n
grassland 1, 12–15
defining 18–19
demographic and income indicators 21
economic value 37–40
illegal activity 77, 83n

Colin G. Brown - 9781781007686
Downloaded from Elgar Online at 05/05/2019 03:29:07AM via free access
grassland (cont.)
indicators for key provinces 20
inspection systems 60, 63
Environmental Protection Bureau
70–1
Grassland Stations 64–8
Monitoring and Supervision Centre
68–70
literature on 8–9
management elements 17, 60
monitoring and measurement
standards 104b
natural and strategic value 35–7
policy matrix xii
reformation challenges 2–4
resources 16
role in economic growth and
development 10
sub-systems 16
sustaining livelihoods 37–40
zones 26
northern temperate steppes 23,
27–31
northeastern desert and alpine zone
23, 31–3
Qinghai-Tibet plateau 23, 33–5
see also grassland degradation;
institutional management;
pastoral region; policy challenges
grassland degradation xi–xii, 50–1
causes 42–3
grazing pressure 46–7, 49–50,
226–7, 248, 251–2
insect and pest damage 45
overstocking of key pastoral
provinces 48
rodents 44–5
sandstorms 43–4, 52n
changes in Inner Mongolia 41
degree of 40–2, 52n
desertification and 42
grazing bands and 8
dry matter indicators 41
lack of data 3, 40, 46, 175
salinization and 42
see also sustainable development
progress
Grassland Law 5, 7, 55, 62
careers over 101–3
enforcement of 68, 77
Household Responsibility System 4,
14, 55, 96, 124
leading to fragmented system 14,
124–6
organizational forms in response
to 134–5
property rights 55
resource management 133–4
specialization and the 135
investment request 76
legislative process 97, 98, 99, 261
overview 94–5
supervision system 64
grassland–livestock balance
administrative regulations 105–7,
122n
setting stocking rates and fines 106
grassland–livestock systems causing
hardship 39–40
Grassland Monitoring and Supervision
Center 68–70
Grassland Natural Protected Areas
program 111
Grassland Plan 88, 112, 122–3n
see also institutional management
grassland policy management 78, 84–6
by-laws, regulations and standards
103–5
Combating Desertification Law 88–9,
92–3, 121
Grassland Law 5, 7, 14, 55, 62, 64, 68,
77–6, 94–7
concerns over 101–3
enforcement of 68, 77
investment request 76
legislative process 97, 98, 99, 261
overview 94–5
supervision system 64
grassland–livestock balance
administrative regulations 105–7,
122n
setting stocking rates and fines 106
legal instruments 88–91
monitoring and measurement
standards 104b
non-grassland-specific laws 90–1
Party-State rule by edict 87, 122n
Ministry of Agriculture ‘Grassland
Plan’ 88, 112, 122–3n
State Council ‘Grassland Opinions’
87–8
policy and legislative environment 86
programs 107–13, 114–15, 116, 117,
118b
uniform policies, non-uniform impacts
259–61
grassland programs 107–9
Artificial Grassland Construction
program 110
Beijing–Tianjin combating
desertification program 118b
Combating Desertification program
110–11
concerns with 119–121
Develop The West program 118, 123n
Disaster Control and Prevention
program 111
economic viability of 119–20
education 79, 82n, 244, 246, 249b
Fencing program 109–10
Grassland Natural Protected Areas
program 111
Grassland Seed Base program 109
grazing restrictions and utilizable
pasture area 117
Natural Grasslands Revegetation and
Construction program 109
Nomad Settlement program 112
Pastoral Water Hydrology program
112
Reduce Grazing Return Grasslands
program 112–13, 114–15, 116
Grassland Stations 64–7, 107
funding 68, 82n
human resources 67
livestock disease laws and 77
see also institutional management
Grasslands Monitoring Centre 75
grazing
alternative feed sources for 10
Animal Husbandry Bureau monitoring
of 62, 64–5
bans 2, 8, 87, 102, 110, 112–13,
114–15, 116, 118b, 122n, 161,
164, 174, 177, 184
fees 54, 56, 68
livestock product statistics 22–3
livestock role in development plans
14–15
local community management of 57–8
northern temperate steppes 29–31
northwest desert and alpine zone 32–3
numbers, turnoff and products 24–5
pressure 46–7, 49–50, 226–7, 248,
251–2
property rights and 54–7
Qinghai-Tibet plateau 33–4
restrictions 44, 47, 50, 51n, 87 102,
108, 117, 121, 122–3n, 158, 164,
165, 174, 271
evidence of change 166
Grasslands Law 94
Reduce Grazing Return Grasslands
program 112–13, 114–15, 116
rotational 182–6
stocking rates, capacities and levels
of overstocking 48
see also institutional management
Green Food system 203–5
see also market management
group marketing 219–20
see also market management
growth and development in pastoral
region 10–11
Habahe County collective marketing
209b
Habahe County forestry checkpoint 78
Han settlers 180, 188–9n, 228
Han sheep 177, 187–8
Hebei 18, 51n
Hefeng County
five year livestock plan 180b
grazing restrictions 102
poverty alleviation programs in 247b
Heilongjiang 18
herb picking 56, 64–5, 68, 76, 103–4, 110
herder livelihood see livelihood
higher value livestock 156, 189n
higher value markets 4, 124, 129–30, 172, 193, 198, 205–6
Hohhot dairy industry vertical integration 141b
household contracts 55–6
demographics, 19, 21, 22
economies of scale 56, 81n
registration 57, 237–8
specialization 4
see also pastoral people
Household Responsibility System 96, 124, 262
leading to fragmented system 14, 124–6
organizational forms in response to 134–5
property rights 55
resource management 133–4
specialization 135
household specialization 4, 135–40
agroindustrialization and 138
Household Production Responsibility System 139
income–risk trade-off 136
levels of 137
regional clustering 136–7
vertical integration in Chifeng City
prefecture 140
Hualing Livestock Company 151b
Hubei 18, 26
human and financial resources 67, 69, 74–6
Hunan 18, 26
illegal grassland activity 77, 83n
import and export data 242
import replacement, livestock 197
imports, breed 163, 183b, 186–8
incentives 4, 85, 124, 158, 159b, 199
absence of market 74–5, 211–13
agistment 251
Central–local divide 7–9
economic 30, 261–2, 265
for dragon head enterprise 154
migration 232
property right 53–4, 56–7
specialization 136, 137
to comply with Central objectives 70, 99
to graze on collective land 102
to invest in grassland management 133–4
lack of incentives 161, 187, 258–9
perimeter fencing 184
to overstock 127, 258
income 22, 36, 38–9
alternative economic activities 234–7
demographic and income indicators 21
differentials across regions 232
rural per capita incomes by region 233
household specialization income–risk trade-off 136
industry development to raise 234–7
livestock income estimates 157
income cycle threat 2
industry targeting 198–201
see also market management
Inner Mongolia 12, 18–19, 26, 27–30, 36, 38–9, 42–5, 47
Agricultural University 71
changes in degradation 41
dairy raising area in Balinyou County 126
decrease in livestock numbers between middle and end of year 168–9
demographics 21, 22
dry grassland indicators 41
ecological immigration 248
economic indicators 242
Erdos grasslands 28
GDP per capita and primary industry proportion (PIP) of GDP 235
grassland degradation 42, 45, 52n
grassland indicators 20
grazing restrictions and utilizable pasture 117
incomes 232, 233
livestock systems
  cattle turnoff channels in Inner Mongolia 173
  goat turnoff channels in Inner Mongolia 173
  livestock numbers 167
  livestock numbers, turnoff and products 24–5
  livestock sheds and pens 176
  livestock turnover as percentage of end of year numbers 171
  sheep turnoff channels in Inner Mongolia 174
Mengniu Dairy Factory tetra pack line 128
mining 235
pastoral households 22
  total and rural 229–30
sandstorms 52n
stocking rates, capacities and overstocking 48, 49
structure of beef cattle herd 170
structure of goat flock 171
see also northern temperate steppes
insect and pest damage 45
inspection systems 60, 63
  Environmental Protection Bureau 70–1
  Grassland Stations 64–8
  Monitoring and Supervision Centre 68–70
see also institutional management;
  Ministry of Agriculture and Animal Husbandry Bureau institutional management 53
  co-ordination 266
  horizontal 80–1
  inspection and 83n
  vertical 79–80, 140
human and financial resources 67, 69, 74–6
  investment 75, 83n
legal capacity 76–8
local community management 57–9, 74
property rights in pastoral regions 53–4
  application of 55–6
  establishment of 54
  grassland management and 56–7
  setting and resource management 265–7
state structures 59, 60, 61
  Environmental Protection Bureau 70–1
  foreign in institutions 72–3
  Grassland Monitoring and Supervision Center 68–70
  Grassland Station human resources 67
  Grassland Stations 64–8
  Ministry of Agriculture and Animal Husbandry Bureau 62–4
  research institutions 71–2
uncertainties 258
institutional names xv
international borders 37
Jilin 18, 26, 42, 51n, 122n, 192
Kashgar cattle market 218
Kashgar meat market 203
key ruminant livestock product markets 194–7
labour and pastoral region growth 10
legal instruments 88–91
  Animal Husbandry Law 90–1
  by-laws, regulations and standards 103–5
  Combating Desertification Law 88–9, 92–3
  Cooperative Law 140–2, 155n
  Grasslands Law 5, 7, 14, 55, 62, 64, 68, 77–6, 94–7
  concerns over 101–3
  enforcement of 68, 77
  investment request 76
  legislative process 97, 98, 99, 261
  overview 94–5
  supervision system 64
legal instruments (cont.)
government–livestock balance
administrative regulations 105–7
setting stocking rates and fines 106
monitoring and measurement
standards 104b
non-grassland-specific laws 90–1
legislative environment for grasslands in China 86
see also grassland policy management
legislative process 97, 98, 99
Liaoning 18, 26, 51n, 122n, 147b, 192
literature on grasslands 8–9
livelihood 1, 12, 16, 19, 23, 35–6
alternative economic activities 234–7
Central–local bounded rationality and 7
demographic and income indicators 21
grasslands sustaining 37–8, 40, 50, 52n
household specialization income–risk trade-off 136
income 22, 36, 38–9
alternative economic activities 234–7
demographic and income indicators 21
differentials across regions 232, 233
household specialization income–risk trade-off 136
industry development to raise 234–7
livestock income estimates 157
industry development to improve 234–7
livestock income estimates 157
management dilemma 2–4, 6
livestock
agistment 249, 251–2
alternative feed sources 10
breed imports 163, 183b, 186–8
centralized markets 211–14
characteristics of key product markets 194–7
expansion 9
export orientation 197
feed systems in pastoral areas 162
import replacement 197
market integration 195
market segmentation 194
markets 196
northern temperate steppes 30–1
northwest desert and alpine zone 31–2
numbers, turnoff and products 24–5
price reporting 197
product differentiation 195
product markets 196
product statistics 22–3
Qinghai-Tibet plateau 33–4
role in development plans 14–15
stocking rates, capacities and levels of overstocking 48
veterinary products 160, 178, 202
veterinary services 62–3, 66, 68, 127, 133b, 144, 145b, 149b
see also grazing
livestock and settlement scheme in Sunan County 249b, 250
livestock industry development and regulations 157–60
Altay Prefecture plan 159b
Animal Husbandry Law 159–60, 183b, 188n
industry measures, plans, targets 157–8, 159b, 180b
see also agroindustrialization
livestock system constraints 160
feed balance and modernizing systems 160–4
forage systems 161, 162
pen-feeding systems 163
feeding systems and grazing restrictions 165
grazing restrictions, checks, balances 164–6
livestock system management 156
animal types 186–8
breeding programs 178, 187
evidence of change 166–8, 170, 172
decrease in numbers in Inner Mongolia between middle and end of year 168–9
livestock numbers in Inner Mongolia 167
livestock turnoff in Inner Mongolia as percentage of end of year numbers 171
structure of beef cattle herd in Inner Mongolia 170
structure of goat flock in Inner Mongolia 171
feed resources 178–82
disaster relief programs 179, 189n
fencing 156, 161, 178, 182, 183b, 184–6
rotational grazing 156, 161, 183b, 184, 189n
tailoring systems to feed resources 172, 174–8, 189n
cattle turnoff channels in Inner Mongolia 173
goat turnoff channels in Inner Mongolia 173
higher value livestock 156, 189n
livestock sheds and pens in Inner Mongolia 176
sheep turnoff channels in Inner Mongolia 174
local community management 57–9, 74
see also collectives; institutional management
local officials and bounded rationality 7–8
low product prices 191
see also market management; price formation
management elements for grasslands 17
managing institutions see institutional management
managing livestock see livestock system management
managing markets see market management
managing structures see organizational structure management:
organizational structure issues
market cooperatives 207–8, 212, 219, 222, 224n
see also market management
market integration, livestock 195
market management 191
advanced 220, 222–4
Xinjiang Production and Construction Corps 222, 225n
coopératives 207–8, 212, 219, 222, 224n
export markets 216, 224n
higher value segment 4, 124, 129–30, 172, 193, 198, 205–6
group marketing 219–20
growing the market 201–2
food safety 202–3
Green Food system 203–5
industry targeting 198–9
Central level 200
livestock revolution 199
local level 200–1
sheep meat prices in Xinjiang 201
integration 193, 198
characteristics of key livestock markets 194–7
market distortions and 256
price formation 205–6
agroindustrial companies participation in 214–19
and the transition from centrally planned systems 206–8
centralized markets and 211–14
traders’ role 208–11, 224n
scope of markets 192
technical productivity and 206, 224n
market-oriented economy 5, 98, 124, 134
market scope 192
market segmentation, livestock 194
marketing and organizational structure integration 129–30
markets (specific)
fine wool marketing in Xinjiang 221
Kashgar cattle market 218
Kashgar meat market 203
wool trader in Yili Prefecture, Xinjiang 213
see also market management
measurement units xv
Mengniu Dairy Factory tetra pack line 128
migrant workers and household registration 237–8
milking stations 141b, 145b
mining boom 235–6
Ministry of Agriculture xv, 2, 5, 62–4, 73, 89
combating desertification 92
Food Safety and Quality Centre 202
funding 66, 81–2n
grassland–livestock balance regulation 105
Grassland Plan 87–8
targets 113, 122n
Green Foods Office 204
legislative process 98–9, 122n
Reduce Grazing Return Grasslands program 112
reports concerning Animal Husbandry Law 160
setting protection areas 97, 111
sole procurement powers over wool 222
Ministry of Science and Technology 61, 71, 80
monitoring and measurement standards 104b
National Grasslands Law 5, 7, 14
National People’s Congress Standing Committee 99
Natural Grasslands Revegetation and Construction program 109
Natural Protected Area Law 91
natural resource management 265–7
natural value or grasslands 35–7
Ningxia 18
Nomad Settlement program 112
non-grassland-specific laws 90–1
northern temperate steppes 23, 26, 27–31
northwest desert and alpine zone 23, 26, 31–3
migration to summer pastures 32
organizational structure issues
diverse rural economy 132–3
efficiency of service provision 127–9
Household Responsibility System 4
leading to fragmented system 14, 124–6
legal status 130–2
marketing and integration 129–30
resource management 133–4, 265–7
small dairy raising areas J26, 133b, 141b
organizational structure management 125
agroindustrialization 6, 129, 145b, 147
diversity and 132
household specialization and 138
key companies by product in pastoral areas 143
versus dragon head enterprises 131b, 148, 149b, 150b, 151b, 152, 154
vertical integration in the dairy industry 141b
Animal Husbandry Bureau wool collection and management 144–6
associations 142–3, 155n
industry-wide 147
Wushen County fine wool associations 144–6
Cooperative Law 140–2, 155n
Galatu Township wool association 138b
Household Responsibility System 55, 96
organizational forms in response to 134–5
household specialization 4, 135–6, 137, 138b, 139, 140
link between support programs and raising areas 133, 140
overgrazing 14, 29, 43–4, 46–50, 134, 180b
restrictions 44, 47, 50, 51n, 87 102, 108, 117, 121, 122–3n, 158, 164, 165, 174, 271
evidence of change 166–8
Grasslands Law 94
Reduce Grazing Return Grasslands program 112–13, 114–15, 116
see also grazing
pastoral counties
criteria 18
demographic and income indicators 21
grassland indicators 20
ruminant livestock numbers, turnover and products 22–3, 24–5
see also pastoral region
pastoral household demographics, 19, 21, 22
pastoral minorities 38
pastoral people
grassland–livestock systems causing hardship for 39–40
livelihood 1, 12, 16, 19, 23, 35–6
alternative economic activities 234–7
Central–local bounded rationality and 7
demographic and income indicators 21
grasslands sustaining 37–8, 40, 50, 52n
household specialization
income–risk trade-off 136
income differentials across regions 232, 233
industry development to improve 234–7
livestock income estimates 157
management dilemma 2–4, 6
northern temperate steppes 29
northwestern desert and alpine zone 31
Qinghai-Tibet plateau 33
settlement 38, 52n
see also people management
pastoral region 36
Central–local bounded rationality 7–8
degradation attention 9
development 1–2
design/implementation gap 3
government approach to 4
growth and constraints to 10, 11, 12
management of 13
ruminant livestock 14
heterogeneity 12
increased efficiency 11–12
policy and system linkages 6
policy priorities 8–9
see also grassland
Pastoral Water Hydrology program 112
pen-feeding 47, 145b, 183, 249, 264
people management 226–7
alternative economic activities 234–7
cultural issues 243–4
generational issues 243–4
income differentials across regions 232
rural per capita incomes by region 233
industry development and 234–7
livestock agistment 249, 251–2
migrant workers and household registration 237–8
population movements 227, 230
percentage changes in number of pastoralists and livestock 231
total and rural populations in pastoral counties 229–30, 252n
population pressures 12, 31, 125, 130, 155n, 226, 237, 255
poverty alleviation programs in Hefeng County 247b
relationship between GDP per capita and primary industry proportion (PIP) of GDP 235
settlement schemes 244–8, 252–3n
in reclaimed desert land, Habahe County 245
in Sunan County 249b, 250
skill levels and opportunity costs 238–9
economic and livelihood statistics in Xinjiang 240–1
economic indicators for selected pastoral provinces 242
‘Sunshine Project of Transfer and Training of Rural Labour’ 239
pest damage 45
place names xiv
policy and legislative environment 86
policy challenges
autonomous regions 3
Central–local divide 7–8
policy challenges (cont.)

desertification 42
and grazing bans 8
design and implementation gap 3
environmental diversity 3
fragmented organizational structures 4
new era 5
non-uniform impacts 259–61
policy environment 4, 86
priorities and 8–9
pro-active vs less interventionist approach 4
reconciling complex systems 3
reconciling instruments 5, 6, 7
resource or livelihood management dilemma 2, 16, 17, 266–67
solutions 254–9, 271
community-based management 264
facing the media 263
governance 261–2, 264–5
institutional setting and resource management 265–7
natural resource management 265–7
non-uniform policy impacts 259–61
stakeholder consultation 257
State-led system problems 264–5
technology 14, 158, 226, 267–71
communication 76, 156, 214, 270
system linkages 6
see also sustainable development progress

policy impacts 259–61
policy management see grassland policy management
policy priority environment 8–9
policy–system linkages in sustainable development 6

population

generational issues 243–4
movements 227, 230
percentage changes in number of pastoralists and livestock 231
total and rural populations in pastoral counties 229–30
pastoral county 10, 229–30
pressures 12, 31, 125, 130, 155n, 226, 237, 255

poverty 1, 3
fencing programs and 185
foreign institution investment and 72
grassland programs and 121, 244, 246
in Hefeng County 247b
systemic 39
prefectures, counties and cities xvii
price formation 205–6
accuracy 256–7
agroindustrial companies participation in 214–19
and the transition from centrally planned systems 206–8
centralized markets and 211–14
traders’ role 208–11
price reporting, livestock 197
pro-active versus less interventionist approach 4

problem solutions 254–9, 271
community-based management 264
facing the media 263
governance 261–2, 264–5
institutional setting and resource management 265–7
natural resource management 265–7
non-uniform policy impacts 259–61
stakeholder consultation 257
State-led system problems 264–5
technology 14, 158, 226, 267–71
‘3S’ 76
communication 214
overstocking addressed by 156
use of satellite 270

product differentiation, livestock 195
product market characteristics, livestock 194–7
programs see grassland programs

property rights in pastoral regions 53–7
provinces 18–19, 51n
and autonomous regions xvi
criteria 18
demographic and income indicators 21
grassland indicators 20
see also pastoral region

Qinghai 18–19, 26, 41
demographics 21, 22
Index

291

economic indicators 242
grassland degradation 44–5
grassland indicators 20
grazing restrictions and utilizable pasture 117
incomes 232, 233
livestock numbers, turnover and products 24–5
pastoral households 22
pastoral incomes 38–9
per capita grassland 52n
population changes 228, 231
stocking rates, capacities and overstocking 47, 48, 49
Qinghai-Tibet plateau 14, 23, 26, 33–6
high altitude grasslands 35
quality 30, 216
air 36, 44
assurance 91, 130–1, 133b, 183b
livestock 37
of authorities’ service 63
of education 238
product 30, 154, 159, 206–7, 211, 218, 220
Reduce Grazing Return Grasslands program 108, 114–15, 116, 118
formal documents 112, 122n
funding administration 116
grazing restrictions and utilizable pasture area 117
investment 113, 122n
local implementation 116, 122–3n
remote sensing (RS) 76
research institutions’ aid, finance and research 71–3
resource or livelihood management dilemma 2
bounded rationality and the 7–8
restrictions on grazing 44, 47, 50, 51n, 87, 102, 108, 117, 121, 122–3n, 158, 164, 165, 174, 271
evidence of change 166–8
Grasslands Law 94
Reduce Grazing Return Grasslands program 112–13, 114–15, 116
rip lines 110, 122n
road infrastructure threat 8
rodents causing grassland degradation 44–5
rotational grazing 156, 161, 183b, 184, 189n
ruminant livestock see livestock
rural economy diversity 132–3, 208
rural industrialization 8
Rural Land Contract Law 90
rural per capita incomes by region 233
salinization and grassland degradation 42, 246
sandstorms causing grassland degradation 43–4, 52n
scientific information 3
Seed Law 91
semi-pastoral counties criteria 18
demographic and income indicators 21
grassland indicators 20
population and livestock growth 228, 230, 231
ruminant livestock numbers, turnover and products 22–3, 24–5
settlement schemes 15, 38, 43, 52n, 84, 109, 112, 123n, 243–8, 252–3n, 256, 264, 271
forage production and 121
in reclaimed desert land, Habahe County 245
specialization 138
Bayatala Township Dairy and Small Raising Area 133b
small dairy raising area Balinyou County 126
Sunan County 250
Shaanxi 18, 26
Shanxi 18, 26, 51n
sheep industry 22, 119
agroindustrialization 143, 149–50b, 153b, 175
Altay Prefecture five year plan for livestock 159b
Animal Husbandry Law key chapters 183b
animal types 177–8, 186–8
sheep industry (cont.)  
associations 138b, 142, 145–6  
expansion 201–2  
feed resources 179, 182  
fencing and wool quality 185–6  
fine wool xi, 143, 189–90n  
Australian production 198  
marketing in Xinjiang 221  
grassland monitoring and measurement standards 104b  
Hefeng County five year plan for livestock 180b  
livestock numbers in Inner Mongolia 167  
decrease 169  
livestock numbers, turnoff and products 24–5, 170  
market 192–3, 194–7  
marketing 176–7  
collective 209b  
inter-regional 212  
meat enterprises 143, 149, 150b, 175–8  
meat prices in Xinjiang 201  
Northern Temperate Steppes 30  
overstocking 49  
payment to producers 223  
specialization 139, 140  
stock migration 32  
systems 172–5  
transition 206–8  
targets 158  
turnoff channels in Inner Mongolia 174  
Sichuan 18–19  
skill levels and opportunity costs 238–9  
small dairy raising areas 126, 133b, 138, 141b  
southwest Xinjiang 89  
specialization see household specialization  
State institutions in grassland management and inspection system 60  
state structures 59, 60, 61  
Disease Inspection and Epidemic Prevention Station 63  
Environmental Protection Bureau 70–1, 82n  
foreign institutions 72–3  
Grassland Monitoring and Supervision Center 68–70  
human resources 67  
Grassland Stations 63–8, 82n  
Ministry of Agriculture and Animal Husbandry Bureau 62–4  
research institutions 71–2, 82n  
see also organizational structure management; organizational structure issues  
stocking rates and fines in grassland–livestock balance 106  
stocking rates, capacities and levels of overstocking 48  
stocking rates, degradation and livelihoods 2–3  
see also grassland degradation; livelihood; overgrazing  
strategic value of grasslands 35–7  
structure management see organizational structure management; organizational structure issues  
sub-leasing land 127, 260  
sub-systems, grassland 16  
‘Sunshine Project of Transfer and Training of Rural Labour’ 239  
sustainable development management  
diagram 13  
‘Sustainable development of grasslands in western China’ xii, 72  
sustainable development progress 254–9, 271  
discussing options with households and village leaders 257  
facing the media 263  
governance 261–2, 264–5  
institutional setting and resource management 265–7  
natural resource management 265–7  
technology 267–71  
‘3S’ 76  
communication 214  
constraints to 125, 134, 158, 175  
 improvisments 258–9  

Colin G. Brown - 9781781007686  
Downloaded from Elgar Online at 05/05/2019 03:29:07AM  
via free access
overstocking addressed by 156
use of satellite 270
vertical integration and 141b
uniform policy impacts 259–61
sustaining livelihoods 37–40
systemic poverty 39

‘3S’ technology 76
  see also technology
technical productivity 206, 224n
  see also market management
technology 14, 16, 226, 267–71
  ‘3S’ 76
communication 214, 268
constraints to 125, 134, 158, 175
improvements 258–9
overstocking addressed by 156
use of satellite 270
vertical integration and 141b
Tibet 18–19, 26
demographics 21, 22
economic indicators 242
education and skills 239
grassland indicators 20
grassland per capita 52n
incomes 38, 232, 233
industry development 236–7
livestock numbers, turnoff and products 24–5
pastoral households 22
percentage change in pastoralists to livestock 231
shift to semi-pastoral counties 230
stocking rates, capacities and overstocking 48, 49
topography
  northern temperate steppes 29
  northwest desert and alpine zone 31
Qinghai-Tibet plateau 33
tourism 1, 16, 37, 39, 97, 103, 235–7
traders’ role in price formation 208–11, 213
trading markets, livestock 195
  see also market management
transition
  economic 5, 8, 98, 120–1, 124, 132, 267, 271
from Central planning era 87, 256
from Centrally planned market systems 206–8
  of organizational structures 124
to urban occupations 238, 243

University of Queensland, China
Agricultural Economics Group xiii
universities 71
usable grassland 5, 51n
vertical integration in the dairy industry 141b, 145b
veterinary products 160, 178, 202
veterinary services 66, 68, 127, 133b, 144, 145b, 149b
Veterinary Station 62–3
water supply dependant on grasslands 36
winter livestock loss 189n
wool industry
agroindustrialization 143, 149b
integration 148
animal types 186–7
associations 138b, 142, 147
auctions 144–5, 222–3
collective marketing 209b
fine wool Merino genetics 188
market 191–3, 194–7, 211–12
fine wool 198
marketing 220, 221, 222–3
production 22, 25, 168
revenue 30
systems 176–8
targeting 200
textile mills 147–8
traders 207–8, 213
Wushen and Erdos grasslands 28, 29, 144
Wushen wool 144–6
wool trader in Yili Prefecture, Xinjiang 213
World Bank pastoral development project 72–3
Wushen County fine wool industry 144–6
Sustainable Development in Western China

Xiaofeiyang Company 143, 149, 150b, 175–6
Xinjiang 14, 18–19, 26, 31
agistment 251–2
Agricultural University 71
demographics 21, 22
economic and livelihood statistics
240–1
economic indicators 242
education 238–9
grassland degradation 45
grassland indicators 20
grazing restrictions and utilizable pasture 117
Han migration 228
incomes 232, 233
livestock numbers, turnoff and products 24–5
mining 235, 243
pastoral households 22
population 228
total and rural 229
Production and Construction Corps
222, 225n
settlement of migratory herders 245–6, 247b, 248
sheep meat prices 201
stocking rates, capacities and overstocking 47, 48, 49
tourism 236
Yili Dairy Company 145b
Yunnan 18, 26, 39
grazing restrictions 117